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Arizona State University

2002–2003 General Catalog

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Academic Coordination

Assistant to the Provost / Linda Van Scoy

Academic and Administrative Documents

Director / Tabb Forster

Editor/Publisher / Steve Gobbell

Associate Editors / Dot DiRienzi, John Maclsaac

Assistant Editor / Rebecca Howe

Senior Office Specialist / Julie Zehring

Desktop Publishing Specialist, Senior / Michael J. Martin

Desktop Publishing Specialists / Cheryl Anderson,

Rob Peterson

Proofreader / Jeanne Fairbanks

Computer Support Specialist / Anthony Garone

Editorial Assistant / Elizabeth Moreau

Web Coordination

Manager, Communications / Katy McIntosh

Desktop Publishing Assistant / Michael Ellis

Catalog Coordinators

Academic Transfer Articulation Office / Zoila Gamero de Tovar,
Beverly Luna

Administrative Services / Cookie Ellis, Sandy Sewell

ASU East / Vinette Williams, Toni Ann Aguirre

ASU Extended Campus/College of Extended Education /

Randy Bailey, Julie Riddle

ASU West / Julie Ramsden

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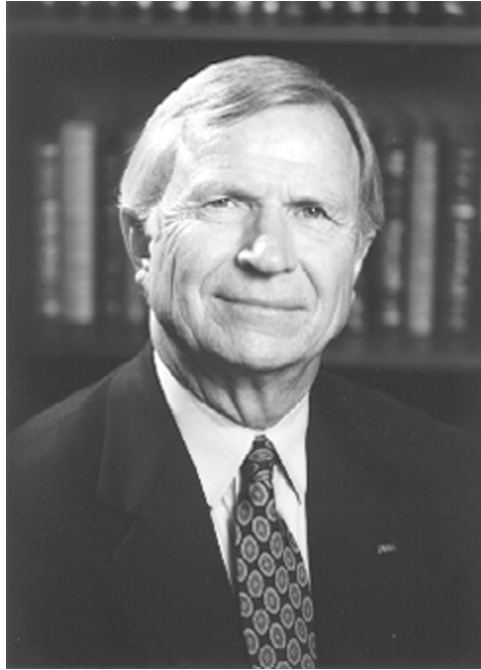
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President Lattie F. Coor

Tim Trumble photo

Dear ASU Students and Prospective Students:

It is my personal pleasure to introduce the Arizona State University 2002–2003 *General Catalog*. It is intended to put a great deal of important information at your fingertips and serve as a guide through your university experience.

The catalog compiles a rather imposing list of programs, courses, requirements, and services. We hope it is organized in a manner that makes it easy to find the information most applicable to you and your course of studies.

While the catalog will answer many of your questions, nothing will substitute for the guidance your advisor can provide. I strongly encourage you to work closely with an advisor to plan your academic program.

On behalf of Arizona State University, I wish you a challenging and fulfilling experience as you work to achieve your goals.

Sincerely,

A handwritten signature in black ink, appearing to read "Lattie F. Coor". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Lattie F. Coor
President

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AMT Aeronautical Management Technology	662	DAN Dance	298
ANP Environmental Analysis and Programming	132	DCI Curriculum and Instruction.....	196
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APH Architectural Philosophy and History.....	133	ECD Early Childhood Education	196
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¹ See the *ASU West Catalog*.

² See the *Graduate Catalog*.

Academic Organization

Organized under ASU Main, ASU East, ASU West, and ASU Extended Campus are colleges, schools, departments, and other administrative units whose faculty offer courses.

ASU Main

Barrett Honors College

College of Architecture and Environmental Design

School of Architecture
School of Design
School of Planning and Landscape Architecture

College of Business

Department of Economics
Department of Finance
Department of Management
Department of Marketing
Department of Supply Chain Management
School of Accountancy and Information Management
School of Health Administration and Policy

College of Education

Division of Curriculum and Instruction
Division of Educational Leadership and Policy Studies
Division of Psychology in Education

College of Engineering and Applied Sciences

Del E. Webb School of Construction

School of Engineering

Department of Bioengineering
Department of Chemical and Materials Engineering
Department of Civil and Environmental Engineering
Department of Computer Science and Engineering
Department of Electrical Engineering
Department of Industrial Engineering
Department of Mechanical and Aerospace Engineering

College of Extended Education

College of Law

College of Liberal Arts and Sciences

African American Studies Program
Department of Aerospace Studies
Department of Anthropology
Department of Biology
Department of Chemistry and Biochemistry
Department of Chicana and Chicano Studies
Department of English
Department of Exercise Science and Physical Education
Department of Family and Human Development

Department of Geography
Department of Geological Sciences
Department of History
Department of Languages and Literatures
Department of Mathematics and Statistics
Department of Microbiology
Department of Military Science
Department of Philosophy
Department of Physics and Astronomy
Department of Plant Biology
Department of Political Science
Department of Psychology
Department of Religious Studies
Department of Sociology
Department of Speech and Hearing Science
Interdisciplinary Humanities Program
Women's Studies Program

College of Nursing

College of Public Programs

American Indian Studies Program
Asian Pacific American Studies Program
Department of Recreation Management and Tourism
Hugh Downs School of Human Communication
School of Justice Studies
School of Public Affairs
School of Social Work
Walter Cronkite School of Journalism and Mass Communication

Division of Undergraduate Academic Services

Academic Success at the University
Bachelor of Interdisciplinary Studies
Writing Across the Curriculum

Graduate College

Gerontology
Science and Engineering of Materials
Transportation Systems

Herberger College of Fine Arts

Department of Dance
Department of Theatre
School of Art
School of Music

ASU East

College of Extended Education

College of Technology and Applied Sciences

Department of Aeronautical Management Technology
Department of Electronics and Computer Engineering
Technology

Department of Information and Management Technology

Department of Manufacturing and Aeronautical
Engineering Technology

East College

Department of Exercise and Wellness

Department of Nutrition

Faculty of Applied Psychology

Faculty of Business Administration

Faculty of Education

Faculty of Multimedia Writing and Technical
Communication

Morrison School of Agribusiness and Resource Management

ASU West

College of Arts and Sciences

Department of American Studies

Department of Integrative Studies

Department of Interdisciplinary Arts and Performance

Department of Life Sciences

Department of Social and Behavioral Sciences

Ethnic Studies Program

Interdisciplinary Studies Graduate Program

Religious Studies Program

Women's Studies Program

College of Education

Department of Elementary Education

Department of Graduate Studies and Professional
Development

Department of Secondary Education

Department of Special Education

College of Extended Education

College of Human Services

Department of Administration of Justice

Department of Communication Studies

Department of Recreation and Tourism Management

Department of Social Work

Gerontology Program

Nursing (ASU Main Program)

Division of Collaborative Programs

Applied Science Program

Barrett Honors College

Learning Enhancement Center

Research Consulting Center

University-College Center

West Campus Advising Center

School of Management

Department of Accounting and Information Systems
Management

Department of Economics, Finance, Marketing and
Quantitative Business Analysis

Department of Management

ASU Extended Campus

College of Extended Education

Academic and Professional Programs

American English and Culture Program

Distance Learning and Technology

Extended Campus Programs

Independent Learning



Whitewashing the "A" on A Mountain is a Welcome Week tradition.

Tim Trumble photo

ASU Baccalaureate Degrees

Baccalaureate degrees, majors, and concentrations offered by ASU Main, ASU East, and ASU West and through ASU Extended Campus are shown in the “ASU Baccalaureate Degrees” table below, organized by the name of the major. The table points to the primary page where more information can be found. The table shows only officially approved concentrations; other informal areas of study may also be available. Where indicated, the approved area of study is called an “emphasis” or some other name in place of “concentration.” For graduate degrees, see the [“ASU Graduate Degrees” table, page 529](#).

ASU offers these baccalaureate degrees, abbreviated in the table below and elsewhere in the catalog:

Bachelor of Applied Science (B.A.S.)
 Bachelor of Arts (B.A.)
 Bachelor of Arts in Education (B.A.E.)
 Bachelor of Fine Arts (B.F.A.)
 Bachelor of Interdisciplinary Studies (B.I.S.)
 Bachelor of Music (B.M.)
 Bachelor of Science (B.S.)
 Bachelor of Science in Design (B.S.D.)
 Bachelor of Science in Engineering (B.S.E.)
 Bachelor of Science in Landscape
 Architecture (B.S.L.A.)
 Bachelor of Science in Nursing (B.S.N.)
 Bachelor of Science in Planning (B.S.P.)
 Bachelor of Social Work (B.S.W.)

ASU Baccalaureate Degrees

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Administration of Justice	B.S.	—	West	690
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Aeronautical Management Technology ¹	B.S.	Air transportation management, professional flight	East	659
Aerospace Engineering ¹	B.S.E.	—	Main	265
African American Studies	B.A.	Humanities/arts, politics and society, social and behavioral sciences	Main	343
Agribusiness	B.S.	Agribusiness finance, e-commerce, food and agribusiness marketing, food science, general agribusiness, golf and facilities management, international agribusiness, management of agribusiness, preveterinary medicine, professional golf management, resource management	East	628
American Indian Studies	B.S.	—	Main	488
American Studies	B.A.	—	West	690
Anthropology	B.A.	—	Main	346
Applied Psychology	B.S.	—	East	642
Applied Science	B.A.S.	Aviation maintenance management technology	East	661
		Aviation management technology	East	661
		Computer systems administration	East	667
		Consumer products technology	East	633
		Digital media management	East	672
		Digital publishing	East	672
		Emergency management	East	672
		Fire service management	East	672
		Food retailing	East	634
		Instrumentation	East	667
		Manufacturing technology and management	East	679
		Microcomputer systems	East	667

¹ This major requires more than 120 semester hours to complete.

² Applications for this program are not being accepted at this time.

³ This program is administered by ASU Main.

ASU Baccalaureate Degrees (continued)

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		Operations management	East	672
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		Semiconductor technology	East	667
		Software technology applications	East	667
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		All minors available at ASU West, individualized concentration	West	690
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Art	B.A.	Art history, digital art, museum studies, studio art	Main	279
	B.F.A.	Art education, ceramics, drawing, fibers, intermedia, metals, painting, photography, printmaking, sculpture	Main	281
Asian Languages (Chinese/Japanese)	B.A.	—	Main	399
Biochemistry	B.S.	—	Main	360
Bioengineering ¹	B.S.E.	—	Main	223
Biology	B.S.	Biology and society	Main	352
Business Administration	B.S.	—	East	643
Chemical Engineering ¹	B.S.E.	—	Main	228
Chemistry	B.A., B.S.	—	Main	359
Chicana and Chicano Studies	B.A.	Humanities/cultural sciences, social sciences/policy	Main	364
Civil Engineering ¹	B.S.E.	Construction engineering, environmental engineering	Main	239
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Computer Information Systems	B.S.	—	Main	164
Computer Science ¹	B.S.	Software engineering	Main	246
Computer Systems Engineering ¹	B.S.E.	—	Main	247
Conservation Biology	B.S.	—	Main	353
Construction ¹	B.S.	General building construction, heavy construction, residential construction, specialty construction	Main	214
Dance	B.F.A.	Choreography, dance education, dance studies, performance	Main	296
Design Science ²	B.S.D.	—	Main	135
Early Childhood Education	B.A.E.	—	Main	194
Economics	B.A.	—	Main	367
	B.S.	—	Main	168
				367
Electrical Engineering ¹	B.S.E.	—	Main	253
Electronics Engineering Technology ¹	B.S.	Electronic systems, microelectronics, telecommunications	East	664

¹ This major requires more than 120 semester hours to complete.

² Applications for this program are not being accepted at this time.

³ This program is administered by ASU Main.

ASU BACCALAUREATE DEGREES

ASU Baccalaureate Degrees (continued)

Major	Degree	Concentration	Campus	Page
Elementary Education	B.A.E.	Multilingual/multicultural education	Main	194
		—	Extended	703
		Bilingual education/English as a second language, early childhood education	East	644
			West	690
Engineering Interdisciplinary Studies ²	B.S.	—	Main	209
Engineering Special Studies ¹	B.S.E.	Premedical engineering	Main	273
English	B.A.	Linguistics, literature	Main	368
		—	Extended	705
		—	West	690
Environmental Resources	B.S.	Ecology, watershed ecology, wildlife habitat management	East	632
Exercise and Wellness	B.S.	—	East	646
Exercise Science/Physical Education	B.S.	Exercise science, physical education	Main	375
Family and Human Development	B.S.	Family studies/child development	Main	378
Finance	B.S.	—	Main	171
French	B.A.	—	Main	400
Geography	B.A., B.S.	Meteorology-climatology, urban studies	Main	381
Geological Sciences	B.S.	—	Main	387
German	B.A.	—	Main	400
Global Business	B.S.	Financial management, human resources management, information systems management, international studies, marketing	West	690
			—	—
Graphic Design	B.S.D.	—	Main	135
History	B.A.	—	Main	390
			West	690
			Extended	704
			—	—
Housing and Urban Development	B.S.D.	—	Main	145
			Extended	704
Humanities	B.A.	—	Main	397
Industrial Design	B.S.D.	—	Main	135
Industrial Engineering ¹	B.S.E.	—	Main	259
Industrial Technology	B.S.	Environmental technology management, graphic information technology, industrial technology management	East	670
			—	—
Integrated Studies	B.A., B.S.	—	Main	336
Integrative Studies	B.A.	All minors available at ASU West, individualized concentration	West	690
			Extended	704
Interdisciplinary Arts and Performance	B.A.	Media, music, performance studies, theater/performance, visual art	West	690
Interdisciplinary Studies	B.I.S.	See the " B.I.S. Concentrations " table, page 116.	Main	114
			East	641
			Extended	703
Interior Design ¹	B.S.D.	—	Main	135
Italian	B.A.	—	Main	401
Journalism and Mass Communication	B.A.	Journalism, media analysis and criticism, media management, media production, strategic media and public relations	Main	496
Justice Studies	B.S.	—	Main	500
Landscape Architecture	B.S.L.A.	—	Main	145

¹ This major requires more than 120 semester hours to complete.

² Applications for this program are not being accepted at this time.

³ This program is administered by ASU Main.

ASU Baccalaureate Degrees (continued)

Major	Degree	Concentration	Campus	Page
Life Sciences	B.S.	—	West	690
Management	B.S.	—	Main	176
Manufacturing Engineering Technology ¹	B.S.	Manufacturing engineering technology, mechanical engineering technology	East	677
Marketing	B.S.	—	Main	180
Materials Science and Engineering ¹	B.S.E.	—	Main	231
Mathematics	B.A.	—	Main	417
	B.S.	Statistics	Main	418
Mechanical Engineering ¹	B.S.E.	—	Main	267
Microbiology	B.S.	—	Main	426
Molecular Biosciences/ Biotechnology	B.S.	—	Main	432
Multimedia Writing and Technical Communication	B.S.	—	East	649
Music	B.A.	—	Main	302
Music Education ¹	B.M.	Choral-general, instrumental, string	Main	302
Music Therapy ¹	B.M.	—	Main	304
Nursing	B.S.N.	—	Main West ³	475 690
Nutrition	B.S.	Dietetics, food and nutrition management, human nutrition	East	651
Performance	B.M.	Guitar, jazz, keyboard, music theatre, orchestral instrument, piano accompanying, voice	Main	304
Philosophy	B.A.	—	Main	433
Physics	B.S.	—	Main	436
Plant Biology	B.S.	Environmental science and ecology, plant biochemistry and molecular biology, urban horticulture	Main	443
Political Science	B.A.	—	Main West	448 690
	B.S.	Public policy advocacy and lobbying, public policy analysis	Extended Main Extended West	704 448 704 690
Psychology	B.A., B.S.	—	Main West Extended	455 690 704
Real Estate	B.S.	—	Main	182
Recreation	B.S.	Recreation management, tourism	Main	506
Recreation and Tourism Management	B.S.	—	West	690
Religious Studies	B.A.	—	Main Extended	459 705
Russian	B.A.	—	Main	401
Secondary Education	B.A.E.	Academic specializations: biological sciences, business, chemistry, Chicana and Chicano studies, economics, English, family and human development, ² French, geography, German, history, mathematics, physical education, physics, political science, social studies, Spanish Academic specializations: biological sciences, English, history, mathematics, social studies	Main West	194 690
Selected Studies in Education ²	B.A.E.	—	Main	191

¹ This major requires more than 120 semester hours to complete.

² Applications for this program are not being accepted at this time.

³ This program is administered by ASU Main.

ASU BACCALAUREATE DEGREES

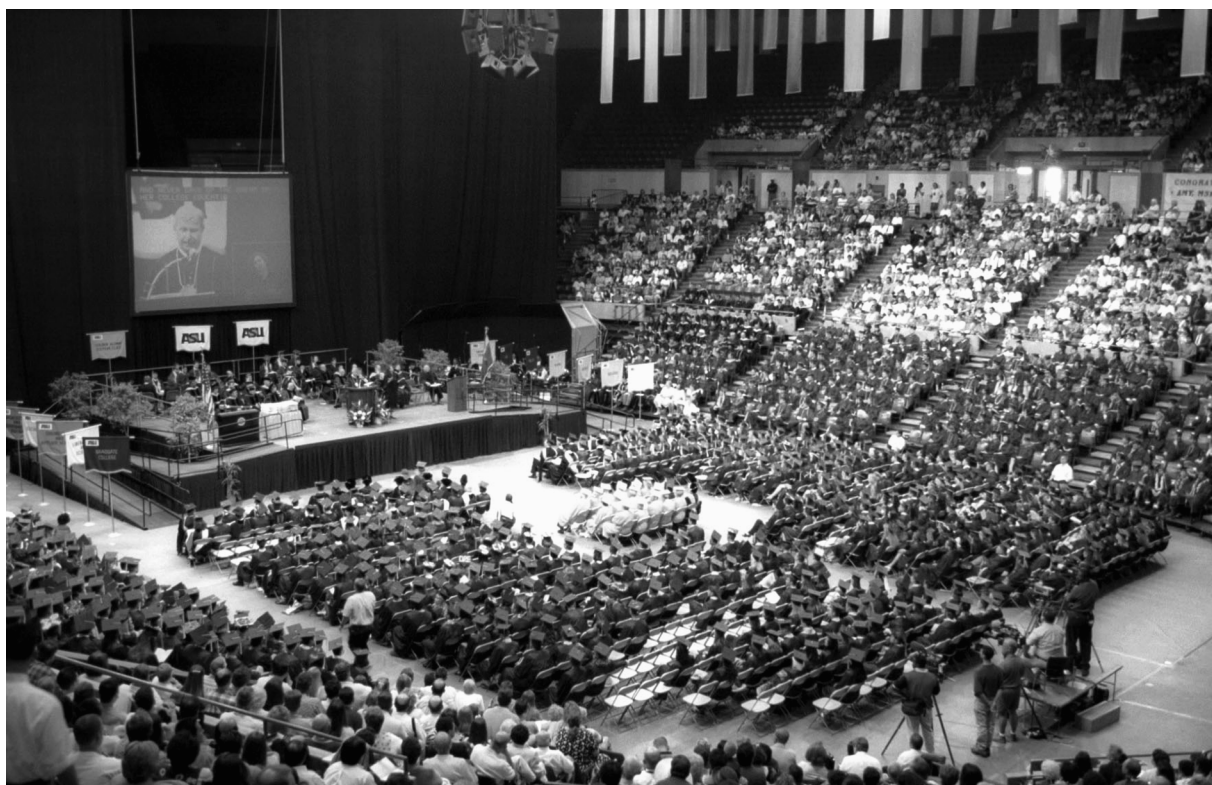
ASU Baccalaureate Degrees (continued)

Major	Degree	Concentration	Campus	Page
Social and Behavioral Sciences	B.A., B.S.	—	West	690
Social Work	B.S.W.	—	Main	510
			West	690
			Extended	704
Sociology	B.A.	—	Main	463
			West	690
			Extended	704
			West	690
Spanish	B.S.	—	West	690
	B.A.	—	Main	401
Special Education	B.A.E.	—	West	690
			Main	194
Speech and Hearing Science	B.S.	—	West	690
Supply Chain Management	B.S.	—	Main	467
Theatre	B.A.	—	Main	182
Theory and Composition	B.M.	Composition, theory	Main	317
Urban Planning	B.S.P.	—	Main	307
Women's Studies	B.A.	—	Main	145
			West	471
			West	690
	B.S.	—	West	690

¹ This major requires more than 120 semester hours to complete.

² Applications for this program are not being accepted at this time.

³ This program is administered by ASU Main.



Graduation exercises in the Wells Fargo Arena

Tim Trumble photo

University Calendar

April 2002

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May 2002

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

June 2002

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

July 2002

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August 2002

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September 2002

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

2002

Check the 2002 *Summer Sessions Bulletin* for details and to confirm these dates.

Mon., Feb. 4–
Wed., May 29

Mon., Feb. 4–
Tues., July 2

Tues., Apr. 30

Mon., May 27

Tues., May 28

Tues., June 4

Tues., June 4

Fri., June 14

Fri., June 21

Fri., June 28

Mon., July 1

Thurs., July 4

Fri., July 5

Mon., July 8

Fri., July 12

Fri., July 19

Fri., July 19

Fri., July 19

Fri., July 26

Fri., Aug. 2

Fri., Aug. 2

2002

Check the fall 2002 *Schedule of Classes* for details and to confirm these dates.

Thurs., Mar. 28–

Fri., Apr. 5

Mon., Apr. 22–

Sun., Sept. 1

Wed., Apr. 24–

Sun., Sept. 1

Summer Sessions

Registration and drop/add for first five-week session and eight-week session

Registration and drop/add for second five-week session

Final tuition payment deadline for all summer sessions (For students who register on or after the deadline, fees are due daily.)

Memorial Day Holiday

Instruction begins for first five-week session and eight-week session

Unrestricted course and complete withdrawal deadline for first five-week session

Unrestricted course and complete withdrawal deadline for eight-week session

Restricted course withdrawal deadline for first five-week session and eight-week session

Restricted complete withdrawal deadline for first five-week session

First five-week session ends

Instruction begins for second five-week session

Classes are excused for Independence Day

August graduation filing deadline (must be met to have name appear in commencement program)

Unrestricted course and complete withdrawal deadline for second five-week session

Restricted complete withdrawal deadline for eight-week session

Eight-week session ends

Restricted course withdrawal deadline for second five-week session

Doctoral participation form due to reserve seat at commencement

Restricted complete withdrawal deadline for second five-week session

Second five-week session ends

Commencement

Fall Semester

Preregistration

Drop/add

Registration

UNIVERSITY CALENDAR

September 2002

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October 2002

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November 2002

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December 2002

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

January 2003

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

February 2003

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Tues., Aug. 6	Final tuition payment deadline for fall 2002 (For students who register on or after the deadline, fees are due daily.)
Tues., Aug. 20— Thurs., Aug. 22	Residence halls open (Check-in date varies by community/last name. Refer to the Residential Life schedule.)
Thurs., Aug. 22	New Faculty and Academic Professional Orientation and Reception
Thurs., Aug. 22— Sun., Aug. 25	ASU Welcome Week 2002
Mon., Aug. 26	Instruction begins
Mon., Sept. 2	Classes are excused for Labor Day
Fri., Sept. 20	Unrestricted withdrawal deadline
Mon., Sept. 30	Winter Session (College of Extended Education [CEE]) registration begins
Mon., Oct. 14— Fri., Oct. 18	Semester midpoint
Tues., Oct. 15	December graduation filing deadline (must be met to have name appear in commencement program)
Fri., Nov. 1	Restricted course withdrawal deadline
Mon., Nov. 11	Classes are excused for Veterans Day
Thurs., Nov. 28— Fri., Nov. 29	Classes are excused for Thanksgiving recess
Wed., Dec. 4	Restricted complete withdrawal deadline
Tues., Dec. 10	Instruction ends
Wed., Dec. 11	Reading day
Thurs., Dec. 12— Sat., Dec. 14; Mon., Dec. 16— Wed., Dec. 18	Final examinations
Thurs., Dec. 19	Commencement (4 P.M.)
Fri., Dec. 13	Some residence halls close for semester break
Sat., Dec. 21	Midyear recess begins
Mon., Dec. 30	Winter Session (CEE) instruction begins

2003

Spring Semester

Check the spring 2003 *Schedule of Classes* for details and to confirm these dates.

Mon., Oct. 28— Tues., Nov. 5, 2002	Preregistration
Mon., Nov. 18, 2002— Sun., Jan. 26, 2003	Drop/add
Wed., Nov. 20, 2002— Sun., Jan. 26, 2003	Registration
Tues., Dec. 17, 2002	Final tuition payment deadline for spring 2003 (For students who register on or after the deadline, fees are due daily.)
Wed., Jan. 1, 2003	Winter Session classes are excused for New Year's Day
Fri., Jan. 17	Orientation for new students
Wed., Jan. 15	Residence halls open
Fri., Jan. 17	Winter Session (CEE) instruction ends
Mon., Jan. 20	Classes are excused for Martin Luther King Jr. Day

March 2003

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

April 2003

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

May 2003

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

June 2003

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

July 2003

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August 2003

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Tues., Jan. 21

Fri., Feb. 21

Sun., Mar. 16–

Sun., Mar. 23

Mon., Mar. 31

Fri., Apr. 4

Wed., Apr. 30

Tues., May 6

Wed., May 7

Thurs., May 8–

Sat., May 10;

Mon., May 12–

Wed., May 14

Thurs., May 15

Fri., May 16

2003

Check the 2003 *Summer Sessions Bulletin* for details and to confirm these dates.

Mon., Feb. 3–

Tues., June 3

Mon., Feb. 3–

Tues., July 8

Tues., Apr. 9

Mon., May 26

Mon., June 2

Mon., June 9

Fri., June 20

Fri., June 27

Tues., July 1

Thurs., July 3

Fri., July 4

Mon., July 7

Mon., July 14

Fri., July 18

Fri., July 25

Fri., July 25

Fri., Aug. 1

Fri., Aug. 8

Fri., Aug. 8

Instruction begins

Unrestricted withdrawal deadline

Classes are excused for spring recess; semester midpoint

May graduation filing deadline (must be met to have name appear in commencement program)

Restricted course withdrawal deadline

Restricted complete withdrawal deadline

Instruction ends

Reading day

Final examinations

Commencement

Residence halls close

Summer Sessions

Registration and drop/add for first five-week session and eight-week session

Registration and drop/add for second five-week session

Final tuition payment deadline for all summer sessions (For students who register on or after the deadline, fees are due daily.)

Memorial Day Holiday

Instruction begins for first five-week session and eight-week session

Unrestricted course and complete withdrawal deadline for first five-week session and eight-week session

Restricted course withdrawal deadline for first five-week session and eight-week session

Restricted complete withdrawal deadline for first five-week session

August graduation filing deadline (must be met to have name appear in commencement program)

First five-week session ends

Classes are excused for Independence Day

Instruction begins for second five-week session

Unrestricted course and complete withdrawal deadline for second five-week session

Restricted complete withdrawal deadline for eight-week session

Eight-week session ends

Restricted course withdrawal deadline for second five-week session

Restricted complete withdrawal deadline for second five-week session

Second five-week session ends

Commencement

Frequently Asked Questions

How do I apply to ASU Main? Complete an application and have all required transcripts and test scores sent directly to Undergraduate Admissions. See [“Undergraduate Admission,” page 58](#). For more information, call 480/965-7788.

How do I apply to ASU East? Complete an application and have all required transcripts and test scores sent directly to Undergraduate Admissions. See [“Undergraduate Admission,” page 58](#). For more information, call 480/727-3278.

How do I apply to ASU West? Contact the Admissions and Records Office at ASU West. See [“Admission and Advising,” page 689](#). For more information, call 602/543-8203.

What is the ASU Extended Campus? The ASU Extended Campus offers courses and degrees evenings and weekends, by television, the Internet, at on- and off-campus sites, and through Independent Learning. See [“ASU Extended Campus,” page 24](#), and [“ASU Extended Campus,” page 703](#), or call 480/965-9696 for information and a course catalog.

What if I am a transfer student? Upon admission, note the number of semester hours on your Certificate of Admission. When registering, consult your department advisor to determine how transfer credits fit into the curriculum (see [“Academic Advising,” page 69](#)). Have you met the First-Year Composition requirement? (See [“First-Year Composition Requirement,” page 79](#).) If you have completed 87 or more semester hours, file a program of study or declaration of graduation (see [“Declaration of Graduation,” page 81](#)).

What if I have a disability or am a veteran? If you have a disability and will be requesting academic accommodations, see [“Disability Resources for Students,” page 42](#), and [“Applicants with Disabilities,” page 64](#). Veteran students using GI benefits, see [“Veterans Services,” page 39](#).

How do I get financial aid? In addition to applying for admission, complete the Free Application for Federal Student Aid (FAFSA) by the February 15 priority date. If you apply after the priority date, you will be considered a late applicant and are less likely to receive grants and Federal Work-Study due to funding limitations. You may obtain a paper FAFSA from any financial aid office or complete an electronic application at www.fafsa.ed.gov. See [“Student Financial Assistance,” page 39](#), and [“Financial Aid,” page 52](#).

How do I find a place to live and purchase a meal plan? Apply early (before March 1, 2002) for the best chance to live on campus beginning in fall semester 2002. Housing is not guaranteed. See [“Residential Life,” page 39](#), for information on student housing. Meal plans may be pur-

chased in advance for ASU or upon arrival on campus. For more information, call Residential Life at 480/965-3515, and Campus Dining Services at 480/965-3464. For ASU East housing, call 480/727-1700, or see [“Campus and Student Services,” page 624](#), in the “ASU East” section, for more information on dining and housing.

What about orientation? Attend orientation on your campus, where questions regarding advising, class registration, student IDs, on-campus housing, and other pertinent topics are addressed. For information about Main Campus orientation, see [“Orientation,” page 64](#). Information regarding ASU East orientation can be obtained by calling 480/727-1088.

How do I get an ID, and what about parking? See [“Proof of Identification,” page 70](#), about obtaining an ASU student ID card. If you are planning to park at ASU Main, purchase a parking decal. See [“Parking Decals,” page 48](#). Parking on ASU East campus is free. ASU East students may obtain student ID cards at the OASIS in the Center Building.

What about placement examinations and university testing requirements? See [“Placement Examinations,” page 68](#), and [“University Testing Requirements,” page 68](#).

Before I register for classes, how do I get an advisor? Call the college of your major to schedule an appointment with an academic advisor. See [“Academic Advising,” page 69](#). For ASU East Academic Advising, see [“Advising,” page 624](#).

When and how do I register? See the *Schedule of Classes* for registration procedures and dates or access registration information online at www.asu.edu/registrar. Remember that you must first provide proof of measles immunity to the Student Health and Wellness Center. See [“Immunization Requirements,” page 64](#).

Once I am registered and ready to go, how can I ensure my success at ASU? Consider enrolling in UNI 100 Academic Success at the University. See [“Division of Undergraduate Academic Services,” page 113](#).

What’s left to do now that the business is taken care of? Become involved in the university by getting to know professors, joining student organizations, and taking advantage of the many cultural, recreational, and social opportunities. For more information on ASU Main campus life, call Student Life at 480/965-6547, Sun Devil Involvement Center at 480/965-2255, or ASASU at 480/965-3161; for ASU East, call 480/727-3278. Investigate the challenges and advantages of the Barrett Honors College. See the [“The Barrett Honors College,” page 118](#).

Academic Definitions

Academic Renewal. Under certain circumstances an undergraduate who has been readmitted to the university after an absence of at least five years may have the former record treated in the same manner as transfer credits. See [“Academic Renewal,” page 70.](#)

Advanced Placement. Students who have taken an advanced placement course of the College Entrance Examination Board (CEEB) in their secondary school and who have taken an Advanced Placement Examination of CEEB may receive credit. See [“Advanced Placement,” page 65.](#)

AECF. The American English and Culture Program features an intensive course of study designed for adult international students who desire to become proficient in English as a second language. See [“American English and Culture Program,” pages 63 and 709.](#)

ASU East. ASU East is located at the former Williams Air Force Base. See [“ASU East,” pages 24 and 622.](#)

ASU Extended Campus. The ASU Extended Campus offers courses evenings and weekends via television and the Internet, at on- and off-campus sites, and through Independent Learning. See [“ASU Extended Campus,” pages 24 and 703.](#)

ASU Main. ASU Main is the principal campus of ASU, located in Tempe. See [“ASU Main,” page 24.](#)

ASU West. ASU West is the Phoenix campus of ASU, established to serve the educational needs of residents in western Maricopa County. See [“ASU West,” pages 24 and 689.](#)

Audit Enrollment. A student who audits a course attends regularly scheduled class sessions but earns no credit. See [“Audit Enrollment,” page 72.](#)

Buckley Amendment. See “Family Educational Rights and Privacy Act” in this section.

CLEP. As part of the College-Level Examination Program (CLEP), students who have taken a College-Level Examination of the College Entrance Examination Board may receive credit. See [“College-Level Examination Program \(CLEP\),” page 65.](#)

Comprehensive Exam. A comprehensive examination is intended to permit a student to establish academic credit in a field in which the student has gained experience or competence equivalent to an established university course. See [“Comprehensive Examinations,” page 65.](#)

Concentration. A concentration is a formalized selection of courses within a major.

Cooperative Education. Cooperative Education is any educational program that requires alternating classroom and

work experience in government or industry. The work experience exists for its educational value. See [“Cooperative Programs,” page 71.](#)

Corequisite. A requirement to be met *while* taking one course, such as taking another particular course, is a corequisite. See also “Prerequisite” in this section.

Course Prefix. A course prefix is a three-letter designation assigned to a group of courses. The [“Course Prefix Index,” page 6,](#) provides a comprehensive list. See also “Cross-Listing” in this section.

Credit Enrollment. One semester hour represents a minimum of one 50-minute class exercise per week per semester. A minimum of 120 semester hours is required for graduation with a baccalaureate degree. To obtain credit, a student must be properly registered and pay fees for the course.

Cross-Listing. One course may have more than one course prefix and may be offered by more than one instruction unit. Some units may require students to enroll in a course under a certain prefix to receive credit properly. Catalog course descriptions indicate courses that are cross-listed.

Cum Laude. An undergraduate student with a minimum of 60 semester hours of course work at ASU and a cumulative GPA of 3.40 to 3.59 graduates *cum laude*. See [“Graduation with Academic Recognition,” page 82.](#) See also “Magna Cum Laude” and “Summa Cum Laude” in this section.

Declaration of Graduation. The Declaration of Graduation uses the Degree Audit System (DARS). DARS is an automated process that matches courses a student has completed with the requirements of a particular academic degree program, producing a report that shows the student which requirements are satisfied and which remain to be fulfilled. See [“Declaration of Graduation,” page 81.](#)

Drop/Add. Drop/add is a process in which a student who has registered for courses for a semester or summer session may drop or add courses through the first week of classes in a semester or the first two days of a summer session. See [“Drop/Add,” page 73.](#)

Family Educational Rights and Privacy Act. The federal Family Educational Rights and Privacy Act of 1974, also known as FERPA or the Buckley Amendment, sets forth the requirements governing the protection of the privacy of the education records of students who are or have been in attendance at ASU. See [“Student Records,” page 77.](#)

Freshman. A student who has earned 24 or fewer semester hours is a freshman.

General Studies Requirement. This is a university requirement of all undergraduates. See [“Meeting the General Studies Requirement,” page 83.](#)

ACADEMIC DEFINITIONS

GPA. The ASU grade point average (GPA) is obtained by dividing the total number of ASU grade points earned by the number of ASU semester hours graded. Grade point averages are rounded to the nearest hundredth of a grade point. See [“Grade Point Average,” page 74.](#)

Grade Points. For the purpose of computing the GPA, grade points are assigned to each of the grades for each semester hour as follows: “A,” four points; “B,” three points; “C,” two points; “D,” one point; and “E,” zero points.

Graduate Catalog. The *Graduate Catalog* describes the procedures and requirements for enrollment in the Graduate College. See [“Graduate College,” page 516.](#)

Graduate-Level Courses. Courses numbered from 500 to 799 are designed for graduate students. See [“Graduate-Level Courses,” page 55.](#)

Incomplete. A mark of “I” (incomplete) is given by the instructor only when a student who is otherwise doing acceptable work is unable to complete a course because of illness or other conditions beyond the student’s control. See [“Incomplete,” page 72.](#)

International Baccalaureate. Students who have taken a higher-level examination through the International Baccalaureate program may receive university credit. See [“International Baccalaureate \(IB\) Diploma/Certificate,” page 65.](#)

Junior. A student who has earned from 56 to 86 semester hours is a junior.

Lower-Division Courses. Courses numbered from 100 to 299 are designed primarily for freshmen and sophomores. See [“Lower-Division Courses,” page 55.](#)

Magna Cum Laude. A student with a minimum of 60 semester hours of course work at ASU and a cumulative GPA of 3.60 to 3.79 graduates *magna cum laude*. See [“Graduation with Academic Recognition,” page 82.](#) See also “Cum Laude” and “Summa Cum Laude” in this section.

Major. A major is a formalized group of courses contained within the program of study. See [“ASU Baccalaureate Degrees,” page 10.](#), and [“ASU Graduate Degrees,” page 529.](#)

Minor. A minor is a formalized group of courses contained within the program of study available from some instruction units. See [“Minors,” page 108.](#)

Omnibus Course. An omnibus course is offered on an experimental or tutorial basis when the course content is new or periodically changes. See [“Omnibus Courses,” page 56.](#)

Pass/Fail Enrollment. A mark of “P” (pass) or “E” (fail) may be assigned for this grading option. This grading method may be used at the option of individual colleges and schools within the university. See [“Pass/Fail Enrollment,” page 73.](#)

Placement Examination. A proficiency examination is given to waive a course requirement, validate certain transfer credits in professional programs, or determine a student’s ability in a field where competence is an important consideration. See [“Placement Examinations,” page 68.](#)

Prerequisite. A requirement to be met *before* registering for one course, such as completing another particular course, is a prerequisite. See also “Corequisite” in this section.

Probation. A student’s college assumes responsibility for enforcing academic standards and may place any student on probation who has failed to maintain good standing. A student on academic probation is required to observe any rules or limitations the college may impose as a condition for retention. See [“Probation,” page 76.](#)

Restricted Complete Withdrawal. From the fifth week to the transaction deadline for a semester and from the seventh day to the transaction deadline for a summer session, students may withdraw from all courses but receive a mark of “W” only from courses in which the instructor certifies that they are passing at the time of the withdrawal. See [“Restricted Withdrawal,” page 73.](#)

Restricted Course Withdrawal. From the fifth week to the end of the 10th week of a semester and from the seventh day to the end of the third week of a summer session, students may withdraw with a mark of “W” only from courses in which the instructor certifies that they are passing at the time of withdrawal. See [“Restricted Withdrawal,” page 73.](#)

Senior. A student who has earned 87 or more semester hours is a senior.

Sophomore. A student who has earned from 25 to 55 semester hours is a sophomore.

Summa Cum Laude. A student with a minimum of 60 semester hours of course work at ASU and a cumulative GPA of 3.80–4.00 graduates *summa cum laude*. See [“Graduation with Academic Recognition,” page 82.](#) See also “Cum Laude” and “Magna Cum Laude” in this section.

TOEFL. The Test of English as a Foreign Language (TOEFL) is taken by students whose native language is not English. See [“TOEFL,” page 63,](#) and “AECF” in this section.

Transcript. An official transcript lists in chronological order all courses taken at ASU. It includes all grades received. It is signed and dated by the registrar and displays the embossed seal of the university. Unofficial transcripts include all information shown on the official transcript, plus information concerning changes, additions, etc., to the record. See [“Transcripts,” page 75.](#)

Unrestricted Course Withdrawal. During the first four weeks of a semester or the first six days of a summer session, a student may withdraw from any course with a mark of “W.” See [“Unrestricted Course Withdrawal,” page 73.](#)

Upper-Division Courses. Courses numbered from 300 to 499 are designed primarily for juniors and seniors. See [“Upper-Division Courses,” page 55.](#)

General Information

MISSION

Arizona State University has emerged as a leading national and international research and teaching institution with a primary focus on Maricopa County, Arizona's dominant population center. This rapidly growing, multicampus public research university offers programs from the baccalaureate through the doctorate for approximately 49,700 full-time and part-time students through ASU Main in Tempe; ASU West in northwest Phoenix; a major educational center in downtown Phoenix; ASU East, located at the Williams Campus (formerly Williams Air Force Base) in southeast Mesa; and other instructional, research, and public service sites throughout Maricopa County. ASU is a modern university that applies its research capabilities to the rapidly evolving needs of Maricopa County and the state.

Arizona State University's goal is to become a world-class university in a multicampus setting, one of the very best public universities in the nation. Its mission is to provide outstanding programs in instruction, research, and creative activity, to promote and support economic development, and to provide service appropriate for the nation, the state of Arizona, and the state's major metropolitan area. To fulfill its mission, ASU places special emphasis on the core disciplines and offers a full range of degree programs—baccalaureate through doctorate. To become competitive with the very best public universities, ASU recognizes that it must offer quality programs at all degree levels in a broad range of fundamental fields of inquiry. ASU will continue to dedicate itself to superior instruction; to excellent student performance; to original research, creative endeavor, and scholarly achievement; and to outstanding public service and economic development activities. As a result of this dedication, ASU was named to Research Extensive (formerly Research I) status in 1994, recognizing ASU as a premier research institution.

ORGANIZATION

Arizona State University is part of a university system governed by the Arizona Board of Regents, a body with perpetual succession under the constitution and laws of Arizona. The board consists of eight citizens appointed by the governor of the state for terms of eight years, and two students with the elected governor and state superintendent of public instruction as members *ex officio*.

The regents select and appoint the president of the university, who is the liaison between the Arizona Board of Regents and the institution. The president is aided in the administrative work of the institution by the provosts, vice presidents, deans, directors, department chairs, faculty, and other officers. Refer to [“Administrative Personnel,” page 613](#).

The academic units develop and implement the teaching, research, and service programs of the university, aided by the university libraries, museums, and other services.

The faculty and students of the university play an important role in educational policy, with an Academic Senate, joint university committees and boards, and the Associated Students serving the needs of a large institution.

ACADEMIC ACCREDITATION AND AFFILIATION

See [“Accreditation and Affiliation,” page 715](#).

EQUAL OPPORTUNITY AND AFFIRMATIVE ACTION

It is the policy of ASU to provide equal opportunity through affirmative action in employment and educational programs and activities. Discrimination is prohibited on the basis of race, color, religion, national origin, citizenship, sex, sexual orientation, age, disability, special disabled veteran, other eligible veteran, or Vietnam-era veteran status. Equal employment opportunity includes but is not limited to recruitment, hiring, promotion, termination, compensation, benefits, transfers, university-sponsored training, education, tuition assistance, and social and recreational programs.

ASU is committed to taking affirmative action in increasing opportunities at all levels of employment and to increasing participation in programs and activities by all faculty, staff, and students. Affirmative action is directed toward minority persons, women, special disabled veterans, other eligible veterans, Vietnam-era veterans, and persons with disabilities.

University Policy Prohibiting Discriminatory Harassment

Harassment Prohibited. Subject to the limiting provisions of “Freedom of Speech and Academic Freedom” specified below, it is a violation of university policy for any university employee or student to subject any person to harassment on university property or at a university-sponsored activity.

Harassment Defined. Actions constitute harassment if (1) they substantially interfere with another's educational or employment opportunities, peaceful enjoyment of residence, physical security, and (2) they are taken with a general intent to engage in the actions and with the knowledge that the actions are likely to substantially interfere with a protected interest identified above. Such intent and knowledge may be inferred from all the circumstances.

Freedom of Speech and Academic Freedom. Neither this nor any other university policy is violated by actions that amount to expression protected by the state or federal constitutions or by related principles of academic freedom. This limitation is further described in the ASU First Amendment Guidelines, the current version of which supplements this policy and is available in the Office of the General Counsel.

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Relationship to the Work of the Campus Environment

Team. If harassment is discriminatory, it falls within the education, monitoring, reporting, and referral functions of the Campus Environment Team. Harassment is discriminatory if taken with the purpose or effect of differentiating on the basis of another person's race, sex, color, national origin, religion, age, sexual orientation, disability, or Vietnam-era veteran status.

INTERGROUP RELATIONS CENTER

The only center of its kind on a college campus, the Intergroup Relations Center (IRC) works with students, staff, and faculty to promote positive intergroup relations, to prepare students for living in a diverse democracy, to create greater understanding between the different groups that exist at ASU, and to provide faculty, staff, and students opportunities to explore the rich diversity that is part of the ASU campus community. Through structured interaction programs, including intergroup dialogues, story circles, retreats, and institutes and via educational and training workshops, the center promotes diversity as one of the university's greatest assets. The educational work of the center encompasses gender, race/ethnicity, sexual orientation, age, disability status, nationality, adult reentry, and other salient social identities found at ASU.

Some of the programs and initiatives offered by the center include Voices of Discovery, a six-week student intergroup dialogue program that brings together small groups of African Americans and white/EuroAmericans, males and females, American Indians and white/EuroAmericans, Latinos and white/EuroAmericans, gays, lesbians, bisexuals, heterosexuals, and other groups to interact with and learn about each other. Leadership 2000, an annual four-day, off-campus retreat brings together 80 students from many different backgrounds to explore their own and others' diversity. Allies in Action, a diverse group of students sponsored by the IRC, works together to improve intergroup relations on the campus. Intergroup Relations Theatre and Music programs use the arts to interactively involve, entertain, and educate participants about issues of diversity. The center also offers programs for faculty and staff addressing issues of diversity in the workplace and the classroom and custom-designed programs, consultation, and intergroup conflict mediation services for a wide range of campus offices, academic departments, and student groups.

For more information, visit the center in SSV 278, call 480/965-1574, or access the IRC Web site at www.asu.edu/provost/intergroup.

HISTORY OF ARIZONA STATE UNIVERSITY

On February 26, 1885, House Bill 164, "An Act to Establish a Normal School in the Territory of Arizona," was introduced in the 13th Legislative Assembly of Arizona Territory by John Samuel Armstrong. The bill, strongly supported by Charles Trumbull Hayden of Tempe, passed the House on March 6 and the Council on March 11 and was signed by Governor F.A. Tritle on March 12, 1885, thereby founding the institution known today as Arizona State University. Under the supervision of Principal Hiram Bradford Farmer, instruction was instituted on February 8, 1886, when 33 stu-

dents met in a single room on land donated by George and Martha Wilson of Tempe.

The institution began with the broad obligation to provide "instruction of persons...in the art of teaching and in all the various branches that pertain to good common school education; also, to give instruction in the mechanical arts and in husbandry and agricultural chemistry, the fundamental law of the United States, and in what regards the rights and duties of citizens."

With the growth of the state, especially the surrounding Phoenix metropolitan area, the school has carried forward this charter, accompanied by successive changes in scope, name, and governance.

The Early Years. For the first 14 years, the school was governed by six principals. At the turn of the century and with another new name, Normal School of Arizona, President Arthur John Matthews brought a 30-year tenure of progress to the school.

He assisted in changing the school to an all-college student status; the Normal School had enlisted high school students who had no other secondary educational facilities in Arizona. He embarked on a building schedule that included the state's first dormitories. Of the 18 buildings constructed while Matthews was president, six are still in use. His legacy of an "evergreen campus," with the import of many shrubs and trees and the planting of Palm Walk, continues to this day: the main campus is a nationally recognized arboretum.

Matthews also saw to it that the Normal School was accredited outside the state. His service on national education organization boards was conducive to this recognition. The school remained a teacher's college in fact and theory during Matthews' tenure, although the struggle to attain status as a university was ongoing.

An extraordinary event occurred March 20, 1911, when former President Theodore Roosevelt visited the Tempe school and spoke from the steps of Old Main. He had dedicated the Roosevelt Dam the day before and was impressed with Arizona. He noted that construction of the dam would benefit central Arizona's growth and that of the Normal School. It would be another year before the territory became a state.

During the Great Depression, Ralph W. Swetman was hired as president for a three-year term. This was a time of uncertainty for educational institutions. Although enrollment increased due to the depression, many faculty were terminated and faculty salaries were cut. The North Central Association became the accrediting agency for Arizona State Teachers College.

The Gammage Years. In 1933, Grady Gammage, then president of Arizona State Teachers College at Flagstaff, became president of Arizona State Teachers College at Tempe, a tenure that would last for nearly 28 years.

The Graduate Division was created in 1937, and the first master's program was established the same year.

On March 8, 1945, the three state institutions of higher learning came under the authority of one Arizona Board of Regents, which oversees ASU today.

The phenomenal growth of the college began after the end of World War II. Dr. Gammage had foreseen that the

G.I. Bill of Rights would flood campuses everywhere with returning veterans. Many of the veterans who had received military training in Arizona had fallen in love with the state and vowed to return after the war. The numbers within one year were staggering: in the fall semester of 1945, 553 students were enrolled; over the weekend semester break in January 1946, enrollment increased 110 percent to 1,163 students. Successive semesters saw continuing increased enrollment.

Like his predecessor, Dr. Gammage oversaw the construction of a number of buildings. His greatest dream, that of a great auditorium, came to fruition after his death. He laid the groundwork for it with Frank Lloyd Wright, who designed what is now the university's hallmark building, Grady Gammage Memorial Auditorium, built in 1964.

Years of Growth and Stature. During the 1960s, with the presidency of Dr. G. Homer Durham, Arizona State University began its academic rise with the establishment of several new colleges (the College of Fine Arts, the College of Law, the College of Nursing, and the School of Social Work) and the reorganization of what became the College of Liberal Arts and Sciences and the College of Engineering and Applied Sciences. Perhaps most important, the university gained the authority to award the Doctor of Philosophy and other doctoral degrees.

The next three presidents—Harry K. Newburn, 1969–71, John W. Schwada, 1971–81, and J. Russell Nelson, 1981–89—and Interim President Richard Peck, 1989, led the university to increased academic stature, expansion of the campuses, and rising enrollment.

A transformation of ASU has taken place under the leadership of Dr. Lattie F. Coor, who became the university's 15th president on January 1, 1990. The university has grown to serve the Valley of the Sun through multiple campuses and the College of Extended Education, an architecture that positions ASU to meet future enrollment growth.

The quality of undergraduate students and programs has improved substantially during the past decade. In 2001, ASU had its best year in history in prestigious national scholarship competitions. Students brought home the Rhodes, Truman, Marshall, Goldwater, and Udall awards, making ASU one of only two public universities in the nation to be represented in all five top scholarship awards. Enrollment in the Barrett Honors College has more than tripled since 1988, from 800 to more than 2,600 students majoring in all disciplines throughout ASU.

Coor's strong commitment to increased diversity is reflected in the faculty and student body. During the last decade, the university's minority enrollment has more than doubled. This fall, minorities represent 30 percent of the university's freshman class and nearly 20 percent of the entire enrollment.

With regard to ASU faculty, the percentage of minorities has increased to 15.3 percent—up from 10.3 percent five years ago. ASU has the highest numbers and highest proportion of Hispanic faculty of any major U.S. research university.

ASU has become one of the leading research universities in America, developing nationally recognized programs in a number of fields, including accounting; astrobiology; design

science; ecology and evolutionary biology; electron microscopy; engineering; exercise science; music; nanotechnology; psychology; and solid-state science. As part of Coor's vision for the economic vitality of Arizona, ASU is committing to a strategic focus on four critical research areas that are essential in the New Economy: materials; biomedicine and biotechnology; information science and technology; and manufacturing. These initiatives already have a significant impact on the Arizona economy, representing more than 207,000 jobs, 2,000 businesses, and \$1.5 billion in exports in the first quarter of 2000.

Part of Coor's legacy to the university—before retiring at the end of the 2002 academic year—is a successful fund raising campaign. Through private donations, primarily from the local community, \$500 million is being invested in targeted areas that most significantly impact the future of ASU. Among the campaign's achievements are the naming and endowing of the Barrett Honors College, the Katherine K. Herberger College of Fine Arts, and the Morrison School of Agribusiness and Resource Management at ASU East; the creation of many new endowed faculty positions, and hundreds of new scholarships and fellowships.

Research Extensive Status. ASU was named to Research Extensive (formerly Research I) status by the Carnegie Foundation for the Advancement of Teaching in early 1994. Nationally, 88 universities have been granted this status, indicating successful garnering of support for research projects and educating future scientists.



Grady Gammage Memorial Auditorium

Tim Trumble photo

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Athletics

The original nickname for the Normal School of Arizona athletic teams was the Owls. Athletics other than Sunday hikes and lawn tennis were not part of the early curriculum.

During President Matthews' tenure, some team competition began. The Tempe Bulldogs saw some interesting and rough competition with the University of Arizona Wildcats. In the 1940s, the college's teams became the Sun Devils.

In 1979, the university joined the Pacific-10 Conference. In 1987, ASU became the first Arizona football team to play in the Rose Bowl, defeating the University of Michigan Wolverines 22–15. ASU made its second appearance in 1997 against Ohio State.

In 2000, ASU finished ninth nationally in the Sears Directors' Cup, which recognizes the top athletic programs in the country. Six teams finished in the top 20 nationally with three teams posting top 10 finishes. Men's swimming and diving finished 10th, women's tennis finished in a tie for fifth, while men's indoor track and field also finished 10th.

UNIVERSITY CAMPUSES AND SITES

ASU Main. ASU Main is located near the heart of metropolitan Phoenix in the city of Tempe (population 158,625). Nearby are the municipalities that make up the fast-growing Valley of the Sun: Chandler, Gilbert, Glendale, Mesa, Scottsdale, and other communities.

ASU Main comprises more than 700 acres and offers outstanding physical facilities to support the university's educational programs. The campus is characterized by broad pedestrian malls laid out in an easy-to-follow grid plan, spacious lawns, and subtropical landscaping.

ASU East. ASU East opened at the Williams Campus in the fall of 1996 and now serves approximately 2,400 students. ASU East offers many of the features of a small residential college in a rural area while providing access to the resources of a major research university and the amenities of a large metropolitan area.

A partnership between ASU East and Chandler-Gilbert Community College allows students to take courses from both institutions and complete an ASU baccalaureate degree entirely at the Williams Campus, at some savings in tuition.

The campus offers excellent educational facilities and residential opportunities, which include a choice of traditional residence halls or two- to five-bedroom homes. A shuttle service provides transportation between ASU East and ASU Main. The 600-acre ASU East campus is easily accessible via major interstate routes.

For more information, see "[ASU East.](#)" page 622.

ASU West. A vital component of the ASU multicampus system, ASU West serves nearly 6,000 undergraduate and graduate students on its growing campus. ASU West provides a friendly, small-campus atmosphere along with the services, resources, and expertise of a nationally acclaimed, PAC-10 research university. Founded in 1984 with upper-division and master's programs, ASU West became a four-year university campus in 2001. The faculty and staff share a deep commitment to learner-centered education.

ASU West prides itself on serving the diverse needs of students who balance academics with the multiple demands

of work and family through convenient scheduling of small classes. The campus mission balances teaching and research, faculty-student collaboration, interdisciplinary perspectives, and many thriving university-community partnerships. Courses at ASU West lead to 29 bachelor's degrees, nine master's degrees, and eight professional certificates.

The campus is located in northwest Phoenix between 43rd and 51st Avenues on West Thunderbird Road. The core campus was completed in 1991 and features a variety of state-of-the-art classroom and student service buildings, including Fletcher Library, the Sands Classroom Building, the Computer Laboratory/Classroom Building, Kiva Lecture Hall, the University Center Building, and the Faculty/Administration Building.

For more information, see "[ASU West.](#)" page 689. For complete information and course listings, see the *ASU West Catalog*.

ASU Extended Campus. The ASU Extended Campus (www.asu.edu/xed) goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies, including television, the Internet, and Independent Learning. The ASU Extended Campus offers programs in partnership with the campuses and colleges of ASU, including a variety of professional continuing education programs. The ASU Downtown Center is the anchor location of the ASU Extended Campus. Lifelong learning opportunities are offered to students of all ages throughout Maricopa County and Arizona through the ASU Extended Campus.

ASU Downtown Center. Located in downtown Phoenix, 502 E. Monroe, the ASU Downtown Center offers a variety of daytime and evening courses of interest to employees in private businesses and government agencies and to individuals seeking personal growth and enrichment. These courses are scheduled at a variety of convenient times and offered through various modes of delivery. Professional continuing education, certificate programs, and lecture series are also available. Access to ASU library information and resources, ASU computing resources, and the Internet is available through the center's computer lab.

ASU Research Park. The mission of the ASU Research Park (researchpark.asu.edu) is to enhance Arizona's high-value research-based economic development and to build the university's capacity to educate and advance knowledge. To this end, the Research Park serves to attract new corporate and regional headquarters and research and development firms to Arizona—headquarters and firms that broaden the base for potential research, interact with graduate students, consult with university faculty, cosponsor seminars on research topics, and provide employment opportunities for ASU graduates.

The Research Park has numerous major tenants, including ASM Lithography, Avnet CMG, Bright Horizons Family Solutions, Iridium Satellite, Motorola Labs, Motorola University, National Association for Purchasing Management,

Philips Electronics, and Walgreens Healthcare Plus. The Research Park contains over 1.5 million square feet of developed space on 320 acres.

Camp Tontozona. Located in the famed Mogollon Rim country near Kohl's Ranch, northeast of Payson, this continuing education facility serves the needs of academic departments conducting teaching and research in mountain terrain. The camp is also available to faculty, staff, graduate students, and alumni for family use. For more information, call 480/965-6851.

Deer Valley Rock Art Center. Deer Valley Rock Art Center, located two miles west of the Black Canyon Freeway on Deer Valley Road, is operated by the ASU Department of Anthropology in consultation with the Hopi, Yavapai, and Gila River Indian tribes. It includes more than 1,500 petroglyphs that cover the eastern slope of Hedgpeth Hills. For more information, call 623/582-8007.

The Arboretum. The Arboretum at Arizona State University is the entire 722-acre main campus. The Arboretum is home to a flourishing oasis of plants from around the world. This virtual outdoor classroom includes more than 300 species of trees and other woody ornamental and herbaceous plants from diverse geographic regions as well as the Sonoran Desert. The Arboretum contains one of the best collections of palms and conifers in the desert Southwest and a growing collection of native Southwestern plants. The Arboretum's date palm collection has received international recognition by the American Association of Botanical Gardens and Arboreta North American Plant Collection Consortium.

The Arboretum's collection began with Arthur J. Matthews. By the time Matthews' 30-year presidency was finished, nearly 1,500 trees of 57 species and more than 5,700 feet of hedges were planted. One of his most enduring landscape projects was the planting of Mexican Fan Palms along Palm Walk in 1916, which extends from University Drive south to the Student Recreation Complex. Today the Arboretum has expanded its collection to include nearly 4,000 trees of 164 species/varieties.

The Arboretum is open to the public free of charge 365 days a year from dawn to dusk. Walking tours of the various collections and points of interest are designated by signage denoting those areas. Many of the plants in the collection throughout campus are marked with identification plaques.

UNIVERSITY LIBRARIES AND COLLECTIONS

The collections of the university's libraries comprise more than 3.6 million volumes, approximately 7 million microform units, and more than 33,500 periodical and serial subscriptions. Computer access to commercially and locally produced databases and the ability to borrow research materials from other libraries enhance local resources. ASU is a member of the Association of Research Libraries and the Center for Research Libraries.

For telephone numbers, see the "[University Libraries](#)," [page 546](#). For more information, access the Web site at www.asu.edu/lib.

Charles Trumbull Hayden Library. The Charles Trumbull Hayden Library, designed by Weaver and Drover in 1966, houses the largest multidisciplinary collection at ASU. In addition to the open stack areas, separate collections and service areas include Access for Disability Accommodations; Circulation; Current Periodicals and Microforms; Government Documents Services; Interlibrary Loan and Document Delivery Services; Library Instruction, Systems, and Technology (L.I.S.T.); Reference; Reserve; Special Collections; and Archives and Manuscripts, which includes the Arizona Collection, the Chicano Research Collection, the Benedict Visual Literacy Collection, and the Labriola National American Indian Data Center. Archives and Manuscripts holds the papers of several major Arizona political figures, including Senator Carl Hayden, with historic materials about Arizona, Chicano, and Indian affairs.

The Special Collections department includes the Child Drama Collection, and collections of materials by and about William S. Burroughs, the Press of Thomas Bird Mosher, and the Patten Herbal Collection. For more information, access the Web site at www.asu.edu/lib/hayden.

Architecture and Environmental Design Library.

Located in the College of Architecture and Environmental Design/North building, this library has a general collection that focuses on architecture, design, graphic design, interior design, landscape architecture, and planning. The library's Special Collections and Archives, Architectural Drawings Collection, and Materials Resource Center provide additional opportunities for research. For more information, access the Web site at www.asu.edu/caed/AEDlibrary.

Arizona Historical Foundation. Under a cooperative agreement with ASU, the Arizona Historical Foundation houses a library of several thousand volumes, manuscript collections, maps, and photographs, and a large collection of audiovisual materials. Housed in the Charles Trumbull Hayden Library, the collection's focus is on the history of Arizona and the Southwest. For more information, access the Web site at www.users.qwest.net/~azhistoricalfdn.

Fletcher Library. Located at the ASU West campus, Fletcher Library utilizes a range of electronic systems, from compact discs to telecommunications networks, to provide access to resources and delivery of materials. Its holdings include more than 315,000 volumes, 5,000 serial subscriptions, and 1.4 million microforms selected to complement ASU West course offerings. For more information, access the Web site at www.west.asu.edu/library.

Law Library. The John J. Ross-William C. Blakley Law Library is located on McAllister Avenue. See "[Law Building and Law Library](#)," [page 323](#), for more information.

Music Library. A large collection of music scores, recordings, books, music reference materials, and listening facilities for individuals and groups is located on the third floor of the Music Building, West Wing. For more information, access the Web site at www.asu.edu/lib/music.

Daniel E. Noble Science and Engineering Library. The Daniel E. Noble Science and Engineering Library houses books, journals, and microforms in the sciences,

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engineering, and nursing; the Map Collection; and the U.S. Patent and Trademark Depository. For more information, access the Web site at www.asu.edu/lib/noble.

University Archives. The University Archives collection is available for use at the Luhrs Reading Room in Hayden Library. The collection (1885–present) comprises university theses and dissertations; administrative records of the university; historical photographs and personal papers of faculty, staff, and alumni; and student, faculty, and official university publications. The historic University Archives Building on Tyler Mall is the home of the 1907 Gallery, which hosts exhibits of historical photographs from the collections of the Department of Archives and Manuscripts. For more information, access the Web site at www.asu.edu/lib/archives/archives.htm.

Video Resources. Located in ECA 100, Video Resources supports a variety of educational media services, including reserve videotapes of all ASU courses broadcast on cable television and ITFS, video viewing/study carrels, and a studio facility for students and faculty. In addition, Video Resources houses thousands of video titles in the ASU Media circulating collection that may be checked out for three days. Special Collections include the WorldFest Video Archive, Horizon, C-SPAN Booknotes, and C-SPAN I and II. Patrons with a current university ID may check out any available videotape for three days. Interlibrary loans and video booking may be scheduled by calling 480/965-7564. For more information, call 480/965-5046, or access the Web site at www.asu.edu/lib/video.

PERFORMING AND FINE ARTS FACILITIES

ASU Art Museum. The ASU Art Museum serves students and scholars within and beyond the university and as a cultural resource for the Phoenix Metropolitan area. Additionally, the museum serves a public beyond the immediate area through traveling exhibitions and publications that not only document the exhibitions but also offer critical insight into the museum's areas of concentration.

Exhibitions, education programs, and publications are interdisciplinary and educational and are designed to engage viewers with art that is relevant to their lives. New technologies in the content of art and in the approaches to reaching new audiences are eagerly and openly adopted.

Collections and exhibitions focus on contemporary art, particularly new media and new methods of presentation; art by Latin American artists; art from the Southwest; prints, both historic and contemporary; and crafts, emphasizing American ceramics. The museum was founded by a gift of historic American paintings, which are on continuous display, including works by Gilbert Stuart, Albert Pinkham Ryder, Winslow Homer, Georgia O'Keeffe, and Romare Bearden. The contemporary art holdings include works by Nam June Paik, Lorna Simpson, Vernon Fisher, Sue Coe, and Enrique Chagoya. Exhibitions and collections are housed in galleries and study rooms within the international award-winning Nelson Fine Arts Center.

Educational programs include artist residencies and dialogs with classes, a student docent program, internships and research assistanceships, lectures and symposia, in-gallery

materials, special curricula-based school programs, and school and public tours. For information on upcoming exhibitions and programs, call 480/965-2787.

ASU Downtown Center Galleria. The Galleria, located on the second floor of the ASU Downtown Center, features work by ASU faculty, staff, students, and local artists. The Galleria is a member of Artlink First Friday's and the Phoenix Art Detour. Open Monday through Saturday, from 8 A.M. to 5 P.M., the Galleria features new and different works each month. For information on current or upcoming exhibitions, call 480/965-3046.

Computing Commons Gallery. One of the unique features of the Computing Commons building is the gallery located off the main lobby in the northwest corner of the building. This unique gallery is designed for showcasing technology-based artwork as well as more traditional two-dimensional graphic presentations. The millennium is an exciting time for the arts, as technology-based tools and techniques open new avenues for creativity. This creativity is reflected in the Computing Commons Gallery's exhibits.

Dance Multimedia Learning Center. The Department of Dance Multimedia Learning Center is a facility designed to promote and encourage the use of media and computer technology in dance education and performance at ASU.

Dance Studio Theatre. The Dance Studio Theatre is a 300-seat performance space that is the mainstage performance site for the 12 formal and informal concerts produced annually by the Department of Dance. The theatre is one of the only dance spaces in the country that is designed with interactive and telematic capabilities. The facility uses video-based motion sensing and enables dancers to interact with sound, lighting, images, and video in performance. High-speed Internet connectivity enables this space to connect with other telematic spaces for dual, multisite, and Web performances.

Drama City. Housed in a 50-year-old former church, Drama City is the primary performance venue for the Institute for Studies in the Arts. The space is a black box, 60 by 30 feet with fixed lighting positions and flexible control stations. The area can seat up to 100 and is equipped for performance or installation pieces. The facility also houses a wide range of technology for performance and presentation including video projection, automated luminaires, and a unique computerized control system for integrated media usage.

Gallery of Design. Housed in the College of Architecture and Environmental Design, the Gallery of Design features traveling exhibitions on design and urban issues.

Paul V. Galvin Playhouse. Built to stage the largest productions of the ASU Theatre, the Paul V. Galvin Playhouse is a 496-seat proscenium-stage theatre set at the east end of the Nelson Fine Arts Center. The Department of Theatre's annual season of 12 to 15 plays also includes productions in the Lyceum and Prism theatres and the Nelson Fine Arts Center Studios.

Grady Gammage Memorial Auditorium. A versatile center for the performing arts designed by Frank Lloyd Wright and named for the late ASU President Grady Gammage, Grady Gammage Memorial Auditorium seats 3,000 and has won wide acclaim for its design and acoustics. In addition to the great hall and related facilities—including the Aeolian-Skinner organ contributed by Hugh W. and Barbara V. Long—the building contains classrooms and workshops for the Herberger College of Fine Arts.

The Intelligent Stage. The Intelligent Stage is a production and performance facility designed to explore the possibilities of interactive stage performance. The facility includes a sprung floor; 30 dimmers and a four channel sound system; a composer workstation; workstations for designing interactive MIDI performances; and a movement sensing, image-processing workstation. All are networked together for multimedial performance and production. Resident artists and technologists provide design and logistical support for projects in the facility.

Katzin Concert Hall. Located in the new music building expansion, the Katzin Concert Hall seats 350 people. Primarily used for solo and chamber music recitals, the hall houses a nine-foot Hamburg concert Steinway piano. The acoustics are enhanced by the maple-paneled stage and the multifaceted walls and ceiling.

Louise Lincoln Kerr Cultural Center. Located in Scottsdale, the Louise Lincoln Kerr Cultural Center offers cultural events, especially in the performing arts, to the community.

Lyceum Theatre. A small but technically sophisticated 164-seat proscenium theatre, the Lyceum Theatre is a venue for faculty productions and a laboratory for the work of student playwrights, directors, and actors.

Music Theatre. As part of the music complex, the Music Theatre, modeled after the Wagnerian Theatre in Bayreuth, Germany, rises five stories and seats an audience of 500. This theatre is the home of many operatic and musical productions.

J. Russell and Bonita Nelson Fine Arts Center. Designed by Albuquerque architect Antoine Predock, the J. Russell and Bonita Nelson Fine Arts Center is a spectacular, 119,000-square-foot, village-like aggregate of buildings that includes five galleries of the ASU Art Museum, the Paul V. Galvin Playhouse, the University Dance Laboratory, seven specialized theatre and dance studios, a video studio, and a variety of scenic outdoor features, including courtyards, fountains, pools, and a 50-by-100-foot projection wall designed for outdoor video.

Northlight Gallery. The Northlight Gallery is dedicated to museum-quality exhibitions of historical and contemporary photography. Located in Matthews Hall, it is open during the academic year.

Organ Hall. Located in the new music building expansion, the Organ Hall houses the Fritts Organ. This tracker-action pipe organ is designed to capture the qualities of baroque European organs. The hall is designed to complement the

organ with a barrel-vaulted ceiling and wooden benches to seat 140 persons.

Prism Theatre. The Prism Theatre is an alternative black box space devoted to student productions.

Recital Hall. Located on the fifth floor of the Music Building, the Recital Hall is an intimate 125-seat facility that opens onto a rooftop courtyard.

Sundome Center for the Performing Arts. As America's largest single-level theatre, the Sundome Center for the Performing Arts in Sun City West has 7,169 seats. The theatre is equipped with sophisticated, state-of-the-art lighting systems, and a single-span roof affords each seat a clear view. As one of Arizona's premier entertainment venues, the Sundome provides an array of top entertainment from Las Vegas-style concerts to classical ballets to celebrity lectures.

Television Station KAET. KAET, Channel 8, is the university's PBS station. Studios of the award-winning station are located in the Stauffer Communication Arts Building. To operate 24 hours a day, KAET employs more than 50 ASU students and interns. To learn more about KAET-TV, access its Web site at www.kaet.asu.edu, or call 480/965-3506.

University Dance Laboratory. A flexible performance space within the Nelson Fine Arts Center, the University Dance Laboratory is designed specifically for experimental dance productions. Along with the Dance Studio Theatre in the Physical Education Building East, the University Dance Laboratory is used by the Department of Dance for experimental performances.

Harry Wood Gallery. Housed in the Art Building (ART 120), the Harry Wood Gallery provides temporary exhibitions of the visual arts during the academic year.

COMPUTING FACILITIES AND SERVICES

Computers are fundamental tools for learning, instruction, and research in every college and department at ASU. The Information Technology (IT) department provides a variety of computing equipment and services available for use by students, faculty, and staff. IT also provides programming, statistical, graphics, and other applications for microcomputers and mainframe computing systems. University-wide electronic mail and the library's online catalog are accessible through a high-speed campus network and from off campus via the Internet.

A wide range of university information is available online at www.asu.edu, the official ASU Web site. Prospective and current students can find details regarding undergraduate and graduate degree programs, financial assistance, housing and student activities. The ASU Web site is also the gateway to many online services, including

1. finding and registering for classes;
2. viewing online grade reports;
3. checking e-mail, creating personal and course Web pages;
4. accessing courses online via myASU, the university's customizable portal;
5. viewing campus event calendars;

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6. searching the student-faculty-staff directory;
7. browsing general and graduate catalogs; and
8. obtaining information about ASU athletics.

IT provides several service centers, described below, for the ASU academic community.

Computing Commons. The Computing Commons building (CPCOM) provides a “technology hub” that draws together students, faculty, and staff from all disciplines on campus in an environment conducive to maximum creative interaction. The building and its facilities have drawn national recognition and acclaim as a model for the support of instruction and research in a technology-based environment. The Computing Commons houses a 246-workstation computing site, seven electronic classrooms, a Research Support Lab, the Customer Assistance Center, a computer store, and a technology-based gallery (see “[Computing Commons Gallery](#),” page 26).

Computing Sites. In addition to the Computing Commons Atrium, there are three additional computing sites located on the ASU Main campus, available for ASU faculty, staff, and students with an ASURITE UserID. Site configurations and hours of operation vary; current information is available on the Web at www.asu.edu/it/fyi/sites.

ASU Downtown Center Computer Lab. The ASU Downtown Center offers an alternative to the computer labs at ASU Main. This facility features 20 Pentium III-800 Mhz computers—all loaded with Microsoft Windows 2000 and Office 2000, Internet Explorer, Netscape, and other software. A high-speed laser printer and a color flatbed scanner are available, and faculty may use the ceiling-mounted computer projection system. The ASU Downtown Center is located in downtown Phoenix. It is a unique educational, applied-research, and community-service facility designed to address the multifaceted urban opportunities of the central Phoenix community. For more information, call 480/965-3046, or access the Web site at www.asu.edu/xed/dtccplab.

Computer Accounts. Computer Accounts, located in CPCOM 105, assists users with account access issues (including lost passwords), disk space quotas, accounts for non-ASURITE services (including mainframe computer access), and other account-related services. Most computing services are accessible through the standard ASURITE UserID and password, available from self-subscription workstations located in a variety of on-campus locations or online at www.asu.edu/asurite. More information about Computer Accounts is available on the Web at www.asu.edu/it/fyi/accounts.

Customer Assistance Center. The Customer Assistance Center, located in CPCOM 202, offers a library of reference manuals, computing periodicals, and other information concerning computing systems and software. Self-paced training is available for various software applications running under the Windows or Unix operating systems. The center also distributes communication, virus protection, and other site-licensed software as well as site-specific documentation in a “print-on-demand” format. Print on demand is also

available on the Web at www.asu.edu/quicklook. More information about the center is available from the Web site at www.asu.edu/cacenter.

Help Desk/Consulting. The IT Help Desk provides ASU students, faculty, and staff with centralized systems information and first-level assistance in resolving computing problems. Services are available by telephone at 480/965-6500, on the Web at www.asu.edu/helpdesk, and in person at the Customer Assistance Center, CPCOM 202. The IT Help Desk assists with data recovery and repair; AFS filespace and permissions for Web sites; communication, e-mail, and virus protection software; and computing and equipment problem referral.

Instruction Support (IT/IS). Instruction Support serves as a development center for the use of technology in the design and delivery of instruction. Staffed with students, faculty, and researchers skilled in the areas of system design, graphics, interactive software, networked delivery, and digital video, the innovation-driven group pushes the development of instruction to the limits of available technology. From this perspective, IT/IS fosters technological innovation by serving as a research and development unit, a production group, and a training facility.

IT/IS collaborates with faculty in the coordination of cross-disciplinary research and production projects relating to the integration of technology with education. Through partnerships with faculty and groups outside ASU, grant-writing teams are able to leverage support not otherwise available to a single academic unit or faculty member. Central to effective support services is the establishment of a partnership among the various support units within the university. IT/IS coordinates the efforts of these groups—which include the College of Extended Education, University Libraries, Disability Resources for Students, and the Office of Research and Creative Activities—to provide faculty with a wide array of instruction support services.

IT/IS offers consultation sessions tailored toward enhancing the instructional use of technology by the university teaching community. Sessions range from an introduction to technology in education through advanced and customized approaches for instructors in specific programs.

More information about IT/IS is available from the Web site at is.asu.edu.

Instruction Support (IS) Lab. The IS Lab provides an environment in which faculty may seek and receive one-on-one, guided, or independent support for course development and delivery. Expert staff work closely with faculty to refine and develop their skills and confidence in the design and delivery of instruction through a variety of technology-supported means, both synchronous and asynchronous. Located in CPCOM 213, the IS Lab provides faculty, university professionals, and graduate students with a unique opportunity to integrate technology with instruction. The IS Lab sponsors workshops and demonstrations and serves as a dynamic clearinghouse of information and referrals for effective integration of technology with education.

Research Support (RS). Research Support provides assistance to faculty, staff, and student researchers engaged in

scientific and creative endeavors. RS involves consulting in the use of software tools and program coding directly related to projects or specific research, including consulting for computation, statistics, visualization, and GIS platforms in conjunction with software package installation and use; media conversion; and product evaluation.

A variety of computation facilities are provided in support of research and creative endeavors within the ASU community, ranging from individual workstations to SMP/MPP servers and mainframes. Extended computer capabilities are available through access to national computing centers. More information is available at www.asu.edu/it/fyi/research.

Research Support (RS) Lab. The Research Support Lab seeks to establish partnerships with faculty, staff, and students to acquire, create, and enhance research and creative endeavors through the effective use of visualization and Geographic Information Systems (GIS) technologies.

The lab is located in CPCOM 235. Its staff assists researchers with hardware, software, and data to facilitate the creation of geographic information systems for spatial analysis, query, and display. The lab supports research from various disciplines and provides additional resources to students who are enrolled in GIS classes, serving as a focal point for GIS users to meet and share information and technical expertise.

Additionally, Visualization Services provides faculty, staff, and graduate students with the hardware and application software resources and services needed for the high-level graphics and visualization used in research. Researchers receive assistance ranging from interactive viewing of scientific data to visualization in the liberal and the performing arts and other endeavors. Visualization Services provides a focal point for developing technologies in software, hardware, and communications.

Further information on GIS and Visualization Services is available on the Internet at www.asu.edu/gislab and www.asu.edu/visualization, respectively.

ALUMNI ASSOCIATION

Founded in 1894, the Alumni Association is a volunteer-led organization committed to serve and unite alumni for the purpose of advancing the interests of ASU and its alumni. The association provides a variety of services for ASU alumni as well as a series of events scheduled around the country.

With more than 240,000 alumni living in the United States and throughout the world, the association plays an important role as the university's primary support organization. Comprising more than 50 groups, the campus, college, club, and chapter organizations (4Cs) of the association provide opportunities for all alumni to stay involved with the part of ASU that interests them most.

Members of the Board of Directors are elected each spring. See "[ASU Alumni Association Board of Directors](#)," page 619. For more information about the association or its board of directors, call 1-800-ALUMNUS or 480/965-ALUM.

PROGRAM ASSESSMENT AND THE OFFICE OF UNIVERSITY EVALUATION

The Office of University Evaluation is a research and service facility that focuses on assessing and improving the effectiveness of the university's academic and support programs. The office conducts, coordinates, and manages research designed to measure the degree to which courses, curricula, and academic programs impart knowledge and skills to students as well as the quality of support provided to students. The results of these studies, or assessments, are used to enhance both the support provided to students and the intellectual integrity of an ASU education.

In order for the university to assess and improve its programs, periodic measurement of student experiences, perceptions, and intellectual growth must be obtained. When asked by the university, students are expected to participate in one or more evaluative procedures, such as the ASU Report Card. These evaluative procedures are designed to assess the efficacy of the total university experience, including teaching and learning and support programs and are not used in individual grading. The information obtained is one of the means used to improve the quality of the educational experience for this and future generations of ASU students.

For more information, call the office at 480/965-9291, or contact them via e-mail at oue@asu.edu. The Office of University Evaluation's Web site is www.asu.edu/oue.

LEARNING AND TEACHING EXCELLENCE

The Center for Learning and Teaching Excellence is dedicated to enhancing teaching and learning possibilities at ASU. To support this mission, the center provides a variety of training, support, and professional development programs for faculty, academic professionals, graduate students who have teaching responsibilities, and academic departments throughout the university. Our resources and services specifically focus on advancing improvements in student learning, especially the manner in which teachers promote and foster that learning.

Some of the center's goals are

1. assisting faculty, programs, and departments to assess and develop instructional approaches;
2. providing workshops designed to enhance specific instructional practices for all who teach;
3. serving as a clearinghouse of information about activities, events, resources, and projects that may enhance teaching and learning;
4. developing synergistic relationships with existing campus units;
5. providing instructional assistance to new faculty on campus;
6. encouraging reflective use of instructional technologies; and
7. collaborating with other campus units to secure grant moneys for new course development, exploration of innovative teaching methods, and/or research in effective instruction.

For more information, call 480/965-9401.

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Learning and Teaching Excellence Courses. Sections of LTE 598 are offered in the annual Summer Institute on College Teaching and Winter Institute on College Teaching, designed for faculty and teaching assistants who wish to develop diverse strategies for enhancing their students' learning.

LEARNING AND TEACHING EXCELLENCE (LTE)

See the *Graduate Catalog* for the LTE courses.

RESEARCH CENTERS, INSTITUTES, AND LABORATORIES

These units serve the university's mission in research. They are overseen by eight of the colleges, the vice provost for Research, and the ASU East provost.

Center for Research on Education in Science, Mathematics, Engineering, and Technology. The Center for Research on Education in Science, Mathematics, Engineering, and Technology (CRESMET), an alliance of the ASU Colleges of Education, Engineering and Applied Sciences, and Liberal Arts and Sciences, was initiated in 1999, growing out of what was previously the Center for Innovation in Engineering Education. The mission of the center is to bring together individuals, programs, and organizations interested in improving K–20 science, mathematics, engineering, and technology education to research, develop, and assess educational theories, curricula, courses, and administrative policies that impact science, mathematics, engineering, and technology education. The center also encourages and supports wide-scale sharing and implementation of effective approaches to producing a more scientifically and technologically literate populace and more capable science, mathematics, engineering, and technology majors.

Research. CRESMET pursues research and development that demonstrates coherent, consistent, and conceptually powerful mathematics, science, engineering, and technology education from kindergarten through college (K–20).

Partnering. CRESMET supports collaborations across the traditional boundaries of university, community, business, and local education agencies.

Sharing. CRESMET establishes communication avenues for intellectual and material products proven effective in supporting powerful learning in science, mathematics, engineering, and technology fields.

For more information, visit CRESMET in ECG 303, call 480/965-5350, or access the CRESMET Web site at www.eas.asu.edu/~cresmet.

College of Architecture and Environmental Design

Herberger Center for Design Excellence. The Herberger Center for Design Excellence is the research, outreach, and publication arm of the College of Architecture and Environmental Design. The center facilitates and promotes research, scholarship, and creative activity among the faculty and students of the college in the fields of architecture, interior design, industrial design, graphic design, landscape architecture and urban design, and environmental planning.

In keeping with its outreach mission, the Herberger Center also publishes reports, newsletters, and books that help

to inform debate on key design and planning issues in the desert southwest. The center works closely with the faculty to publish books, working papers, and conference proceedings that promote scholarship in the planning and design disciplines.

The Joint Urban Design Program (JUDP), based in downtown Phoenix, is the center's outreach arm. It facilitates interaction among college faculty, students, and the broader community, and offers design as a way to further dialogue and to address urban issues. The JUDP conducts intensive workshops, (community-based charrettes) that help neighborhoods, groups, and other city stakeholders focus on concerns and strategies to respond to critical needs. Student groups and faculty work with the JUDP to identify real world problems that they address in studio projects. For more information, call 480/727-5146, or access the JUDP Web site at www.asu.edu/caed.

College of Business

Arizona Real Estate Center. The Arizona Real Estate Center (AREC), established in 1980, serves a multifunction research and educational role to foster better understanding of the real estate sector of the Arizona economy. Housing, commercial real estate, and construction activity data for Arizona and Maricopa County are collected by the center and are utilized for a variety of ongoing projects, including the calculation of affordability indexes and the computation of housing appreciation figures for the metropolitan Phoenix area. The center's annual outlook series provides a public forum for prominent members of the real estate industry to present their perceptions of market conditions.

For more information, call 480/965-5440, access the AREC Web site at www.cob.asu.edu/seid/arec, or write

ARIZONA REAL ESTATE CENTER
PO BOX 874011
TEMPE AZ 85287-4011

Bank One Economic Outlook Center. The Bank One Economic Outlook Center (EOC), established in 1985, specializes in economic forecasts of Arizona and the Western states. The center publishes the *Bank One Arizona Blue Chip Economic Forecast* (monthly), *Greater Phoenix Blue Chip Economic Forecast* (quarterly), *Western Blue Chip Economic Forecast* (10 issues per year), and *Blue Chip Job Growth Update* (monthly), an update of current job growth in the United States. The center also publishes *Mexico Consensus Economic Forecast* (quarterly), a forecast and historical data on the Mexican economy.

For more information, call 480/965-5543, access the EOC Web site at www.cob.asu.edu/seid/eoc, or write

BANK ONE ECONOMIC OUTLOOK CENTER
PO BOX 874011
TEMPE AZ 85287-4011

Center for the Advancement of Small Business. The Center for the Advancement of Small Business (CASB) is a 21st-century leader in business education, practice, and research providing high-quality, relevant programs, and information services focused on small business since 1994. The center enables students and existing small and medium-

size businesses to participate, contribute, and compete in the global economy.

The center provides students from all disciplines with programs and resources that prepare them for positions of leadership in small and medium-size businesses, and aids small and medium-size businesses in the continuous improvement of their human resources and business practices. CASB also engages in applied research on entrepreneurship and the emerging changes and trends in small business.

For more information, visit CASB in BAC 111, call 480/965-3962, access the CASB Web site at www.cob.asu.edu/seid/casb, or write

CENTER FOR THE ADVANCEMENT
OF SMALL BUSINESS
PO BOX 874406
TEMPE, AZ 85287-4406

CAPS Research. CAPS (Center for Advanced Purchasing Studies) Research was established in November 1986 by a national affiliation agreement between the ASU College of Business and the Institute for Supply Management. It is the first and only program of its kind in the nation and is located in the Arizona State University Research Park, about eight miles south of the main ASU campus. CAPS Research conducts in-depth research into the problems facing the purchasing profession today and, through its studies, seeks to improve purchasing effectiveness and efficiency and the overall state of purchasing readiness.

For more information, call 480/752-2277, access the Web site at www.capsresearch.org, or write

CAPS RESEARCH
ASU RESEARCH PARK
2055 E CENTENNIAL CIRCLE
PO BOX 22160
TEMPE AZ 85285-2160

Center for Business Research. The Center for Business Research (CBR) has been a consistent source of information on the Arizona and metropolitan Phoenix economies since 1951. Both the business community and the public have had access to the economic indicators produced by the ongoing projects of the center, including quarterly net migration estimates for Arizona and Maricopa County. CBR also conducts projects under the sponsorship of private and public agencies. Recent examples include the economic impact of Super Bowl XXX, a study of seasonal migration to Arizona, and an analysis of the state's hospital industry. A monthly publication of the center, *AZB/Arizona Business*, plays a major role in disseminating to the public the economic information compiled by the research centers of the Seidman Institute. The staff within the center is available to respond to inquiries and to provide available data.

For more information, call 480/965-3961, access the CBR Web site at www.cob.asu.edu/seid/cbr, or write

CENTER FOR BUSINESS RESEARCH
PO BOX 874011
TEMPE AZ 85287-4011

Center for Services Leadership. The Center for Services Leadership (CSL) is a leading university-based hub devoted to the study of services marketing and management since 1985. The CSL addresses how any company can improve internal service processes and use service and customer satisfaction as a competitive advantage. The center encourages firms to share the best ideas and practices for adaptation across industries. Though grounded in marketing, the center's work is cross-functional, integrating concepts and techniques from marketing, operations, human resources, and management.

The center's areas of expertise include customer retention and loyalty; service quality; service delivery; professional services such as healthcare, accounting, and consulting; customer satisfaction; services strategy; service culture; and service recovery. A leader in the business and academic communities, the Center for Services Leadership work advances the knowledge base in the field and provides applicable frameworks, concepts, and tools.

The center offers its partner firms topflight executive education in services through the annual "Activating Your Firm's Service Culture" symposium, the annual "Services Marketing and Management" institute program, and the annual "Information Technology Services Marketing" course and provides customized executive education programs and research projects tailored to and conducted for charter member firms.

The center also actively supports the College of Business M.B.A. program that offers a specialization in Services Marketing and Management. This specialization infuses strong company-based experience and encourages summer internships.

For more information, visit the CSL in BAC 440, call 480/965-6201, or write

CENTER FOR SERVICES LEADERSHIP
PO BOX 874106
TEMPE, AZ 85287-4106

L. William Seidman Research Institute. The mission of the L. William Seidman Research Institute is to encourage and support applied business research by serving as a public access point to the College of Business. Specific goals include transferring new knowledge to the public; supporting faculty and student research; encouraging the development of educational programs grounded in business research; and conducting high-quality, applied business research.

The institute encourages research activity by providing research support services to the faculty, staff, and students of the college. These services include facilitating grant preparation and assistance in grant administration. The institute's research centers act as the focal point for involving faculty and students in applied research on important issues identified by the business community.

The institute also serves an important role in the broader educational mission of the College of Business by disseminating the findings of research conducted by the faculty, students, and research center staff, as well as the results of business research from other sources around the world. This is accomplished through a variety of mechanisms: newsletters and research reports; seminars and conferences; Internet

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Web pages; media interviews and press releases; and by responding to inquiries from businesses, public officials, and the community. For more information, call 480/965-5362, access the institute's Web site at www.cob.asu.edu/seid, or write

L. WILLIAM SEIDMAN RESEARCH INSTITUTE
PO BOX 874011
TEMPE AZ 85287-4011

Institute for Manufacturing Enterprise Systems. See "[Institute for Manufacturing Enterprise Systems](#)," page 33, for information about this joint venture of the College of Business and the College of Engineering and Applied Sciences.

College of Education

Southwest Center for Education Equity and Language Diversity. The Southwest Center for Education Equity and Language Diversity conducts, supports, and promotes research, scholarship, and innovative practice in language education designed for minority students in public schools. The center gives priority to scholarship and field-based work relating to educational equity and the systematic usage of heritage languages and cultures. The aim is to integrate these resources into the educational experience of all children and youth.

The center's scope of work is driven by a need to merge several related topics into a single articulated conversation: biliteracy; promoting the role of public education to strengthen communities; and enabling binational collaboration among educators. The long-term vision is to help develop a new pedagogy tailored to the needs of the bicultural region the center serves. The integration of these themes shapes the scope of work for the center in the following areas:

1. Within the broad scope of educational policy research, the center focuses on scholarly inquiry that contributes to informed and enlightened discourse on language policy for schools and society, especially on the harmonious coexistence of English, the national language; and Spanish, the second most used language in our society.
2. Life in the American Southwest is bicultural and increasingly binational. In this Pan-American context, bilingualism will gain in importance. Equally important will be the collective ability of residents on both sides of the border to work harmoniously in pursuit of a common destiny that will be ever more intertwined. Schools must help children and youth develop skills and predispositions to face this challenge.
3. Mexico and the United States are becoming more interdependent. In this context, Mexican educators should have opportunities to contribute to improving education for Mexican immigrant children in U.S. schools. To enable this, schools must create pilot projects and an infrastructure for collaboration among institutions and individuals on both sides of the U.S.-Mexico border.

For more information, visit the Southwest Center for Education Equity and Language Diversity in ED 440, call 480/965-7134, or access the center's Web site at www.asu.edu/educ/sceed.

Center for Indian Education. The Center for Indian Education is an interdisciplinary research and service center established in 1959. It promotes studies in American Indian policy and administration that contribute to scholarship and effective practices in education, professional training, and tribal capacity building. It is structured to foster relations between the university and sovereign tribes and to provide training and technical assistance for community programs. The center publishes the *Journal of American Indian Education* and sponsors workshops and colloquia that bring together scholars and tribal community leaders.

The center provides leadership through a group of American Indian faculty and is organized on the basis of scholarly expertise of the faculty. In addition to College of Education faculty, responsibilities are shared by faculty from the School of Social Work, the School of Justice Studies, the College of Liberal Arts and Sciences, and the College of Law. Areas currently studied include administrative leadership, policy analysis, bilingual education, health and welfare policy, justice studies, and program development in professional studies.

For more information, visit the center in ED 402, call 480/965-6292, or access the center's Web site at coe.asu.edu/cie.

Education Policy Studies Laboratory. Located within the College of Education, the Education Policy Studies Laboratory (EPSL) conducts and coordinates original research in areas such as student performance standards, assessment, curriculum, and commercialism in schools. EPSL not only disseminates its analyses and reports to policy makers and educators, but concentrates on providing the public with readable accounts of research.

The EPSL houses two research units—the Commercialism in Education Research Unit (CERU), which is the only national academic research center dedicated to schoolhouse commercialism, and the Education Policy Research Unit (EPRU), which conducts original research and facilitates implementation of educational innovations.

For more information, contact Alex Molnar, director and professor of Educational Leadership and Policy Studies, EDB L1-01, 480/965-1886, or access the laboratory's Web site at www.asu.edu/educ/epsl.

CRESMET. See "[Center for Research on Education in Science, Mathematics, Engineering, and Technology](#)," page 30.

College of Engineering and Applied Sciences

Center for Low-Power Electronics. The Center for Low-Power Electronics (CLPE) is a collaborative effort of the University of Arizona and ASU to address fundamental, industry-relevant research problems in the design of ultra-low power microelectronic systems. The CLPE is formed under the State/Industry/University Cooperative Research initiative of the National Science Foundation (NSF). The NSF and the State of Arizona recognize that Arizona has the key ingredients to become a leader in this technology. It has

the world's leading companies involved in the manufacture of portable computing and communication systems. The technical areas of focus of the Center for Low-Power Electronics include

1. basic materials, alternative materials, and their fabrication;
2. device design optimization;
3. design of digital, analog, and hybrid low-power circuits; and
4. power-based physical design for single- and multi-chip VLSI systems.

For more information, visit the center in ENGR 115, or call 480/965-8654.

Center for Solid State Electronics Research. The Center for Solid State Electronics Research (CSSER) focuses on research in the areas of epitaxial semiconductor crystal growth, device characterization and modeling, defect behavior in semiconductors material characterization, environmentally benign and other novel processing, fine line lithography, surface analysis, and transport. Major programs address semiconductor device modeling, transport theory, optoelectronics, ferroelectrics, semiconductor processing, microwave devices, and ultra-submicron and nano-structured devices. New thrust areas include molecular electronics and MEMS.

For more information, visit CSSER in ENGR 115, call 480/965-3708, or access the CSSER Web site at ceaspub.eas.asu.edu/csser.

Institute for Manufacturing Enterprise Systems. The Institute for Manufacturing Enterprise Systems (IMES) is a joint venture of the College of Business and the College of Engineering and Applied Sciences, established to enhance manufacturing research and industrial collaboration at the interface between the two colleges. IMES's mission is to establish ASU as an international leader in the creation and dissemination of new knowledge in the area of global manufacturing for the new economy. It particularly focuses on how manufacturing impacts Arizona. Research thrust areas include virtual manufacturing, enterprise systems, knowledge management, and software in the system solution.

For more information, visit the institute in GWC 402, or call 480/965-3709.

Center for System Science and Engineering Research. The Center for System Science and Engineering Research (SSERC) has established four focus areas: nonlinear dynamical systems, control theory and its applications, mathematical neuroscience, and scientific computing and interdisciplinary systems engineering. The center is jointly sponsored by the College of Engineering and Applied Sciences and the College of Liberal Arts and Sciences. Its main goals are the creation and enhancement of interdisciplinary and cooperative research, graduate education, and public service programs in the areas of systems science, applied mathematics, and computation.

For more information, visit the SSERC in GWC 606, call 480/965-8382, or access the SSERC Web site at www.eas.asu.edu/~sserc.

CRESMET. See "[Center for Research on Education in Science, Mathematics, Engineering, and Technology](#)," page 30.

Telecommunications Research Center. Telecommunications play a vital role in home, commercial, entertainment, educational, scientific, and military systems. The Telecommunications Research Center focuses its interests and activities in research and educational programs. The approach is to conduct basic and applied research, develop technologies, and provide education programs in all major areas of telecommunications, from signal generation to reception. The targeted areas of excellence are antennas, propagation, and scattering; microwave circuits, devices, and measurements; optical communications; signal processing; broadband switching; and wireless communication systems. Ultramodern laboratories and computational facilities are associated with the center.

For more information, visit the center in GWC 411, call 480/965-5311, or access the center's Web site at trc.eas.asu.edu.

College of Law

Center for the Study of Law, Science, and Technology. Located in the College of Law, the Center for the Study of Law, Science, and Technology conducts research, edits *Jurimetrics: The Journal of Law, Science and Technology* in cooperation with the American Bar Association Section on Science and Technology, and sponsors seminars, workshops, and conferences. Through these activities, the center seeks to contribute to the formulation and improvement of law and public policy affecting science and technology and to the wise application of science and technology in the legal system. Current areas of research include communications and telecommunications law, computer-related law, forensic science and statistics, legal issues and biotechnology, law and medicine, and law and social science.

For more information, visit the center in LAW 201, or call 480/965-2124.

College of Liberal Arts and Sciences

Arizona Center for Medieval and Renaissance Studies (ACMRS). The Arizona Center for Medieval and Renaissance Studies is a research unit serving affiliate scholars from ASU, Northern Arizona University, and the University of Arizona. It represents a variety of disciplines, including history, literature, philosophy, religion, language, music, art, and science. ACMRS enriches academic offerings in medieval and renaissance studies by sponsoring one or two visiting professors each year. Graduate research assistantships are also available through the center.

Significant opportunities for the study of the Middle Ages and the Renaissance exist at ASU. Hayden Library has an extensive microfilm collection and many rare books in medieval and renaissance studies. ACMRS also sponsors a lecture series each semester covering a variety of topics.

Other programs include an annual conference, a public symposium, a summer study abroad program at the University of Cambridge (United Kingdom), and student exchange programs with the University of Copenhagen (Denmark) and the University of Kalmar (Sweden).

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Since 1996, ACMRS has published Medieval and Renaissance Texts and Studies (MRTS), a major series of editions, translations, and reference works. In collaboration with the University of Massachusetts at Dartmouth and the University of Kansas, ACMRS sponsors and coedits *Mediterranean Studies*, an annual interdisciplinary journal publishing articles on all aspects of the Mediterranean region. ACMRS also sponsors a book series titled *Arizona Studies in the Middle Ages and the Renaissance*, published by Brepols (Belgium).

ACMRS also partners with the Renaissance Society of America and the University of Toronto in *Iter*, a massive, retrospective, online medieval and renaissance bibliography covering all languages and disciplines, and is the official site of the Medieval Academy of America's online data project offering information on medieval centers, programs, committees, and regional associations in North America.

For more information, visit ACMRS in SS 224, call 480/965-5900, or access the ACMRS Web site at www.asu.edu/clas/acmrs.

Cancer Research Institute. Significant advances in the treatment of human cancer and other serious medical problems depend upon scientists well trained in organic chemistry, biochemistry, and biology. The Cancer Research Institute provides graduate students with the specialized training necessary for research in the discovery and development of effective anticancer drugs. Among various activities, laboratory personnel are pursuing a unique program concerned with isolation, structural identification, and synthesis of naturally occurring anticancer agents from marine animals, plants, and marine microorganisms.

For more information, visit the institute in CRI 209, or call 480/965-3351.

Center for Asian Studies. Through its East Asian and Southeast Asian studies programs, the Center for Asian Studies serves as research coordinator for Asian studies' faculty and graduate students in a variety of disciplines. The center sponsors colloquia and research conferences. It also publishes two scholarly *Monograph Series* and a newsletter on Southeast Asian studies, *Suvannabhumi*, which have an international readership. Graduate students may apply for research assistantships in the center and its program.

The center works with the office of International Programs to administer student exchange programs with a number of universities in Asia. The center also sponsors an Asian film series each semester. A reading room is located in the center office suite offering a variety of Asian and English language publications and newspapers from and about Asia.

For more information, visit the center in WHALL 105, or call 480/965-7184.

Center for Meteorite Studies. The nation's largest university collection of extraterrestrial materials is available for research in the Center for Meteorite Studies. Teaching and research on meteorites, meteorite craters, and related areas of space and planetary science are accomplished through the regular academic units in cooperation with the center.

For more information, visit the center in PS C151, or call 480/965-6511.

Center for Solid State Science. The Center for Solid State Science is a research unit within the College of Liberal Arts and Sciences.

The membership comprises faculty and academic professional researchers and research support personnel, most of whom hold simultaneous appointments in affiliated academic units. The Center for Solid State Science is the ASU focal point for interdisciplinary research on the properties and structure of condensed phases of matter at the interfaces between solid-state chemistry and physics, earth and planetary science, and materials science and engineering. It also supports interdisciplinary approaches to science and engineering educational outreach activities.

The center provides an administrative home for large, multidisciplinary, block-funded research projects. These include the NSF-supported Materials Research Science and Engineering Center (MRSEC) and the Interactive Nano-Visualization for Science and Engineering Education (IN-VSEE) project. To support these activities, members of the center operate modern and sophisticated research facilities and organize regular research colloquia and symposia.

Principal topical areas of research in the center include studies of structure and reactivity of surfaces and interfaces, electronic materials, advanced ceramics and glasses, synthesis of new materials, high-pressure research, development of techniques in high-resolution electron microscopy and micro-structural and chemical analysis, development of visualization techniques at different scales of magnification for science education and community outreach.

The research facilities of the center include the Center for High Resolution Electron Microscopy (CHREM) and the Goldwater Materials Science Laboratories (GMSL).

CHREM. The center operates several ultrahigh-resolution and ultra high-vacuum electron microscopes and supports microscopy methods, and instrumentation development, including holography, position- and time-resolved nano-spectroscopy and energy-filtered imaging and diffraction. The center provides high-resolution capability for a large external group from other universities and industry.

GMSL. These facilities include

1. the Materials Facility (MF), which provides a wide range of synthesis and processing capabilities for preparation of specimen materials. MF also provides thermal analysis for study of solid-state reactions and Auger and X-ray photoelectron spectroscopy for analysis of surface compositions and electronic structure of surfaces;
2. the Materials Science Electron Microscopy Laboratory (MSEML), which provides state-of-the-art electron microscopes for analysis of microstructures, including imaging and diffraction, and high spatial resolution chemical analysis using energy dispersive X-ray and electron energy loss micro-spectroscopy;
3. the Ion Beam Analysis of Materials (IBeAM) facility, which provides compositional and structural determination of the surface and near-surface regions (0–2mm) of solids by ion beam analysis where elemental composition and depth distribution information are needed. Channeling experiments are

- used to determine crystal perfection and site occupancy;
4. the Secondary Ion Mass Spectrometry (SIMS) laboratory, which provides depth profile and point composition analysis with very high chemical sensitivity, on the order of one part per billion, including isotopic analysis for many materials. SIMS is also used as a chemical microscope, to image elemental distributions on specimen surfaces;
 5. the Scanning Probe Microscopy Laboratory (SPM), which provides facilities for nanoscale viewing of solid surfaces using scanning tunneling microscopy (STM), atomic force microscopy (AFM), and related techniques. The SPM laboratory serves as a focus for undergraduate research training programs and educational and outreach activities;
 6. the Facility for High Pressure Research, which provides facilities for synthesis of new materials and for geochemistry/geophysics studies at up to 25 Gpa (250,000 atmospheres) and temperatures greater than 2000° C. These facilities are complemented by diamond anvil cells capable of in situ studies at up to one million atmospheres. This laboratory provides a focus for core research projects within the MRSEC;
 7. the Goldwater Materials Visualization Facility (GMVF), which consists of a battery of linked workstations for remote operation of instruments and data collection, capture of images in real time, and advanced computing and simulation of materials. The GMVF is used in research and in undergraduate and graduate education, as well as in educational and community outreach; and
 8. other specialized laboratories under development, which include high-resolution X-ray diffraction for thin film characterization, optical spectroscopy, and nuclear magnetic resonance spectroscopy for solid-state studies and research on materials under extreme conditions.

These facilities provide the primary teaching and research resources used by students in the Science and Engineering of Materials interdisciplinary Ph.D. program and the undergraduate option for Materials Synthesis and Processing. They are also used extensively by students in disciplinary programs from affiliated departments.

For more information, visit the center in PS A213, call 480/965-4544, or access the Web site at www.asu.edu/clas/csss.

Center for the Study of Early Events in Photosynthesis. The ASU Center for the Study of Early Events in Photosynthesis was established in 1988 as part of a joint grant program of the Department of Energy, the National Science Foundation, and the Department of Agriculture. In 1990, it was designated a Regents Center of the University. Since September of 1995, it has been funded by the Office of the Vice Provost for Research and the College of Liberal Arts and Sciences. The center consists of about 90 students, post-doctoral associates, and research scientists led by 15 faculty members in the Department of Chemistry and Biochemistry and the Department of Plant Biology. These research groups

share a common goal: understanding the process of photosynthesis, which is responsible for producing all of our food and filling the vast majority of our energy and fiber needs. The impetus for development of the center was the premise that photosynthesis is a complex problem that will only yield to an investigation using a wide variety of approaches and techniques. Thus, the center serves as an infrastructure supporting individual ASU scientists and fostering multidisciplinary cooperative research projects.

The ultimate objective of the research is the elucidation of the basic principles governing the biochemical and biophysical processes of photosynthetic energy storage. This goal is being realized via investigation of the early events of photosynthesis, including: light absorption and excitation transfer in photosynthetic antennas; the mechanism of primary photochemistry in plant and bacterial systems; secondary electron transfer processes; structure and assembly of photosynthetic antennas, reaction centers, and electron transfer proteins; pigment-protein interactions; artificial and biomimetic photosynthetic solar energy conversion systems; and mechanisms of biological electron transfer reactions.

The center is equipped with state-of-the-art instrumentation which allows students to do frontier research in a broad range of disciplines. Equipment includes a variety of pulsed lasers for measurements with time resolution ranging from sub-picoseconds to seconds, a 500 MHz NMR instrument; an EPR spectrometer, a protein X-ray facility, spectrophotometers, fluorometers; a protein sequencer, and an amino acid analyzer.

The center sponsors a weekly Photosynthesis Seminar Series and brings in visiting scientists from around the world to carry out collaborative research. Undergraduate, graduate, and postdoctoral training programs in the Department of Chemistry and Biochemistry and the Department of Plant Biology are central components of the activities of the center.

For more information, visit the center in PS D207, or call 480/965-1963.

CRESMET. See "[Center for Research on Education in Science, Mathematics, Engineering, and Technology](#)," page 30.

Exercise and Sport Research Institute. The Exercise and Sport Research Institute (ESRI) is an interdisciplinary research unit located in the Department of Exercise Science and Physical Education and serves, in part, as a research facility for the interdisciplinary doctoral program in exercise science. Faculty and graduate students within ESRI investigate a wide range of topics concerning physical activity, including different age cohorts, levels of health, levels of ability and fitness; and levels and types of training, and physical and emotional stresses, nutrition, and genetic backgrounds. Where applicable, these aspects are studied using an interdisciplinary approach. ESRI is affiliated with a number of clinical and research institutions in the Phoenix area.

ESRI houses numerous specialized research laboratories. *Biomechanics* applies the laws of mechanics to the study of human movement. Current research examines kinematic and kinetic determinants of locomotion patterns in walking, running, cycling, and swimming; neuromusculoskeletal modeling and computer simulation of locomotion in clinical and sport applications; ergonomics; and mechanisms

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underlying upper extremity repetitive strain injuries. *Exercise physiology* is the study of physiologic systems (cardiovascular, respiratory, muscular, endocrine, metabolic) under conditions of stress, particularly exercise stress. Both acute exercise responses and chronic adaptations resulting from exercise training are considered in relation to health and performance and are investigated in several specialized labs. The *Exercise Biochemistry Lab* examines subcellular systems involved in the provision and regulation of energy transfer during exercise. The *Exercise Endocrinology Lab* studies interrelationships of exercise and training with stress, hormones, neurotransmitters, and the immune system. Research conducted in the *Applied Exercise Physiology Lab* is aimed at better understanding how physical activity and exercise influence the health, fitness, and athletic performance of able-bodied and physically-challenged individuals. Research in the *Motor Control Lab* investigates how movement is regulated and controlled via the nervous system in normal and pathological populations. Special emphases include motor deficits attributed to basal ganglia dysfunction and upper extremity coordination, particularly finger and hand posture, in reaching and prehensile movements. *Motor development* studies how human movement is generated and evolves throughout the lifespan. Current research focuses on learning and development of bimanual coordination. Timing and coordination of perceptual-motor skills are measured in normal developing children, persons with Down syndrome, and adults to investigate cerebral asymmetries and specificity of learning. The *Sport and Exercise Psychology Lab* examines the relationship between psychological constructs and physical activity, and the influence of participation in physical activity on psychological phenomena. Current research is designed to examine the influence of physical activity, fitness, and particular sport practices on psychophysiological mechanisms and cognitive functioning; the effect of psychological skills for performance enhancement; motivational aspects of physical activity across the lifespan; and the effects of exercise on mental health.

For more information, visit ESRI in PEBE 159, or call 480/965-7906.

Hispanic Research Center. The Hispanic Research Center (HRC) at ASU is an interdisciplinary unit, dedicated to research and creative activities, that is university-wide but administered through the College of Liberal Arts and Sciences. The HRC performs basic and applied research on a broad range of topics related to Hispanic populations, disseminates research findings to the academic community and the public, engages in creative activities and makes them available generally, and provides public service in areas of importance to Hispanics.

Faculty, staff, and advanced graduate students organize into working groups to develop a broad range of specific projects and lines of inquiry within the general categories of Hispanic entrepreneurship, science and technology, information and data compilation and dissemination, the Hispanic polity, and the arts. Ongoing activities of the HRC, primarily funded by external grants, include the Arizona Hispanic Business Survey, the *Bilingual Review Press*, the

Community Art and Research Outreach (CARO), Chicana and Chicano Space: Art Education Web site, Digital Divide Solutions Project, Project 1000, and the Western Alliance to Expand Student Opportunities.

CARO sponsors creative activities and research in collaboration with community-based organizations and ASU faculty.

For more information, visit the HRC in CFS 104, call 480/965-3990, or access the HRC Web site at www.asu.edu/clas/hrc.

Institute of Human Origins. The Institute of Human Origins (IHO), founded in 1981 by Donald Johanson, became part of the College of Liberal Arts and Sciences in 1997. IHO is a multidisciplinary research organization dedicated to the recovery and analysis of the fossil evidence for human evolution and the establishment of a chronological framework for human evolutionary events. IHO's scientists carry out field research at sites in Africa, the Middle East, and Asia. IHO houses the largest collection of *Australopithecus afarensis* casts (including "Lucy," a 3.2 million-year-old human ancestor) in the world as well as an extensive collection of other fossil hominid casts. IHO's library contains more than 3,000 volumes, numerous journals, videotapes, audiotapes, and slides related to human evolution and fossil sites. IHO produces periodic newsletters, offers lecture series, conducts tours and workshops, and supports numerous informal science education outreach projects.

For more information, visit IHO in SS 103, call 480/727-6580, or access the IHO Web site at www.asu.edu/clas/ihp.

Joan and David Lincoln Center for Applied Ethics. The Joan and David Lincoln Center for Applied Ethics (LCAE) is a university-wide center for applied ethics that is administratively housed in the College of Liberal Arts and Sciences. Its mission is

1. to develop and coordinate a strong focus on theoretical and applied ethics across intellectual disciplines and professional programs within the university,
2. to support teaching and creative research in ethics, and
3. to foster collaboration between the university and its varied publics to address major ethical challenges facing contemporary society.

For more information, visit LCAE in AG 355, call 480/727-7691, or access the Web site at www.asu.edu/clas/lincolncenter.

Latin American Studies Center. Arizona maintains an ever-growing interest in Latin America that draws upon an extensive experience of historical and geographical ties. The Latin American Studies Center is the focal point for these interests at ASU. Through its program, the center serves the university community and maintains strong ties with various Latin American organizations in the state and the nation. Principal activities are coordinating Latin American studies at the undergraduate and graduate levels; sponsoring student exchange programs; organizing events featuring Latin American arts and culture, numerous seminars, and research conferences; publishing a wide range of

professional materials; and undertaking and facilitating research about the region.

The center administers student exchange programs with the Catholic University of Bolivia and three Mexican universities—the Autonomous University of Guadalajara, the Autonomous University of Nuevo Leon, and the University of Sonora. Each spring several ASU students are selected to attend courses at the Latin American universities while Bolivian and Mexican students attend ASU. The center also has an exchange agreement with the Pontificia Universidad Catolica del Ecuador for faculty and students as well as summer programs in Quito, Ecuador and Ensenada, Mexico.

The center is a member of the American Modern Language Association, Consortium of U.S. Research Programs for Mexico, Consortium for Latin American Studies Association, Pacific Coast Council on Latin American Studies, Rocky Mountain Council for Latin American Studies, Consortium of Latin American Studies Programs, and Conference on Latin American History.

The center directly encourages research, not only through its research conferences, but also through close coordination with the Latin American collection of Hayden Library and networking with Latin American universities.

For more information, visit the center in SS 213, or call 480/965-5127.

College of Public Programs

Center for Nonprofit Leadership and Management. The Center for Nonprofit Leadership and Management (CNLM) promotes the understanding and improved practice of nonprofit organizations. The center coordinates a nonprofit sector research program, facilitates educational offerings in nonprofit studies, serves as a convener on topical issues, and provides selected technical assistance and information services. The center facilitates relationships among students, faculty, and community organizations across a range of research and outreach activities. In addition, the center convenes leaders and managers from the nonprofit, business, and government sectors on topical issues pertinent to building nonprofit capacity in the region. The center supports the activities of three complementary nonprofit leadership and management education programs: the ASU American Humanics Program (undergraduate certificate), a postbaccalaureate program (graduate certificate), and a noncredit program (extended education certificate). For more information, call 480/965-0607, or access the Web site at www.asu.edu/copp/nonprofit.

Center for Urban Inquiry. The Center for Urban Inquiry focuses on civic involvement. The center's mission is to examine the unique features of the new urban West in the United States, particularly intersections of growth and development with citizen activism and community building. By harnessing the unique resources of the university, the center engages in partnerships with urban citizens, including youths, to increase awareness, promote inclusion, and address needs. Center programs include seed grants to students working in teams in pursuit of urban research and community service; service learning that involves students in community building; technical assistance to neighbor-

hood organizations, schools, and hospitals; and the production of works that appeal broadly to urban audiences, including performances, exhibits, and videos. For more information, call 480/965-9216, or access the center's Web site at www.asu.edu/copp/urban.

Morrison Institute for Public Policy. Established in 1981 by the Morrison family of Gilbert, Arizona, as a unit within the School of Public Affairs, the institute conducts research on public policy matters, informs policy makers and the public about issues of importance, and advises leaders on choices and actions. Morrison Institute offers a variety of services to public and private sector clients and pursues its own research agenda. Services include policy research, program evaluation, and public outreach. The institute's interests, research, and publications span such areas as education, urban growth, human services, workforce development, economic development, and arts and culture.

For more information, call 480/965-4525, access the institute's Web site at www.asu.edu/copp/morrison, or write

MORRISON INSTITUTE FOR PUBLIC POLICY
ARIZONA STATE UNIVERSITY
PO BOX 874405
TEMPE AZ 85287-4405

Herberger College of Fine Arts

Institute for Studies in the Arts. The Institute for Studies in the Arts (ISA) in the Herberger College of Fine Arts serves as a research laboratory for the development of new art forms, new ideas and concepts, and innovative technologies for artistic expression; a network for communication among creative scholars both within and outside the arts; and a resource base for the documentation, evaluation, and dissemination of research in the arts. ISA addresses the needs of a variety of populations through technical and monetary support and sponsorship for research projects, performances, exhibitions, and symposia.

ISA facilities include an experimental media performance space with an adjacent technology prototyping and applications studio in Drama City; the "Intelligent Stage," an interactive and tele-performance studio with state-of-the-art digital audio and video production and post-production facilities in Matthews Center; a Technology Development Studio for the development of prototype technologies and their application to aesthetic research; and comprehensive archives that document the history of research initiatives supported by the ISA.

ISA is open to a wide range of proposals from faculty, graduate and undergraduate students, and visiting artists, provided such proposals address the ISA mission of experimentation and innovation in the arts. For more information, visit ISA in MCENT 224, call 480/965-9438, or access the ISA Web site at herbergercollege.asu.edu/isa.

Vice Provost for Research

Center for Environmental Studies. Established in 1974, the primary mission of the Center for Environmental Studies is to facilitate collaborations among faculty researchers and to aid decision making about environmental issues. Through its collaborations, both with ASU faculty and

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partners from government, business, and the educational community, the center advances the identification of key local and global environmental issues and collects reliable information to be used by scholars, policy makers, and the general public. For more information, access the CES Web site at www.asu.edu/ces.

The center is also home to the Central Arizona–Phoenix Long-Term Ecological Research (CAP LTER) project, one of only two urban sites in the NSF-funded LTER network. The CAP LTER project focuses on an arid-land ecosystem profoundly influenced, even defined, by the presence and activities of humans, and involves more than 50 associated faculty from biology, ecology, engineering, geography, geology, sociology, urban planning, and anthropology. For more information, access the CAP LTER Web site at caplter.asu.edu.

The center administers an NSF-funded Integrative Graduate Education and Research Training (IGERT) grant to develop a multidisciplinary program in urban ecology. The program's research component engages students in wide-ranging and multidisciplinary investigations into the ecology of cities, with the CAP LTER project providing the research infrastructure. For more information, access the IGERT Web site at www.asu.edu/ces/igert.htm.

The center also facilitates applied environmental research projects undertaken by the Southwest Center for Environmental Research and Policy (SCERP), a consortium of five U.S. and four Mexican universities. SCERP develops a research agenda for the study of air and water quality, hazardous waste problems, environmental health issues, and growth management questions in the border region. For more information, access the Web site at www.scerp.org.

For more general information about the center, contact the director, Center for Environmental Studies, Tempe Center (located at the southeast corner of University and Mill), 480/965-2975, or access the center's Web site at www.asu.edu/ces.

ASU East

Sustainable Technologies, Agribusiness, and Resources Center. The focus of the Sustainable Technologies, Agribusiness, and Resources (STAR) Center is to bring together multidisciplinary researchers whose mission is to study sustainable processes and systems, whether natural or human designed, that will be efficient and less consumptive and will promote conservation of the earth. For more information, call 480/727-1240, or access the STAR Center Web site at www.east.asu.edu/research/star.



ASU Research Park

Tim Trumble photo

Student Services

The university is committed to the belief that an education involves more than attending class. While the assimilation of information is a central part of the university experience, learning about others, about independence and leadership, and about living in a complex society are equally important. Student Affairs' services and developmental programs reflect this philosophy.

UNDERGRADUATE ADMISSIONS

For many undergraduates, the first introduction to ASU is through the recruitment and admission programs of Undergraduate Admissions. Personal contact with prospective students through high school and community college visits and through student visits on campus are some of the approaches that provide information about the academic programs and support services available at ASU. A primary goal of Undergraduate Admissions is to identify, inform, motivate, recruit, and enroll students from ethnic groups underrepresented at ASU. Orientation programs ease the students' (and parents') transition to the ASU campus. Undergraduate Admissions also coordinates and supports the ASU Parents Association. For more information about undergraduate admissions, call 480/965-7788, or visit the Web site at www.asu.edu/admissions. For more information about the ASU Parents Association, call 480/965-2602.

STUDENT FINANCIAL ASSISTANCE

Pursuing a college education is an important life decision as well as a major financial investment. The cost of a college education can be a major concern for many students and their families. The ASU Student Financial Assistance Office is committed to helping students, within the limits of available funds, meet college costs. Options range from merit scholarships to financial aid awards—grants, loans, and employment.

Approximately two-thirds of ASU students rely on some form of financial assistance to meet their educational expenses. For more information, call 480/965-3355, or visit the Web site at www.asu.edu/fa.

REGISTRAR

Management of the registration system and maintenance of academic records are the primary responsibilities of the Office of the Registrar. Registration is available through SunDial, the ASU touch-tone registration and fee payment system, or in person at the UASB Registrar site, OASIS General Information site at ASU East, or Registration Services at ASU West. The Student Information System stores academic records and improves the quality of data used in academic advising. The Office of the Registrar coordinates applications for graduation and undergraduate readmission, course changes and scheduling, transcript services, applications for residency, and verification of enrollment. For more

information, call 480/965-4747, or visit the Web site at www.asu.edu/registrar.

Veterans Services

This office offers complete educational services for U.S. veterans and their eligible dependents. Counseling about admissions, registration, and veterans benefits is available. Veterans programs provide service by advising all interested veterans and dependents about educational benefits and their optimum use. Students must apply each semester to receive veterans benefits. The program also assists veteran students in obtaining suitable paid tutors, when needed, using their federal benefits. Students receiving veterans educational benefits are not eligible to receive pay for audited courses. Veterans must achieve satisfactory GPAs and semester hours progress toward their academic programs for continued educational benefits, as stated under "[Satisfactory Academic Progress,](#)" page 76. The university must report this progress to the Department of Veterans Affairs each term. Failure to maintain the minimum GPA established by the university and/or the veteran's college may result in academic probation or disqualification. Although veterans may be eligible for educational benefits while on academic probation, benefits could be affected by a continuing probation status. The Veterans Services Section is located in SSV 148. For more information, call 480/965-7723.

RESIDENTIAL LIFE

Living in one of the ASU residence halls provides students the opportunity to make the most of their college experience. Special residential communities for freshmen, honors students, and students in particular academic areas offer opportunities and activities that enrich the educational experience.

The Freshman Year Experience program (see "[Freshman Year Experience,](#)" page 40) provides a unique environment of classrooms, live-in tutors, academic advisors, and other support services designed to help freshmen develop skills for success.

Because the demand for campus housing tends to exceed space availability in the residence halls, students are encouraged to apply for housing early (before March 1, 2002) for the best chance to live on campus for fall semester 2002. Housing is not guaranteed. Students must be admitted to ASU before applying for housing. Requests for specially modified rooms for students with disabilities should be noted on the application.

Students will receive residence hall application information with their admission certificate. For more information, visit the Web site at www.asu.edu/reslife, call 480/965-3515, or write to

STUDENT SERVICES

RESIDENTIAL LIFE
ARIZONA STATE UNIVERSITY
PO BOX 870212
TEMPE AZ 85287-0212

Information about ASU Main voluntary meal plans may be obtained by calling 480/965-3464 or writing

CAMPUS DINING
ARIZONA STATE UNIVERSITY
PO BOX 871101
TEMPE AZ 85287-1101

ASU East Housing

ASU East housing includes single student residence halls equipped with kitchens, two- to-five-bedroom houses, and a freshman residence hall that participates in ASU East's Freshman Year Experience program. For more information, see "[Williams Campus Housing and Residential Life.](#)" [page 626](#), call 480/727-1700, or access the Web site at www.east.asu.edu/sta/u-life/housing.

STUDENT DEVELOPMENT

ASU students experience success through active involvement in learning and within their community. Student Development enhances student learning through academic support services and programs and encourages student involvement in the community through participation in cocurricular programs, clubs, employment, leadership opportunities, organizations, and service.

Freshman Year Experience

A student's freshman year is a time to learn new ideas, meet new people, and grow as an educated citizen ready to contribute to the community. The Freshman Year Experience (FYE) helps freshmen achieve academic success by coordinating services and programs in settings designed just for freshmen. Services provided include freshman-level classes and academic advisors in the halls, computer labs, live-in tutors with tutoring offered five nights a week, staff trained to support students in achieving academic success, and special floors for freshmen majoring in Engineering; Architecture and Environmental Design; Business; Education; and Broadcasting, Communication, and Journalism (within the College of Public Programs).

ASU has designated several residence halls as FYE service sites: Manzanita, Mariposa, McClintock, Palo Verde complex, Sahuaro, and Sonora. A freshman can choose to live in one of the halls and have direct access to FYE programs or opt to live off-campus or in another residence hall and still use FYE services. For more information, call 480/965-1512, or access the Web site at www.asu.edu/vpsa/fye.

Learning Resource Center

The Learning Resource Center (LRC) provides academic support to ASU students through tutoring in most disciplines, Supplemental Instruction™ (SI), peer coaching, academic success workshops, and computer-assisted instruction. The LRC provides scheduled small-group tutoring to ASU students in all grade levels in approximately 100 courses, including math, languages, business, physics, chemistry, and computer science. SI provides students in traditionally challenging courses with the opportunity to

meet with an SI leader, a student who has successfully completed the course, for collaborative study-skills sessions that focus on the course material.

The peer coaching program assists ASU students on or at risk of academic probation by providing a structured learning environment that focuses on helping students develop time- and stress-management skills. The academic success workshops offer the opportunity to develop general academic skills and college adjustment/survival skills such as coping with test anxiety, organizational skills, and critical thinking. Computer-assisted instruction is open to all ASU students, staff, and faculty, and addresses learning software applications, Internet use and research, and e-mail.

For more information, call the LRC at 480/965-6254, or access the Web site at www.asu.edu/vpsa/lrc.

Co-Curricular Programs

Co-Curricular Programs (CCP) works to enhance the ASU undergraduate educational experience by maximizing faculty and student interaction outside the traditional classroom setting. This is accomplished through the following program components:

Campus Wide Programming. CCP brings students and faculty together for a variety of events that facilitate informal dialogue, lead to the exchange of ideas, and provide out-of-classroom learning experiences. The annual Last Lecture Series offers students the opportunity to recognize and honor excellent teaching by nominating outstanding faculty to present a lecture to the ASU community as though this would be their "last lecture."

Residential Programming. CCP supports Resident Assistants in the development of programs that promote learning outside the classroom. Programs like the Classic Film Colloquia bring students and faculty together to explore ideas and topics that supplement and enhance their classroom learning.

Seminar Courses. CCP coordinates a number of small group seminar courses each semester, entitled CED 394: Special Topics in Leadership. These one-semester-hour, discussion-format courses bring together a faculty or staff member and up to 12 students to discuss and learn about a specific interest or topic. CED 394 courses are open to students of all academic levels and majors.

Faculty Fellows. Faculty take an active role in the planning and development of CCP programs. Faculty Fellows serve as liaisons with their academic departments and their colleagues, further enhancing the learning experiences of students outside the traditional classroom.

Student Advisory Board. Students work collaboratively with Faculty Fellows and CCP staff to develop and promote programs for the campus community.

For more information on upcoming programs or seminar courses, call CCP at 480/965-9600, or access the Web site at www.asu.edu/vpsa/partnerships.

Child and Family Services

Child and Family Services (CFS) provides resource and referral services to students, faculty, and staff. Information about the Campus Children's Center (480/921-2737), Child

Development Laboratory (480/965-7267), Child Study Laboratory (480/965-5320), and the College of Education Preschool (480/965-2510) may be obtained at CFS or by calling the programs directly. CFS maintains a child care referral database and coordinates workshops and discussion groups on child and elder care issues. Educational materials and listings of additional on- and off-campus activities, programs, and services for children and their families are available at the CFS office, MU 14C.

For more information, call 480/965-9515, or visit the Web site at www.asu.edu/vpsa/family.

For specific information about child care at ASU East, call 480/727-1400.

Sun Devil Involvement Center

Located on the third floor of the Memorial Union, the Sun Devil Involvement Center provides opportunities for student involvement through clubs, coalitions, community service, fraternities and sororities, leadership, programming, and student government. For more information, call 480/965-2255, or visit the Web site at www.asu.edu/mu/sdic.html.

Student Organization Resource Center

The Student Organization Resource Center provides opportunities for students to get involved with established campus organizations and helps students start new organizations. The center maintains a list of all registered groups, assists with the coordination of major events, and provides a resource desk where students can access information on student activities and leadership opportunities. Members of REACH, a student paraprofessional organization, staff an information desk and are available for outreach sessions. For more information, call 480/965-2255, or visit the Web site at www.asu.edu/clubs.

Student Leadership Programs

Student Leadership Programs serves as a resource to students interested in leadership development. Resources include a leadership library and information about the ASU Leadership Development Model and other campus, local, and national leadership programs. Staff are available for presentations; workshop facilitation; and advising, guidance, and coordination of efforts in leadership development. For more information, call 480/965-2255, or visit the Web site at www.asu.edu/mu/slp.

Leadership Development Classes. A series of leadership development classes are offered to provide students an opportunity through class activities, discussions, and experiences to understand leadership theories and models, to develop leadership skills, and to apply leadership knowledge through service and internships. CED 294 ST: Foundations of Leadership focuses on the basic principles of leadership and current writing on the topic, particularly on college campuses. A capstone course, CED 484: Leadership Internship, applies leadership skills to a variety of experiential learning opportunities. For more information, access the Web site at www.asu.edu/vpsa/slp/Classes.

Greek Life

Involvement in a fraternity or sorority can be one of the most rewarding aspects of a student's college experience.

Fraternities and sororities provide opportunities for leadership development, academic success, campus involvement, community service, social interaction, brotherhood/sisterhood, and intramural participation. Nineteen fraternities are governed by the Interfraternity Council and twelve sororities hold memberships in the Panhellenic Council. The National Panhellenic Council offers seven predominantly African American fraternities and sororities for involvement with community service, cultural learning, and a deep sense of tradition. The Hispanic Greek Council, three fraternities and two sororities, offers Hispanic students an opportunity to work on service projects, give back to the Latina/Latino culture, and network within the Hispanic community. In addition to the benefits of lifelong membership, many of the fraternities and sororities have chapter houses or residence hall floors that provide a rewarding living/learning option for their members. For more information, call Greek Life at 480/965-2255, or visit the Web site at www.asu.edu/mu/greeklife.

Community Service Program

The Community Service Program strives to engage students, faculty, and staff in meaningful cocurricular service. Through the integration of academic studies with public service, the campus community is provided with intentional avenues to serve the societal needs of Valley communities. By engaging students in worthwhile service while promoting a lifelong commitment to citizenship and social justice, the Community Service Program not only augments curricular learning but also affords students the key opportunity to turn learning into social action.

For more information, visit the Community Service Program, located at the Sun Devil Involvement Center on the third floor of the Memorial Union, access the Web site at www.asu.edu/mu/community, or call 480/965-2255.

Short-Term Service Projects. The Community Service Program collaborates with Valley-wide agencies and campus entities to provide meaningful episodic service events such as Alternative Spring Break, the Fall Service Plunge, and the Martin Luther King Jr. Day of Service. Current information can be found in updated listings in the office and on the Web site on a weekly basis.

Cocurricular Service Learning Opportunity Clearinghouse. A detailed clearinghouse of information from more than 400 social service and nonprofit agencies across the Valley of the Sun offers information about internships, post-graduation opportunities, and long-term service. Students can use this resource to design a service experience that complements their academic, personal, and professional goals.

Cocurricular Service Learning in the Classroom. The Community Service Program works with faculty and instructors on campus to successfully integrate cocurricular service learning into the classroom setting. Information regarding courses that integrate cocurricular service learning is available for students, and the resources are open to students as they seek to meet course requirements.

Workshops and Skill-Building. Throughout the year, the Community Service Program offers workshops and

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presentations around service-related topics to develop strong campus leaders and exceptional civic leaders for the future. Topics may include servant leadership, volunteer management, event planning, and reflection. Workshop series information is available in the office.

Programming and Visual Arts

Programming and Visual Arts (PVA) connects students with opportunities to participate in the visual arts and programming on campus. Programs supported by PVA include a student-run film committee, weekly comedy shows—*Barren Mind Improv* and *Farce Side Comedy Hour*, and an annual silent art auction which showcases emerging ASU artists.

PVA also maintains the Memorial Union's Art Collection. Located throughout the Memorial Union, this permanent collection is comprised of paintings, fine art prints, photographs, sculptures, and tapestries. The collection includes works of faculty, alumni, and students from the ASU School of Art as well as other recognized artists. For more information, call 480/965-2255.

MEMORIAL UNION

The Memorial Union (MU) serves as the campus community center for students, faculty, staff, and guests of ASU. Opportunities for student involvement are abundant with programs and services that enhance the ASU experience. Students can connect through activities, clubs, community service, organizations, student government, the arts, and volunteer programs.

A variety of student employment opportunities are available at the MU. Some of the student positions include: administrative clerk/assistant, building manager, computer lab attendant, event assistance, information desk associate, and Sparky's Den associate. The MU offers flexible work schedules to accommodate class schedules. Promotion from within the various work groups is encouraged.

Some of the building's features include an art gallery; computer lab and workroom; multi-purpose meeting rooms; study and group work areas; and Sparky's Den: a recreation center with bowling, billiards, and a video arcade.

Services provided in the MU include banking facilities and several ATMs, a card and gift shop, catering, film developing, food venues, a general store, a hair salon, a music store, a post office, and a travel agency. For more information about any of these services or to explore employment or volunteerism, call the MU Information Desk at 480/965-5728, or visit the Web site at www.asu.edu/mu.

STUDENT LIFE

Student Life strives to enhance student learning and student achievement by fostering a positive, inclusive campus environment; providing services to meet the needs of a diverse student body; and empowering students to advocate for their needs and interests by developing leadership and life skills. Opportunities for leadership and community involvement help students prepare for their roles as responsible citizens. Students learn and sharpen their leadership skills through their involvement in student activities, workshops, community service, and student government. For

more information, access the Web site at www.asu.edu/studentlife.

Adult Re-Entry Program. The Adult Re-Entry Program offers a variety of services to assist students age 25 and older in reaching their academic goals, such as preenrollment assistance, orientation, peer mentoring, resource and referral information, support groups, and scholarships. The Adult Re-Entry Center in MU 14 provides a welcoming environment for individual or group study. For more information, call 480/965-2252, or visit the Web site at www.asu.edu/studentlife/reentry.

Associated Students of Arizona State University (ASASU). ASASU is the student government of the university and the official representative of the student body in matters of university governance and budgeting. Through paid, volunteer, or elected positions, students can become active, contributing members of ASASU. Students can select from a wide variety of activities and services, some of which include: College Councils, Student Senate, Student Legal Assistance, Safety Escort Service, Co-op Bike Repair Service, Environmental Issues, Internships, and Homecoming and spring event committees. For more information, call 480/965-3161, or visit the Web site at www.asu.edu/asasu.

Danforth Chapel. Built in 1948 as a multi-faith chapel and retreat for the university community to use for prayer, meditation, weddings, memorial services, baptisms, Bible study groups, and worship, Danforth Chapel continues to provide opportunities for those functions. The chapel is located on Cady Mall between the Memorial Union and Hayden Library. For more information, call 480/965-3570, or visit the Web site at www.asu.edu/studentlife/danforth.

Disability Resources for Students. Disability Resources for Students (DRS) facilitates equal access to educational and cocurricular programs, campus activities, career exploration, and employment opportunities for qualified ASU students with disabilities, ensuring they are provided with mandated reasonable and effective accommodations. Contingent upon refunding, a U.S. Department of Education TRIO Student Support Services Grant also allows DRS to incorporate a unique academic enhancement model into the disability support services program for 270 selected students with disabilities who meet TRIO eligibility requirements. Disability documentation is required and information regarding disabilities is confidential. DRS is located on the first floor of Matthews Center. For more information, call 480/965-1234 (voice) or 480/965-9000 (TTY), fax 480/965-0441, or visit the Web site at www.asu.edu/drs.

Educational Opportunity Center. This community outreach service focuses on first-generation low-income individuals. The center offers vocational testing and guidance as well as assistance in application for admission, scholarships, and financial assistance at a postsecondary institution suited to a particular individual's needs. Services are free, partially funded by the U.S. Department of Education. The center has a main office at 1000 East Apache Blvd., Suite 118 in Tempe and satellite offices around Maricopa County. For more information, call 480/894-8451, or visit the Web site at www.asu.edu/studentlife/eoc.

International Student Office. The International Student Office (ISO) is responsible for the administration and coordination of the ASU international student program. The ISO's principal responsibilities and services include administrative support, counseling, initial orientation, visa administration, and campus and community activities which promote international awareness and enrich the educational experiences of students. The ISO is located in SSV 265. For more information, call 480/965-7451, or visit the Web site at www.asu.edu/studentlife/iso.

Multicultural Student Center. The Multicultural Student Center (MSC) provides a central location for multicultural students to receive a number of services designed to assist them in pursuing academic success. Staff actively seek to recruit and retain multicultural students through a variety of support services and programs. University success courses, one-on-one guidance, consultation, and referral are offered to address the academic, personal, and cultural needs of multicultural students. The Hispanic Mother/Daughter Program and the Native American Achievement Program are specialized programs within the MSC designed to increase the persistence and graduation rates of students. Summer programs such as the Asian Lead Academy, the Native American Summer Institute, the Academic Enrichment Program, and Sun Devil Welcome provide outreach to the community and assist students with their transition and adjustment to the university. The student coalitions, as well as other multicultural student organizations, provide cultural programming and academic support to African American, American Indian, Asian American, Hispanic/Latino, gay and lesbian, and women students. The MSC office is located in SSV 394. For more information, call 480/965-6060, or visit the Web site at www.asu.edu/studentlife/msc.

Student Advocacy and Assistance. Student Advocacy and Assistance guides students in resolving educational, personal, and other campus impediments toward successful completion of their academic goals. Student Advocacy and Assistance links students with appropriate university and community resources, agencies, and individuals; collaborates with faculty and staff in the best interest of the students; and follows through to bring efficient closure to student concerns. Student Advocacy and Assistance is located in the Office of Student Life, SSV 263. For more information, call 480/965-6547, or visit the Web site at www.asu.edu/studentlife/advocacy.

Student Judicial Affairs. Student Judicial Affairs oversees the review of conduct issues, involving both students and student organizations, as set forth by the Arizona Board of Regents *Student Code of Conduct*. This code is designed to balance the rights and needs of the individual with the responsibility of the individual to meet the needs of the community. Outreach and education are provided to students, faculty, and staff in areas such as student rights and responsibilities, campus and community standards, and university policies. Referrals for student conduct issues are accepted from faculty, staff, students, or observers. The Student Judicial Affairs designee reviews all referrals. Students who are found to have violated the *Student Code of Conduct* are subject to appropriate sanctions for student misconduct.

Student Judicial Affairs is located in the Office of Student Life, SSV 263. For more information, call 480/965-6547, or visit the Web site at www.asu.edu/studentlife/judicial.

Student Legal Assistance. Student Legal Assistance counsels and advises students regarding their legal rights and responsibilities. This service is offered free of charge to currently enrolled ASU students. Notary services are also available. Typical consultation topics include auto-related issues, criminal matters, debt, domestic relations, wills, towing and traffic violations, landlord/tenant issues, and miscellaneous issues. Student Legal Assistance is located in the Memorial Union, Room 329. For more information, call 480/965-6307, or visit the Web site at www.asu.edu/studentlife/legal.

Upward Bound Program. Upward Bound is a college preparatory program designed to increase the academic skills and motivational levels of participants (low income, potential first-generation college students) to encourage their completion of high school, as well as enrollment in and graduation from postsecondary institutions. The year-round program includes summer residential components funded by the U.S. Department of Education. The Upward Bound Program office is located in SSV 276. For more information, call 480/965-6483, or visit the Web site at www.asu.edu/studentprgms/orgs/ub.

Veterans Upward Bound. This program is designed for low-income, first-generation veterans who wish to pursue postsecondary education but whose life experiences did not adequately prepare them for the educational requirements of today. College preparation instruction in writing, reading, mathematics, general science, study skills, and computer literacy are provided to suit each veteran's individual needs. Veterans lacking a high school diploma can also prepare for obtaining their General Education Development (GED) while participating in Veterans Upward Bound. Interest inventory assessments and career advising are also available. All services are free, funded by the U.S. Department of Education. The Veterans Upward Bound office is located at 1000 East Apache Blvd., Suite 106, in Tempe. For more information, call 480/965-3944, or visit the Web site at www.asu.edu/studentlife/vub.

COUNSELING AND CONSULTATION

Counseling and Consultation offers a range of confidential counseling and psychological services for ASU students. Staff members are available to discuss any important personal concern a student may be facing, particularly issues related to the adjustment to university life. Professional help in the following areas is available: psychological issues, personal concerns, interpersonal issues, and crisis intervention. Counseling and Consultation staff members have a strong commitment to meeting the needs of students of color and nontraditional students. The Counseling Center staff consists of both male and female mental health professionals, including psychologists, counselors, psychiatric providers, and social workers. Students are initially seen by an individual counselor for assessment. Continuing services in the form of individual, couples, or group meetings are

STUDENT SERVICES

then offered on a short-term basis depending upon the student's need and staff availability.

Counseling and Consultation offers counseling groups on topics such as women's and men's issues, eating disorders, substance abuse, stress management, multicultural/diversity issues, and interpersonal relationships. Other services available to the ASU community include consultation and outreach programming. Career interest testing is offered to both students and non-students.

Counseling and Consultation provides training for psychologists through its internship training program for doctoral trainees in clinical and counseling psychology. This program is accredited by the American Psychological Association. In addition, counseling practicum training is provided to master's and doctoral students enrolled in ASU graduate programs.

Confidentiality in counseling is of utmost importance. Information about a student is not released without that student's written permission, except in the case of imminent danger to self or others, child/adult abuse, court order, or where otherwise required by law. Notations of counseling are not a part of a student's academic record.

ASU students may schedule an initial counseling appointment either by phone (480/965-6146 or 480/965-4726) or in person. There is no cost for the initial personal consultation. Students may receive up to three counseling sessions for no fee. Fees are charged for additional sessions although fee reductions and waivers are available. Office hours are 8 A.M. to 5 P.M. Monday through Friday. Counseling and Consultation is located at two sites on campus, SSV 334 and SHW A168.

For information about student counseling at ASU East, call 480/727-1255.

Testing Support Services. Testing Support Services (TSS) offers courses to help students prepare for the following graduate entrance exams: the Graduate Record Exam (GRE), the Graduate Management Admissions Test (GMAT), and the Law School Admission Test (LSAT). Students may obtain information about test preparation workshops by phone (480/965-6777), in person, or from the TSS Web site at www.asu.edu/vpsa/tss. The TSS office is located in SSV 382 and is open 9 A.M. to 6 P.M. Monday through Thursday and 9 A.M. to 5 P.M. Friday.

STUDENT HEALTH AND WELLNESS CENTER

Services. The Student Health and Wellness Center offers fully accredited outpatient health care to all students enrolled at ASU. The professional staff, consisting of physicians, nurse practitioners, registered nurses, dietitians, and health educators, has special interest and training in college health care. Consultant physicians in dermatology, orthopaedics, and other specialties are on-site and are available by referral from a member of the Student Health and Wellness Center professional staff.

Additional services include comprehensive women's health care, immunizations, a travel clinic, and an allergy clinic for students needing periodic injections. The pharmacy at the Student Health and Wellness Center provides many prescription and over-the-counter medications at rea-

sonable costs. Radiology and laboratory services are also available.

A notarized parental "consent to treat" form is required before a student under 18 can receive treatment at the Student Health and Wellness Center. A copy of the parental consent form may be obtained from the Student Health and Wellness Center's Web site at www.asu.edu/health.

For information about Student Health Services at ASU East, call 602/222-6568.

Health Education. The Student Health and Wellness Center provides educational programs on nutrition, stress management, alcohol and other drug use and abuse, sexuality, and sexually transmitted diseases, including the Human Immunodeficiency Virus (HIV). Peer education programs provide students an opportunity to gain experience in health education and to enhance presentation skills. Services and educational brochures are available at the Student Health and Wellness Center and at other locations on campus.

Hours. Students are strongly encouraged to schedule appointments to minimize waiting time and to allow students the opportunity to establish a relationship with one clinician. Appointments are available by calling 480/965-3349. Patients with urgent health care problems may be seen at the Student Health and Wellness Center's Acute Care Clinic on a same-day basis. The clinic is open weekdays from 9 A.M. to 5:30 P.M.

Fees. Full-time students are not charged for primary care visits at the Student Health and Wellness Center. There are charges for consultant visits, radiological procedures, laboratory procedures, medications, certain special or surgical procedures, and certain health education services. Patients receiving medical treatment off campus, such as consultations, emergency care, and hospitalization, are responsible for any resulting charges.

Insurance. *While the Student Health and Wellness Center provides comprehensive ambulatory care, it is not a substitute for health insurance.* Medical insurance coverage is strongly recommended for all students and is required for international students. Eligible students and dependents may enroll in health insurance coverage arranged by ASU. Dependents must complete an application and may require underwriting approval by the insurance carrier. The coverage assists students in paying for laboratory and radiology procedures, off-campus consultations, hospitalization, surgery, and emergency and after-hours care. Students may purchase health insurance through SunDial, the ASU touch-tone telephone registration system, or at any registrar site. For more information, call the Student Health and Wellness Center's insurance office at 480/965-2411.

STUDENT MEDIA

The activities of Student Media are most visible in the *State Press*. The campus newspaper, one of the largest daily newspapers in Arizona, is published five days a week by ASU students who make editorial decisions with the support of an experienced university staff director.

The *State Press* provides students with on-the-job training in newswriting, photography, editing, advertising, and

production work. The *State Press* also addresses the many informational needs of the university community, not only through stories about the campus, and local and national events, but through paid advertisements by area merchants, campus groups, and university faculty, students, and staff. *The Web Devil* is Student Media's online news center and community guide, including complete listings of restaurants, hotels, apartments, transportation, campus maps, and fun places to go within the community surrounding ASU. Access the Web site at www.statepress.com.

Student Media publishes *Hayden's Ferry Review* twice a year. This award-winning national literary and art magazine brings together in one publication the finest contemporary literature and art by established and emerging writers and artists. Access the Web site at www.asu.edu/studentmedia/products.htm#hfr.

Student Media provides complete prepress services to the university community. For more information, call 480/965-7572.

CAREER SERVICES

Career Services provides advising for individual career planning concerns and offers information about numerous career fields and permanent positions. Students are encouraged to use the Career Education Center throughout their academic careers. A computerized career planning system assists students in evaluating and making career choices. Career Services offers workshops and classroom presentations on career planning, interviewing skills, résumé writing, and a myriad of additional career-related topics. Advisors are available to assist students on an individual basis in career planning and employment.

Hundreds of employers from business, industry, government, social service agencies, health organizations, and educational institutions come to ASU to interview students seeking permanent positions and career-related summer, intern, and co-op employment. Career Services facilitates these interviews for both employers and students to meet each group's needs and interests. In addition, career and job fairs are scheduled throughout the year.

The agency's services support students' career development throughout their college experience, and Career Services encourages participation in programs as early as the student's freshman year. The ASU Main campus office is located in SSV 329. For more information, call 480/965-2350.

ASU East students may contact the Career Preparation Center at 480/727-1411. The office is located on the lower level of the Academic Center Building.

STUDENT RECREATION COMPLEX AND RECREATIONAL SPORTS

The Student Recreation Complex (SRC) is the place to become involved and meet people with similar interests in an active lifestyle. Student Affairs' Recreational Sports is one of the largest programs of its kind in the country, serving more than 27,000 students annually. Programs offered include intramural sports, informal recreation, fitness, aquatic and sports skills classes, outdoor recreation, children and family programs, sport clubs, adaptive

recreation for individuals with long- or short-term disabilities, a wellness program, safety education, experiential learning, and special events.

Located on the south end of Palm Walk, the SRC is one of the finest student recreation facilities in the United States. Features include a variety of resistance and cardiorespiratory equipment, a 9,000 square-foot weight room, three large gymnasiums, 14 indoor racquetball courts, one squash court, martial arts, aerobics and sport club rooms, outdoor equipment rental, and adaptive weight equipment. Outdoor facilities include a lighted, multiuse complex with four fields, a .43-mile perimeter walking and jogging path, four sand volleyball courts, 14 tennis courts, and a 70-meter swimming pool with two movable bulkheads that allow the pool to be divided into three parts for simultaneous multiuse programming.

For more information, call 480/965-8900, stop by for a tour, or visit the Web site at www.asu.edu/src.

ARIZONA PREVENTION RESOURCE CENTER

The Arizona Prevention Resource Center (APRC) is a partnership among ASU, the Governor's Division of Drug Policy, the Arizona Department of Education, and the Arizona Department of Health Services.

The APRC serves as a centralized source for individuals, schools, and communities throughout Arizona to support, enhance, and initiate programs focused on the prevention of the use of tobacco products and the use and abuse of alcohol and other drugs; gangs and violence; and other areas, such as health promotion, domestic violence, and dropout prevention. The APRC operates in the following program areas:

1. Clearinghouse—provides accurate, timely, and personalized prevention information and materials through in-house library, access to national sources, and linkages between prevention programs in Arizona.
2. Training and Technical Assistance—provides high quality, responsive training and technical assistance for organizations and individuals undertaking prevention programs in local communities and schools; focus is on research-based (promising and proven) practices.
3. Evaluation and Accountability—coordinates and provides leadership for a statewide evaluation strategy for accountability in alcohol and other drug prevention and treatment programs; produces an annual inventory of substance abuse and gang prevention and treatment programs in Arizona; designs and conducts contracted evaluations of community-based prevention programs; promotes accountability in all aspects of APRC operations.
4. Strategic Initiatives and Planning—promotes effective collaboration between prevention and treatment program leadership; broadens the funding base for prevention programs; researches and develops strategies for comprehensive statewide systems and accountability.

STUDENT SERVICES

For more information, call 480/727-2772 or toll-free at 1-800-432-2772, visit the Web site at www.asu.edu/aprc, or write

ARIZONA PREVENTION RESOURCE CENTER
ARIZONA STATE UNIVERSITY
PO BOX 872208
TEMPE AZ 85287-2208

Information can also be obtained by fax, at 480/727-5400, or at 542 East Monroe Street in Phoenix.

The Arizona Drug and Gang Prevention Resource Center (ADGPRC), located with the APRC, provides similar information and technical assistance for communities to help them focus strategically on drug and gang prevention issues.

The ADGPRC can be contacted at 480/727-5015 or toll-free at 1-888-432-2547, or visit the Web site at www.asu.edu/adgprc.

INTERCOLLEGIATE ATHLETICS

The university is a member of the National Collegiate Athletic Association, Division I, and the Pacific-10 Conference. The university has 22 varsity intercollegiate sports and more than 500 participants. Intercollegiate athletics at ASU are governed by a board of faculty, students, and staff under the regulations of the Arizona Board of Regents, the NCAA, the Pacific-10 Conference, and the university. Policies are administered by Intercollegiate Athletics. All athletic grants-in-aid and scholarships are administered in coordination with Intercollegiate Athletics.

RELIGIOUS ACTIVITIES

Various religious centers representing most major religious groups are available near ASU Main and provide students with opportunities to participate in programs of reli-

gious worship and to meet other students through social activities. For more information, call the Campus Interfaith Council at Danforth Chapel, 480/965-3570.

OTHER OPPORTUNITIES FOR STUDENT INVOLVEMENT

Dance. The Department of Dance and Dance Arizona Repertory Theatre, a student touring outreach company, present 12 to 14 faculty- and/or student-directed concerts a year. Interested students should attend open auditions, held at the start of each semester. For more information, call 480/965-5029.

Forensics. The ASU Forensic squad, associated with Pi Kappa Delta national forensic honorary association, travels to trophy tournaments across the country. For more information, call the director of Forensics, at 480/965-5095.

Communication Activities: Performances. Participants write, compile, and perform scripts for presentation in diverse on- and off-campus settings through the Hugh Downs School of Human Communication. For more information, call 480/965-4111.

Music. Performing organizations with the School of Music provide opportunities for involvement and credit, including bands, Lyric Opera Theatre, symphony orchestra, and university choral organizations. For more information, call the School of Music at 480/965-3371.

Theatre. The University Theatre presents four to six faculty-directed productions and eight to 14 student-directed productions a year. Audition information is available from the Department of Theatre, GHALL 232, 480/965-5337.



Sun Devil Stadium on a picture-perfect Saturday for football

Tim Trumble photo

Fees, Deposits, and Other Charges

The Arizona Board of Regents reserves the right to change fees and charges without notice. The latest *Schedule of Classes* usually reflects up-to-date fee amounts. The following fees apply to both credit and noncredit (audit) registrations.

DEFINITIONS

Resident tuition refers to the charge assessed to all resident students who register for classes at ASU. *Nonresident tuition* refers to the charge assessed to nonresident students, as established in Arizona Board of Regents' Policy 4-102.

ACADEMIC YEAR TUITION

The resident and nonresident tuition for fall and spring semesters is shown in the "2001–2002 Resident and Nonresident Tuition" table, on this page. The amounts listed are per semester hour each academic term. For more information on classification for fee status, see "[Residency Classification Policies and Procedures](#)," page 50.

Students registered for seven or more hours are considered full-time for tuition payment purposes. See "Enrollment Verification Guidelines," page 71.

Note: The rate for one hour is charged if the student is registered for only a zero-hour class.

Graduate College Differential Fees. Certain graduate programs assess an additional differential fee. These fees differ according to college and/or program. Contact the program advisor for details on these fees.

Off-Campus and Independent Learning Courses. For information on fees for off-campus and independent learning courses, see "Distance Learning and Technology," page 708.

Summer Sessions Fees. The 2002 registration fee per semester hour is \$126, except for law students. The registration fee per semester hour for law students is \$270. For more information, see "Summer Sessions," page 539, and the *Summer Sessions Bulletin*.

OTHER FEES, DEPOSITS, AND CHARGES

Special Class Fees and Deposits. Certain university classes require payment of fees or deposits for materials, breakage, and rentals. These fees and deposits are listed in the *Schedule of Classes* for each semester.

Student Recreation Complex Fee. All students (except university employees) who take at least one class at ASU Main must pay a mandatory Student Recreation Complex fee. Full-time (seven or more hours) students are charged \$25 per semester. Part-time students pay \$12 per semester, and summer students pay \$12 per semester. See the latest *Schedule of Classes* for more information.

2001–2002 Resident and Nonresident Tuition

Hours	Resident*	Nonresident*
1	\$ 126.00	\$ 428.00
2	252.00	856.00
3	378.00	1,284.00
4	504.00	1,712.00
5	630.00	2,140.00
6	756.00	2,568.00
7	1,206.00	2,996.00
8	1,206.00	3,424.00
9	1,206.00	3,852.00
10	1,206.00	4,280.00
11	1,206.00	4,708.00
12 or more	1,206.00	5,139.00

* Tuition is subject to change for 2002–2003. In addition to tuition, students are charged other fees (e.g., the Student Recreation Complex fee and financial aid trust fee).

Financial Aid Trust Fee. All students must pay a financial aid trust fee. Full-time students (enrolled for seven or more hours) are charged no more than 1 percent of the current tuition. The fee for students enrolled six or fewer hours is half that charged full-time students. The total summer sessions fee does not exceed the amount for a full-time student. Fees collected from students are matched by the State of Arizona and used to create a Financial Aid Trust Fund, from which student grants are awarded under the usual financial aid eligibility criteria used by the ASU Student Financial Assistance office.

Arizona Students' Association (ASA) Fee. The ASA is a nonprofit lobbying organization that represents Arizona's public university students to the Arizona Board of Regents, State Legislature, and U.S. Congress. In 1997, students at the state universities voted to change the mechanism for funding the ASA. A \$1 fee is charged to each student every semester. Any refunds for this fee are provided through the ASA Central Office.

Late Registration. The fee assessed for registrations on or after the first day of each session is \$35. A \$35 late fee is also assessed on registration payments received after the fee payment deadline but processed before the class enrollment purge.

Admission Application. The nonrefundable fee for undergraduate admission or readmission applications to a degree program is \$50. The nonrefundable fee for graduate admission applications to a degree program is \$45. The nonrefundable fee for graduate nondegree applications or applications for readmission to a degree program after a lapse in enrollment is \$15.

FEES, DEPOSITS, AND OTHER CHARGES

Transcripts. The Office of the Registrar releases official transcripts *only upon the written request of the student*. The request must include the following information about the student:

1. name and former name(s);
2. ID number;
3. date of birth;
4. dates of attendance;
5. return address;
6. specific address to mail transcript;
7. signature; and
8. appropriate fees (as described in the text that follows).

The Request for Official Transcript form is available online at www.asu.edu/registrar/forms.

The Office of the Registrar does not issue a transcript if the student has a financial records hold. The student must supply a specific address if the transcript is to be mailed.

The fee for an official transcript for a student not enrolled is \$5 for the first copy. Additional copies ordered at the same time are \$1 each. The fee is \$1 per copy for a student enrolled for a current or future semester.

Unofficial transcripts may be requested in person at the Office of the Registrar, any registrar site, or by mail or fax (480/965-2295) if a signed release is enclosed. There is no charge for an unofficial transcript.

All in-person transcript requests require presentation of photo identification. Requests are not accepted from third parties without a written release from the student. For information on parental access to records, see “Access to Records,” page 78.

Copies of Education Records Other Than ASU Transcripts. For fewer than six pages, there is no charge. For six to 10 pages, the total charge is \$2. For 11 to 15 pages, the total charge is \$3. Copies of additional pages cost \$1 for every five pages copied.

Comprehensive Examination. This fee is paid by all students seeking to establish credit by examination and is \$50 per semester hour.

Private Music Instruction. The fee for one-half hour of instruction weekly is \$60. The fee for one hour of instruction weekly is \$100.

Musical Instrument Rental Charge. The charge for use of university-owned musical instruments is \$25 per semester. Consult the School of Music for specific information.

Binding and Microfilm Fees. The binding fee for a thesis or dissertation is \$17 per copy. This fee is subject to change. Additional charges may be required depending on the size and nature of the document. The dissertation microfilming fee is \$55 and is subject to change.

Sun Card/ID Card. The replacement fee is \$15.

Parking Decals. A parking decal must be purchased, in person or by using the Sun Dial/Park Smart touch-tone telephone system 480/350-1500, for motor vehicles parked on

campus except in areas where metered parking or visitor lots are available. Photo identification is required. Annual decals for controlled access parking start at \$50. Decals are sold on a first-come, first-served basis. For more decal sales information, call 480/965-6124, or visit the Web site at www.asu.edu/dps/pts.

Each vehicle registered at ASU Parking and Transit Services must comply with Arizona emission standards (A.R.S. § 15-1627G) during the entire registration period. The fee for this emission inspection is \$25 per vehicle.

Everyone is encouraged to support travel reduction measures by using mass transit, the university shuttle bus, carpooling, bicycling, or walking whenever possible.

Parking Violations. Due to a high demand for parking, regulations are strictly enforced. Fines range from \$10 to \$100. Appeals to parking citations may be filed within 14 calendar days to Parking and Transit Services and, after payment, may be further appealed to the Parking Citation Appeals Board. Unpaid parking citations are delinquent financial obligations subject to the provisions of the “[Delinquent Financial Obligations](#),” page 50. The vehicle of any person owing three or more unpaid parking citations or \$100 in unpaid parking citations is subject to impoundment. An \$85 minimum fee is assessed if impoundment is required. For more information, call 480/965-4527.

Returned Checks. Checks returned by a bank are assessed a \$15 service charge with repayment needed within five business days of notification. A second \$12 service charge is made if the returned check is not repaid within this five-day period. Repayment of a returned check must typically be in cash.

The university may have arrangements with its bank to redeposit automatically for a second time checks for which there are insufficient funds. No service charge is assessed by ASU until a check is returned to ASU; however, the payer may be assessed a service charge by the payer’s financial institution.

Students paying fees with a check that is subsequently not honored by a financial institution are subject to involuntary withdrawal from the university if repayment is not made. All students involuntarily withdrawn are charged according to the standard refund schedule as of the involuntary withdrawal date, as determined by the university.

On-Campus Housing. The cost of ASU Main housing varies. In 2000–2001 the typical cost was \$3,100 per academic year. Meal plans are purchased separately. For more information, see “Residential Life,” page 39, or call 480/965-3515.

TRANSPORTATION

To reduce air pollution and traffic congestion, students are encouraged to travel to and from campus by means other than automobile and to reduce transportation needs through careful class scheduling. Nearby on-campus parking is limited and tightly controlled.

Alternative transportation modes are used by thousands of ASU students. ASU is served by a regional transit service; monthly and reduced-fare semester passes are available on campus. In addition, an inexpensive express shuttle

runs between ASU Main in Tempe and ASU West in north-west Phoenix; another shuttle runs among ASU Main, Mesa Community College, and ASU East in Mesa; and a Free Local Area Shuttle (FLASH) is available around the periphery of ASU Main. A free Neighborhood Flash also is available for the ASU community connecting the Escalante and University Heights neighborhoods with the Riverside/Sunset and Lindon Park neighborhoods through downtown Tempe and ASU Main.

Bicycle ridership at ASU is estimated to be more than 15,000 students daily. Ample racks in many locations enable the parking and securing of bicycles. Bicycle use is restricted only in those areas of campus where pedestrian traffic is sufficiently heavy to make such use a hazard. The Bike Co-op Repair Service provides assistance with bicycle maintenance.

For more information on commute alternatives, call 480/965-1072.

PAYMENT METHODS AND DEADLINES

SunDial. The SunDial system, at 480/350-1500, allows students to register for classes, to drop and add classes, and to make fee payment from any touch-tone phone. Students paying fees with available financial aid, debit cards, Visa, MasterCard, or Discover must use the SunDial system. Refer to the *Schedule of Classes* for available dates and times and more information about the SunDial system.

Debit/Credit Cards. ASU accepts debit cards, Visa, MasterCard, and Discover. Debit/credit card payments through SunDial are processed online with the bank. See the *Schedule of Classes* for information about using debit/credit cards by mail or campus payment boxes.

Checks. Checks payable for the exact amount of charges and without a restrictive endorsement are generally acceptable, except for students on check-use suspension due to a previously returned check.

Financial Aid. Students receiving financial aid may use their expected aid, except Federal Work-Study, to pay university charges through the SunDial phone system (480/350-1500). If the balance owed exceeds the financial aid, it must be paid with a check or credit card by the fee payment deadline date.

Veterans Deferred Payment. The Veterans Readjustment Assistance Act allows veterans to apply for deferred payment of fees, books, materials, and supplies required for courses. To assist eligible students, a Veteran Promissory Note may be issued deferring payment during their first semester of benefits. Contact the Veterans Services Section at SSV 148, or call 480/965-7723 for information on meeting the necessary requirements. The university may deny this privilege if the student has had previous delinquent obligations.

Payment Deadlines. Fees must be paid by the deadline dates and times indicated or the registration is voided. A fee payment deadline is printed on all Schedule/Billing Statements and in the *Schedule of Classes*.

REFUNDS

Academic Year Resident and Nonresident Tuition. Students withdrawing from school or individual classes receive a refund as described in the “Fall and Spring Withdrawal Refunds” table:

Fall and Spring Withdrawal Refunds	
Withdrawal Date	Refund
Before first day of the semester	100%*
One through 7 calendar days	80%
8 through 14 calendar days	60%
15 through 21 calendar days	40%
22 through 28 calendar days	20%
After the 28th calendar day	No refund

* A \$35 processing fee is subtracted per session.

The university provides a prorated refund for first-time students receiving financial aid; therefore, the refund schedule is the minimum amount refundable to these students.

Withdrawal occurs on the calendar day that withdrawal is requested, either in person at a registrar site or by phone using SunDial. Students withdrawing for medical or other extenuating circumstances must contact their college for refunds that may be available under these circumstances.

Summer Sessions Fees. Students withdrawing from any summer session or individual classes receive a refund as described in the “Summer Sessions Withdrawal Refunds” table. *Refunds are based on the session days and not the class meeting dates for any particular class.*

Summer Sessions Withdrawal Refunds	
Withdrawal Date	Refund
Before first day of session	100%*
First and second days of session	80%
Third day of session	60%
Fourth day of session	40%
Fifth day of session	20%
After fifth day of session	No refund

* A \$35 processing fee is subtracted per session.

Special Class Fees and Deposits. After the first week of classes, refunds, if any, are determined only by the department or school offering the course. Refund determination is based on withdrawal date, type of activity, and costs already assessed by the department or school.

Private Music Instruction. If a student must drop a music course because of illness or other emergency beyond the student’s control, not more than half of the instruction charge may be refunded, as determined by the School of Music.

Late Registration. This fee is not refundable.

Student Recreation Complex Fee. This fee is refundable only upon complete withdrawal, in percentage increments per the refund schedule.

FEES, DEPOSITS, AND OTHER CHARGES

Financial Aid Trust Fee. This fee is not refundable.

Official Transcripts. Overpayments by mail of \$5 or less are refunded only by specific request.

Graduation Fee. Overpayments by mail of \$5 or less are refunded only by specific request.

Residence Halls. Refunds to students departing from ASU Main residence halls before the end of the academic year are computed on the following basis.

Charges and Deposits. Housing payments and deposits are refunded as prescribed by the Residential Life License Agreement that students sign when they apply for residence hall accommodations. Students should refer to the Residential Life Schedule of Charges and Deadlines for specific information on refunds.

Other University Charges. Other university charges are normally not refundable, except for individual circumstances.

Payment of Refunds. Refunds require student identification and are made payable only to the student for the net amounts due the university. When the last day of a refund period falls on a weekend or holiday, a withdrawal form must be submitted to one of the registrar sites during operating hours on the workday preceding the weekend or holiday. Refunds are normally paid by check, payable to the student, and are mailed to the student's local address.

Parking Decal Refunds. Prorated refunds are available through the last business day in April.

Forfeiture of Refunds. Refunds are subject to forfeiture unless obtained within 90 days of the last class day of the semester for which the fees were originally paid.

DELINQUENT FINANCIAL OBLIGATIONS

Arizona Board of Regents' Policy 4-103B, which applies to ASU, states the following:

1. Each university shall establish procedures to collect outstanding obligations owed by students and former students.
2. Each university shall maintain a system to record all delinquent financial obligations owed to that university by students and former students.
3. Students with delinquent obligations shall not be allowed to register for classes, purchase parking decals, receive cash refunds, or obtain transcripts, diplomas, or certificates of program completion. The university may allow students to register for classes, obtain transcripts, diplomas, or certificates of program completion if the delinquent obligation is \$25 or less.
4. Unpaid obligations shall remain a matter of record until students and former students satisfy their financial obligations or until satisfactory arrangements for repayment are made with the university.
5. The university may write off delinquent financial obligations of students according to accepted accounting principles and after appropriate collection efforts. No such write-off shall operate to relieve the student of liability for the obligation nor shall such write-off entitle the student to release of any transcripts, diplomas, certificates of program completion, or to register for further university classes until such obligation is actually paid.

6. Each university shall include this policy in its bulletin or catalog.

A late charge of \$12 is assessed for any balances due the university not paid within 30 days of the initial due date, with a second \$12 late charge assessed if these amounts are not paid within 30 days of the first late charge, and a third \$12 late charge is assessed if these charges are not paid within 60 days of the first late charge. Procedures to be followed for disputed charges are available from the Accounts Receivable section of Student Business Services, located in ADM A109.

RESIDENCY CLASSIFICATION POLICIES AND PROCEDURES

The Arizona Board of Regents is required by law to establish uniform guidelines and criteria for classifying students' residency to determine those students who must pay nonresident tuition. The following is a summary of the general guidelines used to determine residency for tuition purposes. All of the evidence is weighed under the presumption that a nonresident student's presence in Arizona is primarily for the purpose of education and not to establish domicile and that decisions of an individual about the intent to establish domicile are generally made after the completion of an education and not before.

To obtain resident status for tuition purposes, independent students must establish their residence in Arizona at least one year before the last day of regular registration for the semester in which they propose to attend ASU. Arizona residence is generally established when individuals are physically present in the state with the intention of making Arizona their permanent home.

Mere physical presence in Arizona for one year does not automatically establish residency for tuition purposes. Adult students and emancipated minors must combine physical presence in Arizona for one year with objective evidence of their intent to make Arizona their permanent home. If these steps are delayed, the one-year period is extended until both presence and intent have been demonstrated for one full year. In addition to physical presence and intent, the student must demonstrate financial independence for the two tax years immediately preceding the request for resident classification. The student must demonstrate objective evidence of self-support and that he or she was not claimed as an income tax deduction by his or her parents or any other individual for two years. An adult student is defined as being at least 18 years of age at the beginning of the domicile year. For a complete definition of an emancipated minor, refer to the Arizona Board of Regents' residency classification policies, available in the Residency Classification Section, SSV 146.

No person is considered to have gained or lost resident status merely by attending an out-of-state educational institution.

Aliens. Students who are aliens are subject to the same requirements for resident status as are U.S. citizens. In establishing domicile, aliens must not hold a visa that prohibits establishing domicile in Arizona.

Refugees. Refugees may qualify as resident students by virtue of having been granted refugee status in accordance with all applicable laws of the United States and having met all other requirements for residence in Arizona.

Exceptions to the General Residency Rule

Students may be eligible for resident status for tuition purposes if they can meet one of the following criteria on or before the last day of regular registration.

Legal Dependents. If a student and his or her parents are domiciled in Arizona and have not met the one-year residency requirement but the parents are entitled to claim the student as a dependent for federal and state tax purposes, the student may be eligible for resident status for tuition purposes.

Transferred Employees. If students are domiciled in Arizona and have not met the one-year residency requirement but are employees or spouses of employees who have been transferred to Arizona by their employers for employment purposes, the students may be eligible for resident status for tuition purposes.

Members of the Military. If students are not domiciled in Arizona but are members of the U.S. Armed Forces stationed in Arizona or are the spouses or dependent children of a member (as defined in A.R.S. § 43-1001), the students may be eligible for resident status for tuition purposes. If military service is concluded while they are enrolled, students do not lose resident status while they are continuously enrolled in a degree program. If individuals are domiciled in Arizona immediately before becoming members of the U.S. Armed Forces, they do not lose resident status because of their absence while on active duty with the military as long as they maintain Arizona affiliations and file Arizona state tax.

A student who is a member of an Arizona National Guard or Arizona Reserve unit may be eligible for resident status for tuition purposes. A student may also be eligible if he or she has been honorably discharged from the armed forces of the United States, has declared Arizona as his or her legal residence one year before discharge, and has taken the other appropriate actions, including filing an Arizona income tax return. A student who is the spouse or dependent of a member of the armed forces who has claimed Arizona as his or her legal residence and filed Arizona income tax for one year before enrollment may be eligible for resident status for tuition purposes.

Teachers and Classroom Aides. If a student is under contract to teach on a full-time basis or is employed as a full-time non-certified classroom aide at a school within a school district, the student is eligible to pay resident tuition only for courses necessary to complete the requirements for certification by the State Board of Education.

Native Americans. Students who are members of a Native American tribe whose reservation lies both in Arizona and



Welcome Week activities offer many fun ways to get to know fellow freshmen.

Tim Trumble photo

an adjacent state and who are residents of that reservation may be eligible for resident status for tuition purposes.

Procedures for Establishing Resident Status

All students are responsible for obtaining residency classification for tuition purposes before registering and paying their fees. This procedure requires students to complete and file an Arizona residency information form. This form is required of all new and returning students as part of the admission or readmission process. Students classified as nonresidents who believe they may qualify for resident status must file a petition with the Residency Classification Section. This petition must be filed by the last day of regular registration. A student seeking resident status must also file supporting documentation necessary to provide a basis for residency classification (source[s] of support, driver's license, voter's registration, vehicle registration, etc.). Students whose residency petitions are in process at the fee payment deadline are responsible for paying nonresident tuition. However, an appropriate refund is issued if resident status is later granted for that semester.

Any student found to have made a false or misleading statement concerning resident status is subject to dismissal from the university.

Failure to file a timely written petition for reclassification of resident status for tuition purposes constitutes a waiver of the student's right to apply for the given semester. Petition deadlines are published each semester in the *Schedule of Classes*. Extensions to the deadlines are not permitted.

Residency classification is an extremely complex issue. The information presented here is a summary and does not address each individual's situation; therefore, students are encouraged to make a personal visit to the Residency Classification Section to discuss their individual circumstances as soon as possible. Guidelines for determination of residency for tuition purposes are subject to review and change without notice. For more information, call the Residency Classification Section at 480/965-7712, or access the Web site at www.asu.edu/registrar/residency.

Financial Aid

The primary responsibility for financing a college education belongs to students and their families (see the [“2001–2002 Typical Student Budgets” table, page 53](#)). The Student Financial Assistance Office helps students, within the limits of available funds, meet college costs. Students must complete all applications in an accurate and timely manner and notify Student Financial Assistance of any changes in circumstances that may affect eligibility (e.g., loss of parent’s income or change in residency classification). Financial assistance is available as scholarships, grants, loans, and employment. This aid has been made available collectively by the university, alumni, private foundations, civic groups, individuals, and state and federal governments.

To be considered for financial aid, all students must complete the Free Application for Federal Student Aid (FAFSA). This application should be completed in January or early February preceding the academic year the student anticipates attending ASU. The priority date for applying is February 15. Applications completed after this date are processed; however, they are considered late applications. Late applications are less likely to receive federal work-study, grants, and scholarships due to funding limitations.

Additional documentation may be requested to verify application data. Students receive an award notification once their file is complete. Applicants should read carefully all correspondence received.

Students receiving aid are required to meet minimum standards of satisfactory academic progress. In addition to maintaining the minimum GPA defined for good academic

standing, students must complete the hours for which they are funded during the academic year. Failure to meet these standards results in the suspension of aid for subsequent semesters until the deficiency is satisfied.

Students can access personal information regarding financial aid through the SunDial phone system at 480/350-1500 or on the Financial Aid Services Through Technology (FASTT) Web site at www.asu.edu/fa. Students can access the following information:

1. documents still needed to complete a financial aid file;
2. award information; and
3. financial aid forms for printing.

TYPES OF FINANCIAL AID AND MAJOR PROGRAMS

ASU students receive financial aid resources totaling more than \$261 million. There are four categories of financial aid: scholarships, grants, loans, and employment.

Scholarships

There are two sources of scholarships at ASU: university-funded scholarships and private donor scholarships. Many scholarships are offered on the basis of academic merit. However, financial need criteria may also be included in the selection of recipients. Other considerations are GPA, leadership qualities, and community service.



An aerial view of ASU Main campus with Grady Gammage Auditorium prominent in the foreground

Jeff Havir photo

2001–2002 Typical Student Budgets

Item	Dependent			Independent	
	At-Home	On-Campus	Off-Campus	On-Campus	Off-Campus
Room	\$ 1,000	\$ 3,340	\$ 3,900	\$ 3,700	\$ 4,950
Board	1,040	2,076	2,076	2,076	2,076
Personal/Miscellaneous	2,124	2,124	2,124	2,738	2,738
Transportation	1,040	1,040	1,040	1,250	1,250
Total living ¹	\$ 5,204	\$ 8,580	\$ 9,140	\$ 9,764	\$ 11,014
Resident tuition	\$ 2,412	\$ 2,412	\$ 2,412	\$ 2,412	\$ 2,412
Special fees	76	76	76	76	76
Books/supplies	726	726	726	726	726
Resident total	\$ 8,418	\$ 11,794	\$ 12,354	\$ 12,978	\$ 14,228
Additional tuition for nonresidents ²	\$ 7,866	\$ 7,866	\$ 7,866	\$ 7,866	\$ 7,866
Nonresident total	\$ 16,284	\$ 19,660	\$ 20,220	\$ 20,844	\$ 22,094

¹ Loan fees are not included in this amount.

² Amounts of nonresident tuition are shown in the “2001–2002 Resident and Nonresident Tuition” table, page 47.

The Scholarship Office coordinates all scholarship programs. High school students should contact their high school counselors or visit the scholarship Web site at www.asu.edu/fa/scholarships to determine the appropriate process for obtaining a variety of scholarships available to entering freshmen. Other undergraduate students may contact the Scholarship Office or search the Web site for available scholarships. In addition, many academic units provide scholarship funding and select students based on a variety of criteria, which include artistic talent, musical ability, and athletic performance. Students seeking these scholarships should contact the appropriate academic unit directly.

Scholarship Tax Credits. Students may be eligible for either the Hope Scholarship or the Lifetime Learning tax credits. Additional information about these tax credits is available on the Web at sbs.asu.edu.

Consult a personal tax advisor about qualifications for the Hope Scholarship and Lifetime Learning tax credits.

Private Donor Scholarships. Most of these scholarship funds are provided by employers, private individuals, organizations, and corporations. In most cases, the private donor specifies the criteria used by the Scholarship Office to identify candidates for a particular scholarship.

University Scholarships. These scholarships are generally in the value of tuition and/or fees. The largest source for university scholarships is the waiver program authorized by the Arizona Board of Regents. In addition, many scholarships are funded from a general endowment fund. Some of the typical areas targeted for these scholarships are top academic seniors in Arizona high schools, students who demonstrate leadership, students who demonstrate scholastic or scientific abilities, students with disabilities, and nontraditional students.

Grants

Grants are gift assistance from the federal government, the state, or the university that do not have to be repaid.

Federal Pell Grant. Funded by the federal government, the Pell Grant is awarded to students who demonstrate significant financial need. Pell Grant eligibility is determined by the U.S. Department of Education. All students are informed of their eligibility for the grant through the Student Aid Report. The maximum award for the 2001–2002 academic year was \$3,750.

Federal Supplemental Educational Opportunity Grant. SEOG is a federally funded, campus-based program. A limited amount of funds is available through the program. The amount received will depend upon a student’s financial need, the amount of other assistance awarded, and the availability of funds. Maximum grant awards for 2001–2002 were \$1,000.

Leveraging Educational Assistance Partnership (LEAP). This is a three-partner program of federal, state, and university funding. Students with a high financial need may receive this particular form of funding. It is restricted to residents of Arizona. The maximum grant for 2001–2002 was \$1,250.

Student Aid Trust Grant. Provided in partnership between ASU students and the state legislature, these funds are provided primarily to resident, undergraduate or underrepresented students with a high financial need. The maximum grant for 2001–2002 was \$1,500.

University Grant. University grants are generally reserved as the last grant program to be used to resolve a student’s need. Funded by the university, grants are available for both resident and non-resident students. The maximum grant awards for 2001–2002 were \$1,500.

FINANCIAL AID

Loans

Loans are forms of financial assistance available from sources such as the federal government and private lenders that must be repaid and will include any accrued interest.

William D. Ford Direct Student Loan. Through the William D. Ford Direct Student Loan program, the federal government loans money to students based on the university's determination of the student's financial need and cost of education. Repayment begins after the student graduates, leaves school, or drops below half-time enrollment. Under this program there are two loan types: subsidized and unsubsidized. With a subsidized Direct Student Loan, the federal government pays the interest on the loan principal during the student's in-school status, grace, and other authorized periods of deferment.

The school may determine the student to have eligibility for an unsubsidized Direct Student Loan. In this program, the federal government does not pay the interest during the student's in-school status, grace, or other authorized periods of deferment. As the student proceeds through school, interest will accrue and will be added once the student enters repayment. Otherwise, conditions and terms for the two programs are the same.

There is a variable interest rate that is adjusted every July 1. Interest cannot exceed 8.25 percent. In addition, there is a 3 percent loan origination fee deducted from each disbursement. The federal government provides several options for repayment once the student has left school. For students who are considered dependent based on their financial aid application, the following total annual loan limits for subsidized and unsubsidized apply: freshmen may borrow up to \$2,625 per year; sophomores, up to \$3,500 per year; and juniors and seniors, up to \$5,500 per year. For students who are considered independent, the following annual loan limits apply: freshmen may borrow up to \$6,625, of which only \$2,625 can be subsidized; sophomores, up to \$7,500, of which only \$3,500 can be subsidized; and juniors and seniors, up to \$10,500, of which only \$5,500 can be subsidized.

Federal Perkins Loan. The Federal Perkins Loan program is funded by the federal government; the school is the actual lender, and repayments after graduation are made to the university at a 5 percent interest rate. Like the subsidized Student Loan, no interest accrues on the Perkins Loan during the student's in-school status, grace, or other authorized periods of deferment. If funding is available, deferment and cancellation provisions may apply to graduates working in community service, qualifying law enforcement, and teaching occupations. Maximum awards for 2001–2002 were \$3,000.

Parent Loan for Undergraduate Students. Under the Parent Loan for Undergraduate Students (PLUS), parents may borrow money from the federal government on behalf of their dependent students. With this loan, interest is not deferred and repayment begins 45 days after the second disbursement of the loan to the parent. The PLUS approval is based on the parents' credit history. If parents are determined ineligible for a PLUS and students need additional funds, they should contact the Student Financial Assistance

office to determine their eligibility for an unsubsidized Direct Student Loan. There is a variable interest rate adjusted every July 1 that cannot exceed 9 percent. The maximum loan amount is determined by subtracting all other financial aid from the student's cost of education.

Employment

The Student Employment Office provides employment opportunities to students who must work to meet educational expenses or who wish to work because they feel the experience can be a valuable part of their education. Students may choose between hourly and Federal Work-Study programs. The Federal Work-Study programs include community service opportunities.

Federal Work-Study. Funds for this program are provided on a matching basis by the federal government and the university. Students employed under this program receive the same pay rates as other students being employed on campus. In this program, students must demonstrate a financial need.

University Hourly. The university, with its own resources, hires many students on a part-time basis. Although the jobs are similar to those under the Federal Work-Study Program, the university provides the entire amount of the student's wage.

Part-Time Off-Campus. The university receives requests for assistance from many agencies and corporations throughout the area to help them recruit and hire students on a part-time basis. The referral service at the university provides opportunities for students not only to earn funds to support their education, but to gain experience in the areas of their majors or career interests.

Taxability of Financial Aid Programs

Scholarships, grants, fellowships, and stipends (but not loan funds) are taxable income to the recipient, except for the portion of these funds used for tuition, registration, and other university fees, or books, supplies, and equipment required for the courses being taken. Special tax regulations also apply to nonresident alien students and may require withholding of taxes at the time of aid disbursements to these individuals. Information on the taxability of scholarships can be obtained from the following Internal Revenue Service (IRS) publications and forms: *Publication 4—Student's Guide to Federal Income Tax*; *Publication 519—U.S. Tax Guide for Aliens*; *Publication 520—Scholarships and Fellowships*; Form 1040EZ and Instructions—Income Tax Return for Single and Joint Filers with no dependents; and Form 1040NR and Instructions—U.S. Nonresident Alien Income Tax Return.

These publications and forms can be obtained from the IRS at its toll-free number 1-800-829-FORM (3676). These publications and forms can also be accessed online at www.irs.ustreas.gov/prod/forms_pubs.

Classification of Courses

COURSE INFORMATION

Information about all lower- and upper-division courses offered at ASU Main and ASU East appears in the *General Catalog*, available on the Web at www.asu.edu/aad/catalogs. Course information at this Web site is more current than in the printed catalog.

ASU Main and ASU East graduate-level courses are described in the *Graduate Catalog*. ASU West courses are described in the *ASU West Catalog*.

Classes scheduled for the current or upcoming fall or spring semester are listed in the *Schedule of Classes*. Classes scheduled for the summer sessions are listed in the *Summer Sessions Bulletin*. Class schedules are available on the Web at www.asu.edu/registrar/schedule.

COURSE LISTINGS

See “Course Prefix Index,” page 6, for the location of all ASU courses by prefix. See the “Key to Course Listings” diagram, below, for help in understanding listings.

Campus Code. Campus codes are used in the *General Catalog* only for courses in prefixes used by both ASU East and ASU Main. Campus codes are used for all courses offered at ASU Main (M), ASU East (E), and ASU West (W) in the *Schedule of Classes* and the *Summer Sessions Bulletin*.

Semester Offered. In the *General Catalog* and *Graduate Catalog*, the semester offered shows when the academic unit plans to offer the course. Refer to the *Schedule of Classes* and the *Summer Sessions Bulletin* in print or on the Web for the actual course offerings.

Prerequisites and Corequisites. Some requirements, known as prerequisites, must be met *before* registering for a course. Other requirements, called corequisites, must be met

while taking a course. A student registering for a course should be able to show that prerequisites have been met and that corequisites will be met as stated in the catalog or *Schedule of Classes* or must otherwise satisfy the instructor that equivalent preparation has been completed.

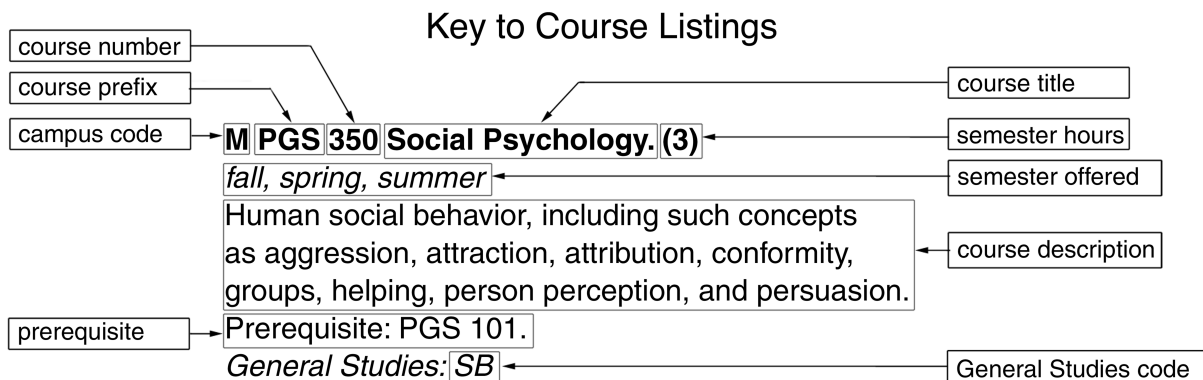
General Studies Code. See “General Studies,” page 83, for an explanation of the General Studies requirement, which applies to students pursuing a bachelor’s degree.

COURSE NUMBERING SYSTEM

Lower-Division Courses. Lower-division courses, numbered from 100 to 299, are designed primarily for freshmen and sophomores. Certain classes are closed to freshmen who lack the designated prerequisites or whose majors are outside the unit offering the course. This information is available in the *General Catalog*, in the *Schedule of Classes*, or from the student’s academic advisor.

Upper-Division Courses. Upper-division courses, numbered from 300 to 499, are designed primarily for juniors and seniors. Prerequisites and other restrictions should be noted before registration. Courses at the 400 level apply to graduate degree requirements for some graduate programs when approved by the Graduate College.

Graduate-Level Courses. Graduate-level courses, numbered from 500 to 799, are designed primarily for graduate students. However, an upper-division undergraduate student may enroll in these courses with the approval of the student’s advisor, the course instructor, the department chair, and the dean of the college in which the course is offered. If the course does not meet an undergraduate graduation requirement, it may be eligible for use in a future graduate program on the same basis as work taken by a nondegree



CLASSIFICATION OF COURSES

graduate student. See “Reserving of Course Credit by Undergraduates,” page 71.

Omnibus Courses

Omnibus numbers are used for courses offered on an experimental or tutorial basis or for courses in which the content is new or periodically changes. Academic units use their prefixes with omnibus course numbers. The general nature of the work required for a particular omnibus course is consistent from unit to unit, but subject matter varies. Omnibus courses are often offered for a variable number of semester hours. See the appropriate academic unit in the *General Catalog* or major in the *Graduate Catalog* for omnibus courses.

Within the catalogs and *Schedules of Classes*, abbreviations are frequently used with a colon to introduce specific omnibus course topics (e.g., IBS 494 ST: Regional Business Environment of Southeast Asia). See the [“Omnibus Course Abbreviations” table below](#).

Omnibus Course Abbreviations

Abbreviation	Title	Number
AP	Applied Project	593, 693, 793
CW	Conference and Workshop	594
FYS	First-Year Seminar	191
FW	Field Work	583, 683, 783
HC	Honors Colloquium	497
P	Practicum	580, 680, 780
PS	Pro-Seminar	498
R	Research	592, 692, 792
RC	Reading and Conference	590, 690, 790
RM	Research Methods	500, 600, 700
S	Seminar	591, 691, 791
ST	Special Topics	194, 294, 394, 494, 598

OMNIBUS UNDERGRADUATE COURSES

191 First-Year Seminar. (1–3)

Small course emphasizing student-faculty discussion/interaction. Strongly recommended for first-year students. Must have taken 25 or fewer semester hours. Consulting an academic advisor before enrolling is recommended.

194, 294, 394, 494 Special Topics. (1–4)

Covers topics of immediate or special interest to a faculty member and students.

484 Internship. (1–12)

Structured practical experience following a contract or plan, supervised by faculty and practitioners.

498 Pro-Seminar. (1–7)

Small-group study and research for advanced students within their majors. Major status in the department or instructor approval is required.

499 Individualized Instruction. (1–3)

Provides an opportunity for original study or investigation in the major or field of specialization on an individual and more autonomous basis. Neither a substitute for a catalog course nor a means of taking a catalog course on an individual basis. Requires application well in advance of regular registration with the student’s advisor, the advisor’s signature, and approval by both the instructor with whom the student will work and the chair of the department offering the course. This

course may be taken only by outstanding senior students who have completed at least one semester in residence and who have a cumulative GPA of 3.00 or higher in the major or field of specialization. A special class fee may be required.

First-Year Seminar. The First-Year Seminar series is specifically designed to meet the needs of the first-year student. Faculty volunteer to direct the seminars and choose course topics according to their own interests and areas of specialization. Class size is restricted so that, early in their college careers, students may interact directly with some of the best faculty the university has to offer.

Honors Courses. The courses listed as 298 and 492 Honors Directed Study, 493 Honors Thesis, 497 Honors Colloquium, and all courses with the HON prefix are reserved for students in the Barrett Honors College. These courses range from one to six semester hours. Consulting with an honors advisor before enrolling is recommended.

OMNIBUS GRADUATE COURSES

500, 600, 700 Research Methods. (1–12)

Course on research methods in a specific discipline.

580, 680, 780 Practicum. (1–12)

Structured practical experience in a professional program, supervised by a practitioner and/or faculty member with whom the student works closely.

583, 683, 783 Field Work. (1–12)

Structured, supervised field experience in a field science or other discipline requiring experience in field techniques.

584, 684, 784 Internship. (1–12)

Structured practical experience following a contract or plan, supervised by faculty and practitioners.

590, 690, 790 Reading and Conference. (1–12)

Independent study in which a student meets regularly with a faculty member to discuss assignments. Course may include such assignments as intensive reading in a specialized area, writing synthesis of literature on a specified topic, writing literature review of a topic.

591, 691, 791 Seminar. (1–12)

A small class emphasizing discussion, presentations by students, and written research papers.

592, 692 Research. (1–12)

Independent study in which a student, under supervision of a faculty member, conducts research that is expected to lead to a specific project such as a thesis or dissertation, report, or publication. Assignments might include data collection, experimental work, data analysis, or preparation of a manuscript.

593, 693, 793 Applied Project. (1–12)

Preparation of a supervised applied project that is a graduation requirement in some professional majors.

594 Conference and Workshop. (1–12)

Topical instruction, usually in compressed format, leading to academic credit. Often offered off campus to groups of professionals.

595, 695, 795 Continuing Registration. (1)

Used in situations where registration is necessary but where credit is not needed. Replaces arbitrary enrollment in reading and conference, research, thesis, dissertation, etc. Used by students when taking comprehensive examinations, defending thesis or dissertation, or fulfilling the continuous enrollment requirement in doctoral programs. Credit is not awarded, and no grade is assigned.

598 Special Topics. (1–4)

Topical courses not offered in regular course rotation—e.g., new courses not in the catalog, courses by visiting faculty, courses on timely topics, highly specialized courses responding to unique student demand.

599 Thesis. (1–12)

Supervised research focused on preparation of thesis, including literature review, research, data collection and analysis, and writing.

792 Research. (1–15)

Independent study in which a student, under the supervision of a faculty member, conducts research that is expected to lead to a specific project such as a dissertation, report, or publication. Assignments might include data collection, experimental work, data analysis, or preparation of a manuscript.

799 Dissertation. (1–15)

Supervised research focused on preparation of dissertation, including literature review, research, data collection and analysis, and writing.

The preceding courses are described in announcements of the Graduate College and are also available in the respective departments. Under special circumstances, arrangements may be made at the dean’s request, through the approval of the senior vice president and provost, to increase the standard semester hours of credit.

Visiting Student Program. The numbers 597, 697, and 797 in the LAW prefix have been reserved for the Visiting Student Program in the College of Law.

SPECIALIZED PREFIXES

Elementary Education Program Courses. Some elementary education methodology courses use the prefix EDB for purposes of registration. These courses are reserved for students admitted to professional programs. EDB courses are converted to permanent ASU education courses (with other prefixes) following the drop-add period, as determined by the registrar’s calendar.

Graduate College Courses. Courses with the prefix GRD numbered 791 are reserved for doctoral students participating in the Preparing Future Faculty (PFF) program administered by the Graduate College. PFF students are required to take one semester hour for each of the semesters they are enrolled in the program. Students enroll for the first-year exploratory phase. Those accepted into the second-year participatory phase enroll for one semester hour each semester.

International Program Courses. Courses with the prefix IPO numbered 495 and 595 are reserved for International Programs study abroad and exchange programs. For most programs, participating students register for 18 semester hours. Following completion of an international program, undergraduate students receive credit for the study completed, with a minimum of 12 semester hours and a maximum of 18 semester hours, graduates with a minimum of six semester hours and a maximum of 12 semester hours.

IPO courses numbered 495 and 595 are converted to ASU credit for recording courses taken abroad.

IPO courses numbered 494 and 598 may be taken for one semester hour. Students register for these courses under the title “Study Abroad.” At the conclusion of the program and the transfer of overseas courses to the students’ ASU records, a grade of “Y” is entered for the course.

For some special international programs, students register and receive credit for fewer semester hours.



Downtown Phoenix

Tim Trumble photo

Undergraduate Enrollment

Arizona State University shares with other colleges and universities a tradition of service and academic excellence that is hundreds of years old. Its purpose is the exchange of knowledge and the pursuit of wisdom. ASU is committed to providing a setting where faculty and students are challenged to exchange ideas and information within an atmosphere of intellectual honesty.

The university offers its students unique opportunities to enjoy both a rich cultural heritage and a diverse student population. Anyone giving evidence of suitable preparation, by way of acceptable academic credentials, is welcome to the university without regard to race, religious creed, or national origin.

Under the constitution and the laws of the State of Arizona, jurisdiction over ASU has been vested in the Arizona Board of Regents. The regents, in turn, grant broad legal authority to the president, the administration, and the faculty to regulate student life within reasonable limits.

By enrolling, a student voluntarily assumes certain obligations of conduct and performance. These obligations include acting with honesty, integrity, and fairness in all campus and community activities. They also include avoiding certain behaviors, such as: the irresponsible use of alcohol; the use, possession, or distribution of illegal drugs; and verbal or physical assaults. Should a student intentionally or inadvertently become involved in questionable campus-related actions or activities, the university will investigate the circumstances and will enforce its standards of conduct through prescribed procedures contained in the *Student Code of Conduct*.

The primary purpose for the *Student Code of Conduct* is to set forth the standards of conduct expected of students who choose to join the university community. Students and student organizations are expected to become familiar with and adhere to this code. Violations of the *Student Code of Conduct* will result in university disciplinary action being taken and appropriate sanctions being imposed for the misconduct. Copies of the *Student Code of Conduct* are available in the Office of Student Life, SSV 263.

The university further reserves the right to take necessary and appropriate action to protect the safety and welfare of the campus community and will cooperate with appropriate law enforcement agencies in their efforts to ensure a safe and secure environment.

STUDENT SERVICES AT ASU

Arizona State University is a richly diverse academic setting with more than 49,000 students. The ASU student may be a traditional 18- to 24-year-old, a recent high school graduate, a community college transfer, someone returning to college to pursue a degree, or a professional studying for an advanced degree or career change. The ASU student may live in residence halls, in on-campus housing for sororities or fraternities, or in one of the many communities in the

metropolitan Phoenix area. Each of the 50 states and more than 100 countries have students enrolled at ASU.

The university is organized into several distinct administrative areas. Student Affairs, one of these areas, is responsible for the delivery of a variety of services and developmental programs in support of students' educational pursuits. These programs and services are based upon human development research that advocates that a person develop culturally, emotionally, intellectually, morally, physically, psychologically, socially, and spiritually.

Special attention is given not only to the recruitment of a high-achieving, culturally diverse student body, but also to the creation of an energetic campus environment that both catalyzes the mature development and advances the academic endeavors of students.

Enrollment services to students begin with recruitment, admissions, student financial assistance, on-campus housing, and registration programs. Student Affairs encourages students to explore the facilities, services, and human resources available. ASU departments guiding students in their educational experience include Career Services, Counseling and Consultation, the Memorial Union, Recreational Sports, Residential Life, Student Development, the Student Health and Wellness Center, Student Life, and Student Media. Each of these areas provides specialized learning opportunities, contributing to an environment that fosters both personal and academic growth.

Undergraduate Admission

Arizona State University welcomes an application for admission from any individual seeking to benefit from the university's broad spectrum of educational programs and services.

For information and application materials, prospective students may call 480/965-7788, access the Web site at www.asu.edu/admissions, or write

UNDERGRADUATE ADMISSIONS
ARIZONA STATE UNIVERSITY
PO BOX 870112
TEMPE AZ 85287-0112

Undergraduate Admissions offers tours of ASU, University Information Sessions, and admission appointments Monday through Friday (except days that are official university holidays). For more information, call 480/727-7013.

Requests for specific information relating to academic programs or student services should be addressed to the appropriate department, school, division, or college.

Admission Procedures for Freshman and Transfer Applicants

Individuals interested in admission to an undergraduate program at ASU need to have the following items on file at Undergraduate Admissions (non-U.S. citizens should see

[“International Student Admissions,” page 63](#), for additional requirements): the required application, fee, official transcripts, and test scores.

Application for Admission. Prospective students must complete and sign the Application for Undergraduate Admission. As with other state-supported colleges and universities, ASU distinguishes between resident and nonresident students with regard to tuition. Residents of Arizona are required to provide residency information, which is part of the admission application. Any student who does not provide residency information is classified as a nonresident for tuition purposes. For more information, call the Residency Classification Office at 480/965-7712.

Students who are admitted for a specific semester and do not enroll must submit a new application (and application fee for nonresident applicants) if they wish to apply for a subsequent semester. All documents are destroyed one year after the semester for which the student has applied if the student is not enrolled in a degree program. Any misrepresentation or falsification on the admission application, including failure to report any college or university attendance, is cause for cancellation of enrollment and any credits earned.

Application Fee. All applicants applying as nonresidents or residing outside Arizona must submit a \$50 nonrefundable application fee.

Official Transcripts. Applicants are responsible for requesting transcripts from each educational institution attended. Official transcripts must be *mailed directly to Undergraduate Admissions by the records office of the issuing institution(s)*. ASU does not accept transcripts sent or carried by hand by the applicants themselves or transmitted by facsimile (fax) machine. High school transcripts must show GPA and date of graduation. ASU requires an English translation of all foreign language transcripts.

ACT or SAT. See “Freshman Applicants,” on this page, to determine which test scores ASU requires. Undergraduate Admissions may investigate any test score that is inconsistent with a student’s academic record or previous scores.

A report of the test scores should be sent to Undergraduate Admissions directly from

ACT
PO BOX 168
IOWA CITY IA 52243-0168

or the

COLLEGE BOARD ADMISSIONS TESTING PROGRAM
PO BOX 592-R
PRINCETON NJ 08542-0590

Application Time Line. ASU urges applicants to have their materials sent as soon as possible to enable university officials to make an early decision concerning the applicant’s admission and to permit the student to take part in preregistration and orientation. Applicants should allow four weeks after all necessary items are received for an admission decision to be made.

Early Notification Date. Applicants whose files are complete (all necessary documentation has been received) by November 1 receive notification by December 1. Applicants whose files are complete by December 1 receive notification by January 15.

Admission Before Receipt of Final Transcript. Admission may be granted to high school seniors who submit a six-semester or seven-semester transcript that shows academic quality or rank in class in keeping with admission standards and who complete the steps in the undergraduate admission procedures. Admission is official when verification of high school graduation showing the final GPA and the date of graduation has been received in the mail by Undergraduate Admissions directly from the high school. Final transcripts must be received a minimum of 45 days in advance of the start of the semester. An admission may be canceled if the final verification shows that the applicant has not met the university requirements for admission or that more than two deficiencies remain.

Transfer applicants enrolled in other colleges and universities may be considered for admission on the basis of meeting all admissions requirements, except for a final transcript of work in progress. This final transcript must be sent to Undergraduate Admissions directly from the issuing institution immediately after the work in progress has been completed. Transcripts carried by hand are not accepted. *Admission is official only after the final transcript has been received showing that the applicant has met the university admission requirements.* In the event the applicant does not qualify or has falsified application documents, admission and registration are canceled, and any registration fees paid are returned.

Undergraduate Admission Standards

The Arizona Board of Regents establishes undergraduate admission standards for the university in general. *Particular colleges, divisions, schools, or departments within the university may establish stricter standards, which are given in the respective sections of the catalog and should be noted by students planning to enroll in any of these programs.*

Freshman Applicants

Undergraduate Admissions requires freshman applicants’ official high school records. To be eligible for admission to ASU, a freshman must have graduated from a recognized high school with satisfactory scholarship defined as meeting both the general aptitude and basic competency requirements shown in the [“Basic Competency Requirements” table, page 60](#), and the [“General Aptitude Requirements for Freshmen” table, page 61](#).

Applicants with a maximum of one deficiency in no more than two competency areas—provided the competency areas are not both math and science—may be admitted with conditions subject to removing the deficiencies within two calendar years of university enrollment. See [“Meeting Basic Competencies,” page 76](#), for an explanation of procedures to meet these competencies.

If the applicant is unable to meet these specific admission requirements, it is possible to file a letter of appeal and three letters of recommendation with the Undergraduate Admissions Board:

UNDERGRADUATE ENROLLMENT

Basic Competency Requirements

High School Courses	Test Scores	College Courses
English		
Four years high school: English composition/literature-based	<i>or</i> Minimum test score: ACT English—21 or SAT I verbal—530	<i>or</i> One transferable three-semester-hour college-level course in English composition
Fine Arts		
One unit of fine arts or a combination of two semesters of fine arts	<i>or</i> NA	<i>or</i> One transferable three-semester-hour college-level fine arts course
Foreign Language		
Two years of the same foreign language	<i>or</i> NA	<i>or</i> One year of transferable college study in the same foreign language
Laboratory Science		
Three years high school, one each from three of the following: biology, chemistry, earth science, integrated sciences, or physics. An advanced-level course may be substituted for one subject area.	<i>or</i> Two years high school lab science (biology, chemistry, earth science, physics) plus minimum SAT II: subject test score on one of the following: Biology Achievement—590 Chemistry Achievement—600 Physics Achievement—620 ACT Science Reasoning—20 The test score may not be from any subject from which high school credit was earned.	<i>or</i> Three transferable four-semester-hour college-level lab science courses in different subject areas. An advanced-level course may be substituted for one subject area.
Mathematics		
Four years high school: one year Algebra I, one year Geometry, one year Algebra II, and one year advanced mathematics	<i>or</i> Minimum test score: ACT Math—24 or SAT I Math—540	<i>or</i> One transferable three-semester-hour college-level course in mathematics for which Algebra II is a prerequisite
Social Science		
Complete both A and B.	<i>or</i> Minimum SAT II: subject test score on American History and Social Studies Achievement—560	<i>or</i> One transferable three-semester-hour college-level American history course
A. One year high school American history	Minimum SAT II: subject score on World History Achievement—580	One transferable three-semester-hour college-level social science course
B. One year high school social science (e.g., anthropology, European history, geography, government, world history)		

UNDERGRADUATE ADMISSIONS BOARD
ARIZONA STATE UNIVERSITY
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TEMPE AZ 85287-0112

The decision of the board is final and any conditions set by the board for future admission supersede all other admission criteria or exceptions. The applicant must be able to meet at least one of the following criteria to be considered for appeal:

1. an upward grade trend during the high school career or an upward grade trend during the senior year;
2. positive recommendations from secondary school administrators, faculty, or counselors based on considerations such as academic potential, work experience, and leadership ability;

3. an average score of 50 or greater on the General Education Development (GED) examination; or
4. completion of at least 12 semester hours of college freshman-level academic studies (at a community college or at a university or both) with a GPA of 2.50 or higher on a 4.00 = A scale in courses in English, social sciences, mathematics, physical or natural sciences, foreign languages, fine arts, or the humanities.

Transfer Applicants

Transfer applicants must submit official academic records from all colleges and universities attended. Transfer applicants under the age of 22 who have not completed an Arizona General Education Curriculum (AGEC) or associate's degree or higher must submit official high school records and meet basic competency requirements. Students who

General Aptitude Requirements for Freshmen

Residency Classification	Class Rank	Composite Score					
		ACT		SAT		GPA (4.00 = A) ¹	
Arizona residents ²	top quarter	<i>or</i>	22	<i>or</i>	1040	<i>or</i>	3.00 competency GPA
Nonresidents ³	top quarter	<i>or</i>	24	<i>or</i>	1110	<i>or</i>	3.00 competency GPA

¹ The GPA is calculated on courses that are used to fulfill competency requirements.
² Resident freshmen who carry a competency GPA from 2.50 to 2.99 or who rank in the top 26–50% of the graduating high school class may be admitted with conditions.
³ All nonresident freshmen who believe they have had a strong high school background and who rank in the top 26–50% of their graduating classes or who carry a competency GPA from 2.50 to 2.99 may apply and are considered on a case-by-case basis. Based on the review, the applicants may be admitted with conditions, deferred until additional course work is completed, or denied.

have not completed first-semester freshman composition from a regionally accredited institution must also submit official SAT or ACT test scores.

Arizona Applicants. An Arizona applicant for transfer admission must have a cumulative GPA of 2.00 (4.00 = A) or higher in all work undertaken at previous institutions of higher learning. A minimum of 24 college or university transferable semester hours must have been earned to be considered a transfer applicant.

Arizona transfer applicants must have the respective minimum GPAs to be admitted to the professional programs in the following areas: computer science—2.50; construction—2.25; economics—2.50; engineering—2.50; and technology—2.25. Other academic units may have different GPA requirements to enroll in junior- or senior-level courses.

Nonresident Applicants. A non-Arizona applicant for transfer admission must have a cumulative GPA of 2.50 or higher on a 4.00 = A scale in all work undertaken at previous institutions of higher learning. Applicants who have at least a 2.00 on a 4.00 = A scale and who believe that they have a strong academic record are considered on a case-by-case basis.

Transfer Credit

Credit is awarded for traditional course work successfully completed at institutions of higher learning as indicated by ASU and the Arizona Board of Regents. *Whether the specific credits can be applied toward a degree depends on the requirements of the department, division, school, or college in which the student is enrolled.* There are several qualifications:

1. Transfer credit is not given for courses in which the lowest passing grade (“D”) or a failing grade was received.
2. While some courses successfully completed but evaluated on nontraditional grading systems (e.g., pass/fail) may be acceptable for transfer, colleges in the university may not accept such credits to fulfill graduation requirements.
3. Grades and honor points earned at other colleges and universities are considered for admission but are not

included in computing the student’s cumulative GPA at ASU.

The following types of credits cannot be transferred to ASU:

1. credits awarded by postsecondary institutions in the United States that lack candidate status or accreditation by a regional accrediting association;
2. credits awarded by postsecondary institutions for life experience;
3. credits awarded by postsecondary institutions for courses taken at noncollegiate institutions (e.g., governmental agencies, corporations, industrial firms);
4. credits awarded by postsecondary institutions for noncredit courses, workshops, and seminars offered by other postsecondary institutions as part of continuing education programs; and
5. credit for active service or courses that were taken through the military.

Acceptable academic credits earned at other institutions that are based on a different unit of credit than the one prescribed by the Arizona Board of Regents are subject to conversion before being transferred to ASU. Once a transfer course equivalency is determined, it stands unless the student changes majors and the course is required by the new major.

Veterans Exception. By Arizona statute, no failing grades received by a veteran at an Arizona university or community college before military service may be considered when determining admissibility. This exception applies only to veterans who

1. are honorably discharged;
2. have served in the armed forces of the United States for a minimum of two years; and
3. have previously enrolled at a university or community college in Arizona.

Military service records must be submitted, including form DD 214.

Community Colleges. A maximum of 64 semester hours are accepted as lower-division credit when transferred from community, junior, or two-year colleges.

UNDERGRADUATE ENROLLMENT

General Aptitude Requirements for College Transfers¹

Residency Classification	Transferable Semester Hours	GPA (4.00 = A)	Materials Required
Arizona residents	1–23	2.00 college GPA plus general aptitude requirements for freshman plus competency requirements	Application, college and high school transcripts, and ACT or SAT scores
	24 or more	2.00 college GPA plus competency requirements	Application, college and high school transcripts, and ACT or SAT scores
Nonresidents ²	1–23	2.50 college GPA plus general aptitude requirements for freshman plus competency requirements	Application, college and high school transcripts, and ACT or SAT scores
	24 or more	2.50 college GPA plus competency requirements	Application, college and high school transcripts, and ACT or SAT scores

¹ Students 22 years of age or older and students who have completed an AGEC, an associate's, or a higher degree at the time of enrollment do not need to submit high school transcripts or test scores.

² All nonresident transfers who have earned a 2.00–2.49 cumulative GPA are encouraged to apply and are considered on a case-by-case basis. Based on the review, the applicants may be admitted with conditions, deferred until additional course work is completed, or denied.

Students Attending Arizona Community Colleges. To determine the equivalency of courses offered by Arizona community colleges and courses offered at ASU, a student should refer to the *Course Applicability System* in consultation with an academic advisor. For more information, access the Web site at az.transfer.org/cas.

The *Course Applicability System* addresses only the acceptability of a course, not its applicability to any specific major, thus the need to consult with an advisor. Community college students who plan to transfer to ASU at the end of their first or second years are strongly advised to follow the ASU transfer guides when taking courses to meet the requirements of the curricula they select. ASU transfer guides are available at www.asu.edu/provost/articulation. Provided college attendance has been continuous, students are permitted to follow the degree requirements specified in the ASU catalog in effect at the time they began community college work. See "[Guidelines for Determination of Catalog Year](#)," page 79.

Arizona General Education Curriculum (AGEC)

The Arizona public community colleges and universities have agreed upon a common structure for a general education core. This curriculum provides students attending any Arizona public community college with the opportunity to build a general education program that is transferable to any other state institution without loss of credit. This common agreement is called the Arizona General Education Curriculum (AGEC).

The AGEC is composed of 35 semester hours of lower-division general education course work in which a student may prepare for transfer.

The AGEC has three forms: AGEC-A, AGEC-B, and AGEC-S. Refer to www.az.transfer.org/cas/atass/student/agec.html for a detailed description of each AGEC.

Community colleges are responsible for certifying completion of the AGEC on the official institutional transcripts.

Completion of the appropriate AGEC will fulfill university lower-division general education requirements of the baccalaureate degree with which the AGEC articulates but may not apply to degrees articulated with the Transfer

Guide Pathway TG-XR. Students completing the AGEC will still be required to fulfill lower-division program requirements and prerequisites within their college and major/minor area of study. To complete a degree program most efficiently, students should select courses that concurrently satisfy AGEC and major requirements.

Completion of any AGEC guarantees admission to the university provided that a GPA of 2.00 (for Arizona residents) or 2.50 (for nonresidents) has been achieved. AGEC completion, however, does not guarantee admission to any specific university program. Majors in the professional fields (e.g., architecture, engineering, business, fine/creative arts, or health professions) and sciences have significant prerequisites and/or program requirements that must be completed before a student may be admitted to upper-division course work. Community college students who are undecided about which of the universities they plan to attend or what program of study they intend to pursue are advised to explore educational options while they complete the AGEC. In all cases, students have the responsibility for selecting general education course work that is relevant to the requirements of their intended major and degree.

Students who complete both the AGEC and an approved associate's degree will be assigned junior-class standing by the state universities. Junior-class standing is based on the number of semester credits a student has earned and does not necessarily indicate the remaining number of semester credits needed to complete degree requirements. Course prerequisites, major requirements, and upper-division requirements continue to be specified by each university. Appropriate sequencing of courses and timely completion of course prerequisites are essential to ensure efficient progress toward a baccalaureate degree. Students who have identified the university they plan to attend and/or a major area of study are advised to fulfill requirements and prerequisites identified by these programs through transfer guides and/or curriculum check sheets provided by the state universities. The AGEC does not replace articulation agreements developed to enhance the transfer process between specific institutions, e.g., Associate Transfer Partnership Degrees

(ATP). Nor does the AGEC eliminate the possibility that students who have identified the university they plan to attend and/or a major area of study will follow transfer guides provided by the state universities.

Appeal Procedure. Transfer students who feel they have been unjustly denied credit for courses they have taken may appeal to the standards committee of the colleges in which they have enrolled. This procedure does not apply to community college transfer of credit greater than the 64-hour maximum. The decision of this committee is final.

An applicant for transfer admission whose academic record fails to meet ASU admission standards is denied admission. Such an applicant, however, may write a letter of appeal accompanied by three letters of recommendation to the Undergraduate Admissions Board for reconsideration of his or her application:

UNDERGRADUATE ADMISSIONS BOARD
ARIZONA STATE UNIVERSITY
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TEMPE AZ 85287-0112

To be considered, appeals must be received at least ten days in advance of the board's meeting date. The decision of this board is final and any conditions set by the board for future admissions supersede all other admission criteria or exceptions.

International Student Admissions

To comply with Immigration and Naturalization Services regulations, any student who plans to attend ASU on an F-1 or J-1 visa must

1. have a minimum GPA of 3.00 (4.00 = A) from secondary school course work if a freshman applicant, or have a minimum GPA of 2.50 (4.00 = A) from college or university course work if a transfer applicant;
2. meet basic competency requirements if he or she attended four years of high school in the United States;
3. submit a financial statement not more than six months old from a financial institution assuring adequate resources to support himself or herself while in residence at the university;
4. have all required admissions materials and credentials reach Undergraduate Admissions by May 1 if applying for the fall semester or October 1 if applying for the spring semester (an English translation of all foreign language documents is required);
5. pay a nonrefundable application fee of \$50 in U.S. funds; and
6. meet all appropriate immigration standards and requirements.

Credit from a Foreign Institution. Transfer credits or advanced standing is granted for academic course work completed at foreign tertiary institutions that are either recognized by the home government/Ministry of Education as a degree-awarding institution or attached to a regionally accredited U.S. college or university as a Study Abroad Program. No credit is awarded for English composition courses

completed at foreign institutions (credit may be awarded at the discretion of ASU when the credit was completed in a country whose native language is English). There are no advanced credits for the international affiliation programs overseas unless they comply with this general policy. For more information, call Undergraduate Admissions at 480/965-2688.

Nondegree International Applicants. All students with F-1 and J-1 visas must maintain full-time status while studying in the United States. Undergraduate full-time status is defined as a minimum of 12 semester hours. However, students with F-1 and J-1 visas may be permitted to take a maximum of six semester hours at ASU as a nondegree student while maintaining full-time status at other higher education institutions or in the American English and Culture Program (AECP) at ASU. Approval by the responsible office at the other institution and/or AECP is required to ensure that the student maintains full-time status in compliance with applicable U.S. laws and regulations.

TOEFL. Applicants whose native language is not English (identified by the U.S. Department of State Bureau of Public Affairs) must provide evidence of English language proficiency as indicated by acceptable scores on the Test of English as a Foreign Language (TOEFL) as follows:

The TOEFL requirement for general admission (pre-professional) to the university is 500 (paper-based) or 173 (computer-based). The TOEFL requirement for admission to the professional programs in the College of Engineering and Applied Sciences and the College of Nursing is 550 (paper-based) or 213 (computer-based).

The following exceptions apply to the TOEFL requirement:

1. Applicants who have earned a bachelor's degree from a regionally accredited college or university in the United States are exempt from the TOEFL.
2. Applicants who have completed 48 transferable semester hours at a U.S. college or university—including two semesters (six semester hours) of freshman composition that satisfy the ASU First-Year Composition requirement—with a cumulative GPA of 2.50 or higher are exempt from the TOEFL requirement.
3. Applicants who have completed four years of high school in a U.S. high school may be admitted to ASU without a TOEFL score but are subject to competency and aptitude requirements.
4. Applicants who have completed their junior and senior years of high school in a U.S. high school may be admitted with a minimum SAT verbal score of 550 or an ACT English score of 23 in lieu of a TOEFL score.

American English and Culture Program

The American English and Culture Program (AECP) features an intensive course of study designed for adult international students who desire to become proficient in English as a second language for academic, professional, or personal reasons. Inquiries about the curriculum, fee schedule, and other topics should be addressed to

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AMERICAN ENGLISH AND CULTURE PROGRAM
ARIZONA STATE UNIVERSITY
PO BOX 873504
TEMPE AZ 85287-3504

Acceptance into the AECF is separate from admission to the university. For more information, see [“American English and Culture Program,” page 709.](#)

Applicants with Disabilities

Some classroom accommodations, such as Braille, audio tapes, interpreting services, enlarged print, and lab material conversions, may require an extended preparation time (i.e., one semester). For this reason, applicants with disabilities are encouraged to contact Disability Resources for Students (DRS) upon application to the university to request information regarding disability documentation/eligibility requirements and deadlines to ensure accommodations for the beginning of the semester. (If students miss DRS deadlines, DRS attempts to provide, but cannot guarantee, appropriate accommodations. Effective alternatives may be necessary.) *Disability identification to DRS is confidential and cannot affect eligibility for admission.*

Call 480/965-1234 (voice) or 480/965-9000 (TTY).
Access the Web site at www.asu.edu/drs, or write

DISABILITY RESOURCES FOR STUDENTS
ARIZONA STATE UNIVERSITY
PO BOX 873202
TEMPE AZ 85287-3202

Admission of Undergraduate Nondegree Applicants

Any high school graduate is invited to enroll for eight or fewer semester hours per semester of undergraduate course work as a nondegree student. Students currently enrolled in high school and persons under the age of 18 may be admitted as nondegree students by submitting official ACT or SAT scores that meet the general aptitude requirements of the university. Persons admitted as nondegree students for a specific year and term must remain nondegree until the next semester.

Anyone interested in admission as a nondegree undergraduate student at ASU must submit to Undergraduate Admissions: (1) a Nondegree Undergraduate Application for Admission (including residency information) and (2) a \$50 nonrefundable application fee for applicants applying as nonresidents or residing outside Arizona. Applicants who are not high school graduates or who are younger than 18 must also submit ACT or SAT scores.

No more than 15 hours of completed nondegree work may be applied to a degree program. A nondegree student who decides to work toward a bachelor's degree must *apply for admission to a degree program* with Undergraduate Admissions and meet normal admission requirements.

Once registered in a regular degree program, a student is not permitted to register again in a nondegree status. Nondegree students are not eligible to receive most types of financial aid, nor are they eligible to receive certain benefits, such as veteran benefits.

Steps from Admission to Registration

Certificate of Admission. After being admitted, students receive a Certificate of Admission, an Immunization Verification form, and publications that contain information about orientation programs. International students additionally receive a Certificate of Eligibility (Form I-20 or IAP-66), which enables them to apply for the appropriate visa.

Upon receipt, students should check their admission information for accuracy and report any errors or changes to Undergraduate Admissions at 480/965-7788.

Orientation. University orientation programs for new students and their parents are provided at numerous times during the year, including the beginning of each semester. Each orientation program includes academic advising, campus tours, special events, and an introduction to university resources and procedures. Parent programs are also included. Newly admitted students are sent information preceding each orientation program. Students are strongly encouraged to attend orientation activities.

Immunization Requirements. Every newly admitted student born after December 31, 1956, must provide proof of measles/rubella immunity to the Student Health and Wellness Center. *Students are not permitted to register until proof of immunity to measles/rubella is on file with the Student Health and Wellness Center.*

The following proof of measles/rubella immunity is considered adequate: (1) two vaccinations of MMR (measles, mumps, rubella), at least one of which must have been given after December 31, 1979; or (2) a copy of laboratory test results that show immunity to both measles and rubella.

Measles/rubella immunity proof can be faxed to the Student Health and Wellness Center at 480/965-8914. Verification that the Student Health and Wellness Center received a student's proof of measles/rubella immunity can be confirmed by going to www.asu.edu/registrar on the Web two working days after the information has been faxed to the Student Health and Wellness Center.

In addition, it is recommended that students also be immunized against mumps, tetanus, hepatitis-B, diphtheria, and meningitis. Special populations may need other vaccines. For more information on measles requirements, visit the Student Health and Wellness Center's Web site at www.asu.edu/health.

International Student Enrollment. International students must complete these additional steps.

Student Health Insurance. All F-1 or J-1 visa students must have health and accident insurance through ASU, and the cost for insurance is automatically added to their registration bill. *No privately acquired insurance is accepted in place of the ASU insurance.* However, students who have health insurance through their government or sponsoring agency may qualify for an insurance waiver if that coverage has been preapproved by the university. No waivers may be granted after the first two weeks of classes. To find out if their sponsor is on the preapproved list, sponsored students and others who fall into this category are encouraged to contact the Student Health and Wellness Center at 480/965-

2411 or visit the Student Health and Wellness Center Web site at www.asu.edu/health.

All international students must report to the International Student Office in Student Life upon arrival on campus.

Special Programs for Advanced Placement and Credit

No more than 60 hours of credit are awarded for any or all programs, including ASU comprehensive and proficiency examinations. In these categories, only credit earned by comprehensive examination counts toward the resident credit requirement for graduation.

Advanced Placement. Students who have taken an advanced placement (AP) course of the College Entrance Examination Board (CEEB) in their secondary school *and* who have taken an AP Examination of the CEEB may receive university credit. No credit is given for any examination with a score of 2 or 1. There is no limit to the number of AP credits that can be used to meet the General Studies requirement, including the requirements in natural sciences (SQ and SG), and literacy and critical inquiry (L).

When the scores are received by the university directly from the CEEB, credit is awarded as shown in the [“Advanced Placement Credit” table, page 66](#).

College-Level Examination Program (CLEP). Students who have taken a College-Level Examination of the College Entrance Examination Board may receive university credit. The table of CLEP credit applies to all students enrolled in the university for the first time in August 1975 and any student enrolling thereafter; see the [“CLEP Credit” table, page 67](#). CLEP examination credit is *not* given where (1) it duplicates credit previously earned by the student at the university or accepted by the university for work done elsewhere or (2) it is more elementary than a course in which the student has already received credit. All examinations are given monthly by University Testing Services.

There is no limit to the number of CLEP credits that can be used to fulfill the General Studies requirement. The General Studies requirement in natural sciences (SQ and SG) and literacy and critical inquiry (L) are not satisfied by CLEP (see the [“General Studies Courses” table, page 86](#)).

General Examinations. To obtain credit or placement, students must receive a standard score of 50 (Computer Based Training [CBT] scale) or higher for the General Examinations, except for English Composition with Essay, on which students must receive a standard score of 610 (1978 scale), 500 (1986 scale), or 50 (CBT scale). *Students who have completed 60 semester hours of credit are not eligible to receive any credit for the CLEP General Examinations.*

Subject Examinations. A standard score of 50 (except Spanish, French, or German) or higher must be received to obtain credit for any subject examination. The completion of 60 semester hours does not preclude eligibility for additional credit for subject examinations.

All equivalency is subject to future review and possible catalog change. For more information, call University Testing Services at 480/965-7146 or stop by EDB 301.

International Baccalaureate (IB) Diploma/Certificate.

Students who present an International Baccalaureate Diploma/Certificate may qualify for university credit, depending on the level of the examination and the grade received. Arizona State University grants credit for higher-level courses only. A grade of 5 qualifies the student to receive credit for up to two introductory courses while a grade of 4 qualifies a student to receive credit for one introductory course. No credit is awarded for English as a Second Language (English B). Credit is awarded according to the [“International Baccalaureate Diploma/Certificate Credit” table, page 68](#)

Comprehensive Examinations. A comprehensive examination is intended to permit a student to establish academic credit in a field in which the student has gained experience or competence equivalent to an established university course. Applications are given only for courses listed in the current catalog and only for courses in which a comprehensive examination can serve as a satisfactory measure of accomplishment.

A number of restrictions apply. The student must be enrolled at ASU with *no more than 100 semester hours of credit earned*. The examinations must be taken during the first two semesters in residence in a degree program at the university. *No more than 60 semester hours of credit may be established by comprehensive examinations* (including AP, IB, and CLEP credit) and independent learning courses.

Comprehensive examinations may not be taken in any course in which the student has been given admission credit or transfer credit from any educational institution. Examination credit may not be received for a lower-level or prerequisite course when credit has already been received in a higher-level course within the same field.

The decision on the suitability of course material for a comprehensive examination, the development of a comprehensive examination, and the administration of an examination are strictly departmental functions. An application is for one course only. The student should complete an application form with the number, title, and number of semester hours for the course. When completed, the application must be approved by the student’s advisor and the chair of the department responsible for offering the course.

The student must then pay the stated fee for such examinations at Cashiering Services. The receipt must be taken to the departmental office.

The examination is prepared by the instructor who normally conducts the course, and it is comprehensive in nature and scope. The instructor and other experts designated by the chair grade the examination, using letter grades “A,” “B,” “C,” “D,” or “E.” If the grade is “C” or higher, a mark of “Y” is entered on the student’s permanent record; otherwise, no entry is made. Credit by examination is indicated as such on the record. The student is notified by mail of the result of the examination. In cases of failure (“D” or “E”), the student is not given an opportunity to repeat the examination.

A student pursuing a second baccalaureate degree may not receive credit by comprehensive examination, but, with prior approval of the college, the student may use the

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Advanced Placement Credit

Examination	Score	Semester Hours	Equivalency
Art—History	5 or 4	6	ARS 101, 102
	3	3	ARS 101 or 102
Art—Studio—Drawing	5	6	ART 111, 112
	4	3	ART 111
Art—Studio—General	5	6	ART 111, ¹ 112
	4	3	ART 112
Biology	5 or 4	8	BIO 187, 188
	3	4	BIO 187
Chemistry	5 or 4	9	CHM 113, 115
	3	4	CHM 113
Computer Science A	5 or 4	3	CSE 100
Computer Science AB	5 or 4	6	CSE 100, 200
Economics—Introductory Macroeconomics	5 or 4	3	ECN 111
Economics—Introductory Microeconomics	5 or 4	3	ECN 112
English—Language and Composition	5 or 4	6	ENG 101, 114 eligible for ENG 102
English—Literature and Composition	5 or 4	6	ENG 101, 204 eligible for ENG 102
Environmental Science	5 or 4	3	PLB 322
French—Language	5	14	FRE 201, 202, 311, 312
	4	11	FRE 201, 202, 311
	3	8	FRE 201, 202
French—Literature	5	18	FRE 111, 201, 202, 321, 322
	4	12	FRE 111, 201, 202
	3	8	FRE 201, 202
German—Language	5	14	GER 201, 202, 311, 312
	4	11	GER 201, 202, 311
	3	8	GER 201, 202
History—American or European	5 or 4	6	HST 109 and 110 <i>or</i> HST 103 and 104
Latin—Language	5	16	LAT 101, 102, 201, 202
	4	12	LAT 101, 102, 201
	3	8	LAT 101, 102
Mathematics—Calculus AB	5, 4, or 3	4	MAT 270
Mathematics—Calculus BC	5 or 4	8	MAT 270, 271
	3	4	MAT 270
Music	5 or 4	3	MTC 125
Physics B	5 or 4	6	PHY 111, 112
	3	3	PHY 111
Physics C—Electricity and Magnetism	5 or 4	3	PHY 112 ²
Physics C—Mechanics	5 or 4	3	PHY 111 ²
Political Science—American Government and Politics	5 or 4	3	POS 110
Political Science—Comparative Government and Politics	5 or 4	3	POS 150
Psychology	5 or 4	3	PGS 101
Spanish—Language	5	14	SPA 201, 202, 311, 312
	4	11	SPA 201, 202, 311
	3	8	SPA 201, 202
Spanish—Literature	5	15	SPA 111, 201, 202, 325
	4	12	SPA 111, 201, 202
	3	8	SPA 201, 202
Statistics	5 or 4	3	STP 226

¹ ART 115 credit may be awarded in place of ART 111 based on the School of Art's evaluation of 3D art submitted as part of the AP portfolio.

² Students may petition the department for additional credit and/or equivalencies based on laboratory and/or calculus content of their AP courses.

SPECIAL PROGRAMS FOR ADVANCED PLACEMENT AND CREDIT

CLEP Credit

Examinations	Semester Hours	Equivalency
General		
English Composition	0	With essay qualifies for ENG 105
Humanities	6	Elective credit
Mathematics	3	MAT 106
Natural Sciences	8	Elective credit
Social Sciences and History	6	Elective credit
Subject		
American Government	3	POS 110
American History—Early Colonization to 1877	3	HST 109
American History—1865 to the Present	3	HST 110
American Literature	6	ENG 241, 242
Analysis and Interpretation of Literature	3	Elective credit
Calculus with Elementary Functions	4	MAT 270
College Algebra (1993) (replaces College Algebra [1979])	3	MAT 117
College Algebra and Trigonometry	3	MAT 170
College French	4	FRE 101 (Students must score 39–48.)
College French	8	FRE 101, 102 (Students must score 49–53.)
College French	12	FRE 101, 102, 201 (Students must score 54–62.)
College French	16	FRE 101, 102, 201, 202 (Students must score 63 or higher.)
College German	4	GER 101 (Students must score 39–45.)
College German	8	GER 101, 102 (Students must score 46–50.)
College German	12	GER 101, 102, 201 (Students must score 51–59.)
College German	16	GER 101, 102, 201, 202 (Students must score 60 or higher.)
College Spanish	4	SPA 101 (Students must score 40–49.)
College Spanish	8	SPA 101, 102 (Students must score 50–54.)
College Spanish	12	SPA 101, 102, 201 (Students must score 55–61.)
College Spanish	16	SPA 101, 102, 201, 202 (Students must score 62 or higher.)
English Literature	3	Elective credit
Freshman College Composition (replaces College Composition and Freshman English)	0	With satisfactory essay qualifies for ENG 105
General Biology	8	BIO 187, 188
General Chemistry	9	CHM 113, 115
Human Growth and Development	0	No credit
Information Systems and Computer Applications	3	Elective credit
Introduction to Educational Psychology	0	No credit
Introductory Accounting	6	Elective credit
Introductory Business Law	3	Elective credit
Introductory Psychology	3	PGS 101
Introductory Sociology	3	SOC 101
Principles of Macroeconomics (replaces Introductory Macroeconomics)	3	ECN 111 (Students must score 50 or higher to receive credit.)
Principles of Management	0	No credit
Principles of Marketing	0	No credit
Principles of Microeconomics (replaces Introductory Microeconomics)	3	ECN 112 (Students must score 50 or higher to receive credit.)
Trigonometry	0	No credit
Western Civilization—Ancient Near East to 1648	6	HST 102, 103
Western Civilization—1648 to the Present	3	HST 104

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International Baccalaureate Diploma/Certificate Credit

Examination	Score	Semester Hours	Equivalency
Art/Design	7, 6, or 5	6	ART 111, 112
	4	3	ART 112
Biology	7, 6, or 5	8	BIO 187, 188
	4	4	BIO 188
Chemistry	7, 6, or 5	9	CHM 113, 115
	4	4	CHM 113
Economics	7, 6, or 5	6	ECN 111, 112
	4	3	ECN 111
English A	7, 6, or 5	6	ENG 101, 114
	4	3	ENG 114
English B	No credit	0	None
Foreign Language A or B*	7, 6, or 5	8	Foreign language 101, 102
	4	4	Foreign language 101
History—American	7, 6, or 5	6	HST 109, 110
	4	3	HST 109
History—European	7, 6, or 5	6	HST 103, 104
	4	3	HST 103
Mathematics	7, 6, 5, or 4	4	MAT 270
Physics	7, 6, or 5	8	PHY 111, 112, 113, 114
	4	4	PHY 111, 113

* No credit is awarded if the language is the student's native language.

examination to waive a course requirement if a grade of “C” or higher is earned.

Proficiency Examinations. Proficiency examinations and auditions are given

1. to waive a course requirement;
2. to validate certain transfer credits in professional programs; and
3. to determine a student's ability in a field where competence is an important consideration.

Detailed information may be obtained from the dean's office of the college in which the student is registered.

UNIVERSITY TESTING REQUIREMENTS

All new, transfer, or readmitted undergraduate students who plan to enroll for seven or more semester hours must meet one of the following testing requirements. *Students who fail to meet at least one of these requirements will not be allowed to register for any course the following semester.*

1. Take the ACT English or SAT verbal examination and have scores submitted to ASU.
2. Receive a score of 4 or 5 for the advanced placement examination in English offered by the College Entrance Examination Board and have scores submitted to ASU.
3. Take the CLEP general examination in English, earning a score that qualifies for placement in ENG 105, and have scores submitted to ASU.
4. Have previously taken ENG 101, 102, 105, 107, or 108 at ASU and received a grade of “D” or higher. If the course was taken before 1980, contact the

Recording Section, in SSV 142, before registering for classes.

5. Transfer a course equivalent to ENG 101, 102, 105, 107, or 108 with a grade of “C” or higher. An official transcript showing the grade must be received at ASU at least six weeks before registration. If a student transfers an equivalent composition course from a public community college or university in Arizona, the equivalency is automatically posted, and the student need not take further action. A student transferring a composition course from any other college or university must have the course evaluated for equivalency. See [“First-Year Composition Requirement.” page 79](#), for more information.
6. International students whose native language is not English must take ENG 107 (or WAC 107, followed by ENG 107 the next semester) in the first semester at ASU, unless they have taken and transferred an equivalent composition course from a college or university in the U.S. Such a course must be evaluated for equivalency by the Composition Office.

Placement Examinations

English. New students and continuing, reentry, transfer, and nondegree students who have not taken any composition courses are placed in First-Year Composition courses according to their scores on the ACT English or SAT verbal tests.

Note: The ACT and SAT scoring systems have been modified. Shown in parentheses are equivalent ACT scores for tests taken before October 1989 and equivalent SAT scores for tests taken before April 1995.

Academic Advising at ASU Main

College	Location	Telephone	Days	Hours ¹	Web Address
Academic Advising Services	UASB 129	480/965-4464	Mon., Wed. Tues., Thurs., Fri.	9 A.M.–6:30 P.M. 9 A.M.–5 P.M.	www.asu.edu/duas/cas
Barrett Honors College	BEST C 100L1	480/965-9155	Mon.–Fri.	8 A.M.–5 P.M. ²	www.asu.edu/honors
College of Architecture and Environmental Design	ARCH 141	480/965-3584	Mon.–Fri.	8:30 A.M.–noon, 1–4 P.M.	www.asu.edu/caed
College of Business	BA 109	480/965-4227	Tues. Other weekdays	8 A.M.–6:30 P.M. 8 A.M.–5 P.M.	www.cob.asu.edu/up/indexupo.cfm
College of Education	EDB L1-13	480/965-5555	Mon.–Fri.	8 A.M.–5 P.M.	coe.asu.edu/osa
College of Engineering and Applied Sciences	ECG 100	480/965-3421	Mon.–Fri.	8:30 A.M.–noon, 1–5 P.M. ²	www.eas.asu.edu
College of Law	LAW 120	480/965-1474	Mon.–Fri.	8 A.M.–5 P.M. ³	www.law.asu.edu
College of Liberal Arts and Sciences	SS 111	480/965-6506	Mon.–Fri.	8 A.M.–5 P.M.	clasdean.la.asu.edu/student/resources
College of Nursing	NUR 108	480/965-2987	Mon.–Fri.	8 A.M.–5 P.M.	nursing.asu.edu
College of Public Programs	WILSN 203	480/965-1034	Mon.–Fri.	8:30 A.M.–noon, 1–5 P.M.	www.asu.edu/copp/students/advisors.html
Graduate College	WILSN lobby	480/965-3521	Mon.–Thurs. Fri.	8 A.M.–6 P.M. ² 8 A.M.–5 P.M. ²	www.asu.edu/graduate/fr_checklist.html
Herberger College of Fine Arts	GHALL 127	480/965-4495	Mon.–Fri.	8 A.M.–noon, 1–5 P.M.	herbergercollege.asu.edu

¹ Arizona is on mountain standard time all year and does not observe daylight saving time.

² Walk-ins are welcome; appointments are recommended.

³ Call for additional hours.

Students who score 18 (16) or below on the ACT English test or 460 (380) or below on the SAT verbal test must enroll in WAC 101, a basic writing course (see “Writing Across the Curriculum,” page 374). Students who score between 19 (17) and 28 (24) on the ACT English test or between 470 (390) and 650 (580) on the SAT verbal test are eligible to enroll in ENG 101. Students who score 29 (25) or higher on the ACT English test or 660 (590) or higher on the SAT verbal test may take ENG 105 in place of ENG 101 and 102. Students may qualify for ENG 105 by achieving appropriate scores on the CLEP General Examination in English Composition with Essay or the CLEP Subject Examination in College Composition with Essay. For more information, go to University Testing Services, in EDB 301, access the Web site at www.asu.edu/uts, or call 480/965-7146.

Foreign Language. For information regarding foreign language placement testing, see “Foreign Language Requirement,” and “Foreign Language Placement,” [404](#), and “[Special Programs for Advanced Placement and Credit](#),” [page 65](#).

Mathematics. Placement examinations are not required before registering in mathematics courses at ASU. However, mathematics placement exams should be taken before the start of the semester for MAT 106, 117, 170, and 270. For more information, visit the Department of Mathematics and Statistics undergraduate office, in PS A211, or access the Web site at fym.la.asu.edu/placement.

Academic Advising

Effective academic advising of students is an essential aspect of the educational experience at ASU. The university is committed to providing quality advising to continuing, first-time, and transfer students. To achieve the highest-quality advising, students, faculty, and staff must work to form a partnership. Each college has advisors to assist students in developing programs of study, assessing educational goals, and understanding rules, procedures, and curriculum requirements. In some colleges, these advisors are faculty members. In others, they are full-time, professional advisors. Students often may seek academic and career advice from both faculty members and full-time advisors. Students are encouraged to take advantage of the skill and knowledge of the advising professionals available to them. Most new students and many continuing students must meet with an advisor as a condition of registration.

An additional unit, Academic Advising Services, is a central advising, referral, and information facility whose staff is available to assist students in their academic careers at ASU. Emphasis is placed on advising services to first-time, prospective, transfer, and visiting students and students in transition, such as those changing majors and those without majors. Bachelor of Interdisciplinary Studies majors (B.I.S. or pre-B.I.S.) also receive academic advising in Academic Advising Services. In addition to guidance in the exploration or selection of a major, Academic Advising Services provides general academic information and referrals to all

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areas of student academic support. For more information, visit Academic Advising Services in UASB 129, or call 480/965-4464.

Students are strongly encouraged to seek academic advising at the earliest possible time and to do so regularly throughout their academic careers, whether or not advising is mandatory in their particular programs. Advisors may be contacted at the locations and times shown in the [“Academic Advising at ASU Main” table, page 69](#). For academic advising at ASU East, see the “Academic Advising at ASU East” table, page 623. (See [“Building Abbreviations,” page 743](#), for a list of building abbreviations and names.)

Readmission to the University

Undergraduate students who have previously attended ASU but have not been enrolled at ASU for one semester or more are required to apply for readmission for the semester in which reenrollment is intended. Nonresident applicants must submit a nonrefundable \$40 application fee. If, meanwhile, the student has attended another accredited college or university, it is necessary for the student to have on file an official transcript of all academic work taken. Failure to report such attendance is considered misrepresentation and falsification of university records. In addition, it is considered cause for Records Hold action and withholding of further registration privileges. An applicant for readmission must meet the requirements for good standing. See [“Retention and Academic Standards,” page 75](#), and the requirements of the college to which the application is being made. An applicant who has been denied readmission may appeal to the University Undergraduate Admissions Board. Nondegree applicants for readmission must have a minimum GPA of 2.00. If not, the applicant must apply to ASU through Undergraduate Admissions.

Conditional Readmission. A student completing academic work in progress at another institution may be granted conditional readmission. This conditional status remains effective until a final official transcript is received. The student is subject to Records Hold action, and additional registration privileges are withheld if this condition for readmission is not cleared by midsemester.

Academic Renewal

Academic renewal is a university policy administered for the purpose of recalculating the ASU cumulative GPA of undergraduate students who have been readmitted to a degree program after an absence of at least five continuous calendar years including summer sessions and who have completed in good standing a minimum of 12 college-approved additional hours in residence within three semesters after reentry. Students may have the former academic record before the five-year absence (including transfer credits) accepted in the same manner as if the credits were transfer credits. That is, earned hours are carried forward for up to 60 hours of credit in which a grade of “C” or higher was earned. The cumulative GPA is based only on credits earned subsequent to the student’s reentry. All graduation residency, academic recognition residency, and GPA requirements must be fulfilled after academic renewal.

A request for academic renewal follows this procedure:

1. Students interested in academic renewal must request the Application for Academic Renewal from the Readmission Section of the Office of the Registrar or the dean of the college offering the major.
2. The Application for Academic Renewal may be submitted immediately upon readmission but not later than the start of the third semester after readmission.
3. The Application for Academic Renewal is submitted by the student to the dean of the college offering the major.
4. The dean specifies in advance a minimum of 12 semester hours.
5. When the approved credits are completed with a cumulative GPA of 2.50 or higher, and no grade lower than “C” in each course, the dean forwards the Application for Academic Renewal to the Office of the Registrar for processing.

Only students working toward their first undergraduate degree are eligible to apply for academic renewal, which may be effected only once during a student’s academic career. Academic renewal is transferable among colleges. All students with ASU GPAs below 2.00 are eligible to petition for academic renewal. Individual colleges may elect to entertain petitions for academic renewal from students with ASU GPAs above 2.00. College standards committees have final authorization on academic renewal petitions. Eligibility for graduation is based on the ASU cumulative GPA after academic renewal. However, a student’s complete record—before and after academic renewal—remains on the transcript and may be taken into consideration when a student applies for undergraduate professional or graduate programs.

Registration

All persons attending a class at ASU must be registered for that class. A student is considered to be registered when all registration fees have been paid in full.

Eligibility. Only eligible students may register for courses at ASU. An eligible student is either continuing from the previous semester or has been admitted or readmitted to the university. See [“Undergraduate Admission,” page 58](#), and [“Readmission to the University,”](#) on this page.

Proof of Identification. To receive university services, photo identification must be presented. Each admitted or readmitted student who completes the registration process for a regular semester needs to obtain a student identification card. This photo identification card is valid for the duration of the student’s enrollment at ASU.

Photo IDs are issued throughout the semester at the Sun Card office located in the Memorial Union on Main Campus, and at the OASIS in the Center Building on East Campus. See the [Schedule of Classes](#) or refer to [“Parking Decals,” page 48](#).

Registration Fees. Registration fees are due and must be paid in full at the time specified each semester in the [Schedule of Classes](#). If any payment tendered is unauthorized,

Enrollment Verification Guidelines

Term	Student	Full Time	Half Time	Less Than Half Time
Regular semester	Undergraduate	12 or more hours	6–11 hours	5 or fewer hours
	Graduate	9 or more hours	5–8 hours	4 or fewer hours
	Research assistant	6 or more hours	—	—
Five-week summer session	Undergraduate	4 or more hours	2 hours	1 hour
	Graduate	3 or more hours	2 hours	1 hour
	Research assistant	2 or more hours	1 hour	—
Eight-week summer session	Undergraduate	6 or more hours	3–5 hours	2 or fewer hours
	Graduate	5 or more hours	3–4 hours	2 or fewer hours

incomplete, or received after the due date, registration fees are considered unpaid.

Schedule of Classes. The *Schedule of Classes*, published for the fall and spring semesters, and the *Summer Sessions Bulletin* are distributed without charge. These publications are available online at www.asu.edu/registrar/schedule. They list course offerings, dates, times, places, and procedures for registration, along with other important information about the term.

Course Loads. A minimum full-time course load for an undergraduate student is 12 semester hours. The maximum course load for which a student may register is 18 semester hours (with the exception of a 19-hour maximum for students enrolled in the Colleges of Engineering and Applied Sciences or Architecture and Environmental Design). A student wishing to register for more than the maximum must petition the standards committee of the college in which the student is enrolled and must obtain an approved override before registration. See “Summer Session Semester Hour Load,” on this page, for summer course load information.

Reserving of Course Credit by Undergraduates. Seniors at ASU within 12 semester hours of graduation may enroll in a 400-level or graduate course and reserve the credit for possible use in a future graduate program. The course cannot be used to meet a baccalaureate graduation requirement. Before registration in the course, the student must submit a Graduate College Petition form requesting credit reservation. The form must be signed by the student’s advisor, the head of the academic unit offering the class, and the dean of the Graduate College.

Permission to reserve a course does not guarantee admission to a graduate degree program or that the course may be used toward graduate degree requirements. A maximum of nine semester hours may be reserved, and only courses in which the student earned an “A” or “B” grade are applicable. Reserved credit earned before admission to a graduate degree program is classified as nondegree credit. The maximum course load for a student enrolled in a reserved course is 15 semester hours during a regular semester and six hours during a summer session.

Summer Session Semester Hour Load. The summer session semester hour load limit is seven semester hours for each five-week session and nine semester hours for the eight-week session. The student may not exceed a total of 14 semester hours for any combination of sessions.

Concurrent Enrollment. Provided that the other institution’s regulations concerning enrollment, graduation requirements, and transfer of credits are not violated, a student may enroll in classes at other institutions or in independent learning courses while enrolled at ASU. However, the student is urged to seek advising before concurrent enrollment to assure orderly progress toward a degree. If total credits exceed the maximum course load, prior permission must be granted by the college standards committee. See “Course Loads,” on this page.

Attendance. The instructor has full authority to decide whether class attendance is required.

Enrollment Verification Guidelines. The registrar is responsible for verifying enrollment according to the general guidelines in the [“Enrollment Verification Guidelines” table, on this page](#). Independent learning courses are not considered for enrollment verification purposes.

Cooperative Programs

Cooperative Education. Cooperative education at ASU is any educational program that requires *alternating classroom and work experience* in government or industry. The work experience exists for its educational value.

Full-Time Status of Co-op Students. A co-op student, during a work semester, is identified as both co-op and full time by the university. To qualify, the student must have met prescribed hours and GPA requirements.

Rights and Privileges of Co-op Students. During their work semesters, co-op students have the rights, privileges, and protections—with regard to university matters—accorded to full-time students, except financial aid. They maintain catalog continuity and have student access to university facilities and events.

Financial Aid for Co-op Students. Co-op students are not identified to lenders (including ASU) as being in loan repayment status. They have an “in school” full-time enrollment status. Co-op students do not receive any financial aid disbursement during their co-op semesters, *nor are such awards transferred to another semester*. The student is responsible for notifying Student Financial Assistance as soon as plans for a co-op term are made but no later than 10 days before the co-op term begins. The department or school is responsible for notifying Student Financial Assistance of students approved for co-op terms.

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Traveling Scholar Program. The Traveling Scholar Program is a cooperative program among the state universities designed to enable students to take advantage of programs or special resources that are not available at their own institutions. Any undergraduate student with a GPA of at least 2.50 or any graduate student with a GPA of at least 3.00 enrolled at ASU, Northern Arizona University, or University of Arizona may be designated a Traveling Scholar by prior mutual agreement of the appropriate academic authorities at both the sponsoring and hosting institutions. Contact the Registrar's Records Information Section for more information and the application form.

Grading System

DEFINITIONS

Unit of Credit

The Arizona Board of Regents has defined (May 26, 1979) a unit of credit for the institutions under its jurisdiction. A minimum of 45 hours of work by each student is required for each unit of credit. An hour of work represents a minimum of 50 minutes of class time—often called a “contact hour”—or 60 minutes of independent study work. For lecture-discussion courses, this requirement equates to at least 15 contact hours and a minimum of 30 hours of work outside the classroom for each unit of credit. Even though the values of 15 and 30 may vary for different modes of instruction, the minimum total of 45 hours of work for each unit of credit is a constant. Since the unit of credit as defined by the Arizona Board of Regents is the cornerstone of academic degree programs at ASU, degrees granted by other institutions that are recognized by ASU should be based on a similar unit of credit.

Grades and Marks

All grades and marks appear on the permanent record and/or unofficial transcript.

They are indicated by the letters shown in the [“Grades” table, on this page.](#)

Grading Options

Ordinarily a grade of “A,” “B,” “C,” “D,” or “E” is given upon completion of a course, unless a grading option of “audit” or “pass/fail” is indicated at the time of registration. *Grading options cannot be changed after the close of the drop/add period.*

Incomplete

A mark of “I” (incomplete) is given by the instructor only when a student who is otherwise doing acceptable work is unable to complete a course because of illness or other conditions beyond the student's control. The mark of “I” should be granted only when the student can complete the unfinished work with the same instructor. However, an incomplete (“I”) may be completed with an instructor designated by the department chair if the original instructor later becomes incapacitated or is otherwise not on campus. The student is required to arrange with the instructor for the completion of the course requirements. The arrangement is recorded on the Request for Grade of Incomplete form. The student has one calendar year from the date the mark of “I”

Grades

Grade	Definition	Value
A	Excellent	4.00
B	Good	3.00
C	Average	2.00
D	Passing	1.00
E	Failure	0.00
I	Incomplete	—
NR	No report	—
P	Pass	—
RC*	Remedial credit	—
RN*	Remedial no credit	—
W	Withdrawal	—
X	Audit	—
Y	Satisfactory	—

* This grade appears on only unofficial copies of ASU transcripts.

is recorded to complete the course. If the student completes the course within the calendar year, the instructor must submit a Request for Grade of Incomplete/Authorization for Change of Grade form to the Office of the Registrar, whether the student passed or failed the course. Marks of “I” are changed to a grade of “E” for purposes of evaluating graduation requirements for undergraduate students. Marks of “I” received in the fall 1983 semester or thereafter for undergraduate courses that have been on a student's record for more than one calendar year are automatically changed to a grade of “E.” An undergraduate student does not reregister or pay fees for a course for which an incomplete “I” has been received in order to complete the course.

Students who receive a mark of “I” in courses at the 500 level or above have one calendar year to complete the course for a grade. After one calendar year, the mark of “I” becomes a permanent part of the transcript. To repeat the course for credit, a student must reregister and pay fees. The grade for the repeated course appears on the transcript but does not replace the permanent “I.”

Satisfactory

A mark of “Y” (satisfactory) may be used at the option of individual colleges and schools within the university and is appropriate for internships, projects, readings and conferences, research, seminars, theses, and workshops. The “Y” is included in earned hours but is not computed in the GPA.

Credit Enrollment

The semester hour is the unit on which credit is computed. It represents one 50-minute class exercise per week per semester. To obtain credit, a student must be properly registered and must pay fees for the course.

Audit Enrollment

A student may choose to audit a course, in which case the student attends regularly scheduled class sessions, but no credit is earned. The student should obtain the instructor's approval before registering and paying the fees for the course. Selected courses may not be audited. Veteran students using education benefits should see [“Veterans Services,” page 39.](#)

The mark of “X” is recorded for completion of an audited course, unless the instructor determines that the student’s participation or attendance has been inadequate, in which case the mark of “W” (unrestricted withdrawal) may be recorded. This grading option may not be changed after the close of drop/add. The “X” is not included in earned hours and is not computed in the GPA.

Pass/Fail Enrollment

A mark of “P” (pass) or “E” (fail) may be assigned for this grading option. This grading method may be used at the option of individual colleges and schools within the university. Consult the college dean’s office for detailed information and restrictions before registration. “P” is included in earned hours but is not computed in the GPA.

Remedial Enrollment

A mark of “RC” (remedial credit) or “RN” (remedial no credit) may be assigned for this grading option. The course appears on an unofficial ASU transcript but does not appear on the grade report or official ASU transcript and is not included in earned hours. Remedial hours are included in verification of enrollment for purposes of loan deferment and eligibility.

WITHDRAWALS

Instructor-Initiated Drop

An instructor may drop a student for nonattendance during the second week of classes in fall or spring semesters or the first four days of each summer session. Instructor-initiated drops for nonattendance are signed by the dean or dean’s designee. The college notifies students by mail. The student must contact the instructor before the end of the first week of classes if absences during that period cannot be avoided.

Drop/Add

Students registering for courses for a semester or summer session may drop or add courses through the first week of classes in a semester or the first two days of a summer session. See the *Schedule of Classes* or the *Summer Sessions Bulletin* for dates of drop/add periods. During this period, a student may drop one or more but not all scheduled courses without penalty. Courses that are dropped do not appear on the student’s transcript and fees paid are fully refunded, depending on the student’s remaining hours. A student who wishes to withdraw from all courses during the drop/add period must process an unrestricted withdrawal.

Unrestricted Course Withdrawal

During the first four weeks of a semester or the first six days of a summer session, a student may withdraw from any course with a mark of “W.” See the *Schedule of Classes* or the *Summer Sessions Bulletin* for dates of the unrestricted withdrawal period.

Restricted Withdrawal

From the fifth week to the end of the 10th week of a semester and from the seventh day to the end of the third week of a summer session, students may withdraw with a mark of “W” from only courses in which the instructor certifies that they are passing at the time of the withdrawal. See

the *Schedule of Classes* or the *Summer Sessions Bulletin* for dates of the restricted withdrawal period.

The number of restricted withdrawals with the mark of “W” is limited. One restricted withdrawal is assessed for each course withdrawn from, unless the student is withdrawing from all courses. A complete withdrawal results in the assessment of one restricted withdrawal against a student’s limit. The number of withdrawals is a total of two for students during freshman, sophomore, junior, or senior standing; and a total of two for students during second undergraduate degree standing. Non-degree-seeking graduate students are permitted to process an unlimited number of restricted withdrawals. Students must obtain a Restricted Withdrawal Request and obtain the signature of the instructor. The instructor has the option of assigning either a “W” or a failing grade of “E.”

Students who have reached their restricted withdrawal limit are not allowed to process any additional restricted course withdrawals. However, students are allowed to process a restricted complete withdrawal even when they have reached the restricted withdrawal limit. The preceding limits do not prevent students from processing a complete withdrawal from the university with marks of “W” or “E.” Complete withdrawal counts as one withdrawal for purposes of applying the above limits. The preceding does not apply to audit enrollment or zero-hour labs and recitations.

Procedure for Restricted Withdrawal. A student seeking a restricted withdrawal needs to

1. obtain a withdrawal form from any registrar site;
2. obtain a signature and verification of grade from instructor(s); and
3. have the form processed at any registrar site.

Instructor-Initiated Withdrawal

An instructor may withdraw a student from a course with a mark of “W” or a grade of “E” only if the student’s continued presence in the course is disruptive to the instructor’s ability to conduct the course. A student may appeal an instructor-initiated withdrawal within 10 days of being withdrawn to the standards committee of the college in which the course is offered. The decision of the committee is final. Restricted withdrawal limits do not apply to withdrawals initiated by an instructor.

Withdrawal from the University

To withdraw from *all* classes after having paid registration fees, a student must submit a request in person, withdraw using SunDial, or submit a signed request to the Office of the Registrar. The SunDial complete withdrawal option is only available through the first week of classes for a semester. During the unrestricted complete withdrawal period, a student may withdraw from all courses with marks of “W.” During the restricted complete withdrawal period, a student may withdraw with marks of “W” only from courses that the instructors certify the student was passing at the time of withdrawal. See the *Schedule of Classes* or the *Summer Sessions Bulletin* for dates of the complete withdrawal periods. No one is permitted to withdraw from the university or to conduct any registration transaction in the last two weeks of the semester. The date of the complete withdrawal is always

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the date the withdrawal form or letter is received in the Office of the Registrar.

Medical/Compassionate Withdrawal

A medical/compassionate withdrawal request may be made in extraordinary cases where serious illness or injury (medical) or another significant personal situation (compassionate) prevents a student from continuing in his or her classes, and where incompletes or other arrangements with the instructor are not possible. Usually, consideration is for complete withdrawal. All applications for withdrawal require thorough and credible documentation. Application for less than a complete withdrawal must be especially well documented to justify the selective nature of the medical/compassionate withdrawal request.

A student may request and be considered for a *medical* withdrawal when extraordinary circumstances, such as a serious illness or injury, prevent the student from continuing in classes. This policy covers both physical-health and mental-health difficulties.

A student may request and be considered for a *compassionate* withdrawal when extraordinary personal reasons, not related to the student's physical or mental health (for example, care of a seriously ill child or spouse, or a death in the student's immediate family), prevent the student from continuing in classes.

Each college has a dean's representative (medical/compassionate withdrawal designee) to review medical/compassionate withdrawal requests, according to that college's procedures. A student requesting a medical/compassionate withdrawal is referred to the dean's designee of the college of the major. A nondegree student is referred to the dean's designee of the college with which he or she is primarily affiliated. The dean's designee determines the appropriateness of the medical/compassionate withdrawal request and whether an administrative hold is indicated. Removal of the hold must be authorized by the designee before the student can register for a future semester or be readmitted to the university.

The medical/compassionate withdrawal procedure results in a special note line on the unofficial transcript. Refunds are not given beyond six months past the close of the semester. Only one Request for Documented Medical/Compassionate Withdrawal form needs to be filed with the college of the major, even if classes in more than one college are involved. Medical/compassionate withdrawal applications and supporting documents are retained and filed separately from the student's other records.

GRADE POINTS

For the purpose of computing the grade point average (GPA), grade points are assigned to each of the grades for each semester hour as follows: "A," four points; "B," three points; "C," two points; "D," one point; "E," zero points. GPAs are rounded to the nearest 100th of a grade point.

Grade Point Average

Grade points earned for a course are multiplied by the number of semester hours to produce honor points. For example, receiving an "A," which is assigned four grade points, in a three-semester-hour course would produce 12

honor points. The grade point average (GPA) is obtained by dividing the total number of honor points earned by the total number of semester hours graded "A," "B," "C," "D," or "E." Other grades do not carry grade points. *Semester* GPA is based on *semester* net hours. *Cumulative* GPA is based on *total* net hours.

Change of Grade

Ordinarily the instructor of a course has the sole and final responsibility for any grade reported. Once the grade has been reported to the registrar, it may be changed upon the signed authorization of the faculty member who issued the original grade. Approval for the change is also required by the department chair and the dean of the college concerned. This policy also applies to the grade of "I" (incomplete).

University Policy for Student Appeal Procedures on Grades

Informal. The steps outlined on this page, beginning with step A, must be followed by any student seeking to appeal a grade. Student grade appeals must be processed in the regular semester immediately following the issuance of the grade in dispute (by commencement for fall or spring), regardless of whether the student is enrolled at the university. It is university policy that students filing grievances and those who are witnesses are protected from retaliation. Students who believe they are victims of retaliation should immediately contact the dean of the college in which the course is offered.

- A. The aggrieved student must first undergo the informal procedure of conferring with the instructor, stating the evidence, if any, and reasons for questioning that the grade received was not given in good faith. The instructor is obliged to review the matter, explain the grading procedure used, and show how the grade in question was determined. If the instructor is a graduate assistant and this interview does not resolve the difficulty, the student may then go to the faculty member in charge of the course (regular faculty member or director of the course sequence) with the problem.
- B. If the grading dispute is not resolved in step A, the student may appeal to the department chair or other appropriate chair of the area within the department (if any). The department chair may confer with the instructor to handle the problem. Step B applies only in departmentalized colleges.
- C. If these discussions are not adequate to settle the matter to the complainant's satisfaction, the student may then confer with the dean of the college concerned (or the dean-designate), who will review the case. If unresolved, the dean or designate may refer the case to the college academic grievance hearing committee to review the case formally. In most instances, however, the grievance procedure does not go beyond this level.

Formal. The following procedure takes place after steps A, B, and C (or A and C) have been completed.

- D. Each college has on file in the office of the dean (and in each department of the college) the procedures and composition of the undergraduate or graduate academic

grievance hearing committee for student grievances. Each college committee shall operate under grievance procedures as stated which satisfy due process requirements. The committee shall always meet with the student and the instructor in an attempt to resolve the differences. At the conclusion of the hearing, the committee shall send its recommendations to the dean.

- E. Final action in each case will be taken by the dean after full consideration of the committee’s recommendation. Grade changes, if any are recommended, may be made by the dean. The dean shall inform the student, instructor, department chair (if any), the registrar, and the grievance committee of any action taken.

Repeating Courses

An undergraduate course taken at ASU may be repeated for credit if the grade of “D,” “E,” or “W” or a mark of “X” is received. An undergraduate student may not repeat for credit an undergraduate course in which a grade of “C” or better is earned. Undergraduate courses in which grades of “D” or “E” are received may be repeated only once. After an undergraduate student repeats 100- and 200-level courses, the student’s transcript shows both grades, but the student’s cumulative GPA reflects only the higher grade. After an undergraduate student repeats 300- or 400-level courses, the student’s cumulative GPA and the transcript reflect both grades.

After completing the course, the student must file a Deletion Form with the Office of the Registrar. To be eligible for the deletion of “D” or “E” grades, the course must be repeated at ASU. Independent Learning courses may not be used to repeat “D” or “E” grades. Students who have graduated are not eligible to delete the grade for a course taken before the award of the ASU bachelor’s degree.

Students wishing to repeat a class for the third time with grades of “D” or “E” must petition the standards committee of the college in which they are enrolled. This policy does not apply to seminar and independent study courses with different content each semester. This policy affects only undergraduate students and undergraduate courses.

Demonstration of Mastery

An undergraduate student who receives a “D” in a course in which a “C” or higher is required may use the grade from an equivalent course taken elsewhere to demonstrate mastery at the “C” or higher level. However, the course may neither be transferred to ASU (since credit has already been given for the course) nor computed in the student’s GPA.

Midterm Report

Instructors are required to evaluate students at midterm for academic progress. A student who has been evaluated for a “D” or “E” at midsemester receives a midterm report. The midterm “D” and “E” grades are not recorded on the student’s permanent record. Midterm reports are mailed to the student’s local address of record.

Final Grades

Grades may be viewed online at www.asu.edu/registrar or accessed through SunDial at 480/350-1500.

Records Hold

The Office of the Registrar enforces a financial records hold or administrative hold on the records of a student when an outstanding financial obligation or disciplinary action has been reported.

When a hold is placed on a record, the following results may occur:

1. No official or unofficial transcript is issued.
2. Registration privileges are suspended.
3. Other student services may be revoked.

The hold remains effective until removed by the initiating office. It is the student’s responsibility to clear the conditions causing the hold.

Transcripts

The Office of the Registrar releases official transcripts *only upon the written request of the student*. The request must include the following information:

1. the student’s name and former name(s);
2. the student’s ID number;
3. the student’s date of birth; and
4. the student’s dates of attendance.

The request for official transcript form is available online at www.asu.edu/registrar/forms.

The Office of the Registrar does not issue a transcript if the student has a financial records hold. The student must supply a specific address if the transcript is to be mailed. The fee for an official transcript for a student not enrolled is \$5 for the first copy. Additional copies ordered at the same time are \$1 each. The fee is \$1 per copy for a student enrolled for a current or future semester.

Unofficial transcripts may be requested in person at the Office of the Registrar or any registrar site, or by mail or fax (480/965-2295) if a signed release is enclosed. There is no charge for an unofficial transcript.

All in-person transcript requests require presentation of photo identification. Requests are not accepted from third parties without a written release from the student. For information on parental access to records, see [“Access to Records,” page 78](#).

Retention and Academic Standards

Class Standing. A student’s class standing is determined by the number of hours earned, as shown in the “Class Standing” table below.

Class Standing	
Student	Hours Earned
Freshman	24 or fewer semester hours earned
Sophomore	25 to 55 semester hours earned
Junior	56 to 86 semester hours earned
Senior	87 or more semester hours earned
Graduate	Bachelor’s degree from accredited institution

Academic Good Standing. For the purpose of retention, academic good standing for degree-seeking students is

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defined as shown in the [“Academic Good Standing” table below](#).

Academic Good Standing

Total Earned Hours	Minimum Cumulative GPA
24 or fewer	1.60
25 to 55	1.75
56 or more	2.00

A student who does not maintain the minimum GPA standard is placed on academic probation or is disqualified. A student on academic probation is in conditional good standing and is permitted to enroll. A student who has been disqualified is not in academic good standing and is not permitted to enroll for fall or spring semesters.

To transfer from one college to another within the university or to be eligible for readmission, a student must have a GPA of 2.00 or higher. The GPA determining good standing is computed on courses taken only at ASU.

For purposes of retention or transfer, an individual college may set higher GPA standards; otherwise, the university standards prevail. See the college sections of this catalog or contact the college deans’ offices for statements regarding college retention standards.

Meeting Basic Competencies. New students are required to have completed a specific number of courses in the areas of American history, English, laboratory science, mathematics, social science, fine arts and foreign language. Students who are exempt from these requirements include students who have completed an Arizona General Education Curriculum (AGEC) or an associate degree, students admitted by GED, and students who are 22 years of age or older by the first day of the semester of admission. An admitted student who needs to meet competencies in one or more of these areas must satisfy the requirement within two years of the beginning of the student’s first semester at ASU. Subject competencies in each area may be met by earning a grade of “D” or higher at ASU in an appropriate course(s) as listed in the [“Basic Competency Requirements” table, page 60](#).

Appealing Basic Competencies. A student who has not met all basic competencies at the end of two calendar years after the student’s initial date of enrollment is not permitted to continue at ASU. Each student is notified that he or she may not register or, if already registered, that their registration has been canceled.

A student wishing to appeal the dismissal should submit a petition through his or her college. The colleges have three options in reviewing these appeals:

1. extending the student’s end semester to allow one additional semester to complete the required course work;
2. allowing the student to substitute a course not currently approved to fulfill a competency area when an error has been made in advising or for other just causes; or
3. denying the petition.

College actions are forwarded to the Office of the Registrar for processing.

Dean’s List. Undergraduate students who earn 12 or more graded semester hours (“A,” “B,” “C,” “D,” or “E”) during a semester in residence at ASU with a GPA of 3.50 or higher are eligible for the Dean’s List. A notation regarding Dean’s List achievement appears *only* on the final grade report available online at www.asu.edu/registrar.

Satisfactory Academic Progress. The university is required to publish and enforce standards of satisfactory academic progress for certain students (e.g., student athletes, students receiving financial aid, and students receiving veterans benefits).

Certification of satisfactory progress for student athletes is verified by the academic advisor and the dean’s designee for certifying satisfactory progress. Certification of satisfactory progress for students receiving financial aid or veterans benefits is verified by Student Financial Assistance or the Veterans Services Section, respectively. Students should contact their advisors or the appropriate office for additional information on satisfactory progress requirements.

Probation. A student’s college assumes responsibility for enforcing academic standards and may place any student on probation who has failed to maintain good standing as previously defined. For purposes of probation and retention, an individual college may set higher GPA standards. A student on academic probation is required to observe any rules or limitations the college may impose as a condition for retention.

Disqualification. A student who is placed on probation at the end of a semester is subject to disqualification by the college at the end of the following semester if the conditions imposed for retention are not met.

Disqualification is exercised at the discretion of the college and becomes effective on the first day of the semester following college action. *A disqualified student is notified by the dean of the college or the Office of the Registrar and is not allowed to register in a fall or spring semester at the university until reinstated.* A student who has been disqualified may appeal to the college standards committee. A student who is disqualified may not attend as a nondegree student.

Reinstatement. If a student with a GPA of 2.00 or greater has been disqualified by one college and seeks to transfer to another college at ASU, the student may apply at the Readmissions Section (SSV 114) or directly to the college to which the student wishes to transfer.

To be reinstated into an ASU college other than the disqualifying college, the student must submit an application for reinstatement to the University Undergraduate Admissions Board through the Readmissions Section of the Office of the Registrar.

To be reinstated into the same college from which the student was disqualified, the student must submit an application for reinstatement to the disqualifying college. When reinstatement includes readmission, application must be made to the Readmissions Section of the Office of the Registrar.

Basic Competencies

Area	ASU Courses That May Be Used to Meet Basic Competencies
American history	Any one course: HST 109, 110
English	Any one course: ENG 101, 105, 107; WAC 101, 107
Fine arts	Any one course: ADE 120; DSC 120, 121, 122; any undergraduate three-semester-hour course offered in the Herberger College of Fine Arts
Foreign language	Student must complete through the 102, 107, or 111 course level of any foreign language course.
Laboratory science*	
Chemistry	Any one course: CHM 101, 107, 113, 114, 117
Earth sciences	Any numbered selection: 1. GLG 101 and 103 2. GLG 110 and 111 3. GLG 105 4. GPH 111 5. ERS 130
Life sciences	Any one course: BIO 100, 120, 187, 188, 201; PLB 108
Physics	Any numbered selection: 1. AST 111 and 113 2. AST 112 and 114 3. PHS 110 4. PHY 101 5. PHY 111 and 113 6. PHY 112 and 114 7. PHY 121 and 122 8. PHY 131 and 132
Mathematics	Any one course: MAT 114, 117, 119, 170, 210, 260, 270, 290
Social science	Any one course: ASB 102; ECN 111, 112; GCU 102, 121, 141; HST 102, 103, 104; PGS 101; POS 101, 110, 150, 160; SOC 101

* The laboratory science requirement is designed to demonstrate competency in two separate laboratory science areas. For example, if one lab science competency has been met in life sciences through high school course work, the ATP biology achievement test, or college course work, the second lab science course must be selected from chemistry, earth sciences, or physics.

Reinstatement Appeals. A student wishing to appeal the decision of the standards committee of a college may submit an appeal to the University Undergraduate Admissions Board. The decision of the board is final.

Academic Integrity. The highest standards of academic integrity are expected of all students. The failure of any student to meet these standards may result in suspension or expulsion from the university or other sanctions as specified in the University Student Academic Integrity Policy. Violations of academic integrity include, but are not limited to, cheating, fabrication, tampering, plagiarism, or facilitating such activities. The University Student Academic Integrity Policy is available from the Office of the Senior Vice President and Provost and from the deans of the individual colleges.

Suspension or Expulsion for Academic Dishonesty. All decisions relating to expulsion or suspension that are concerned with academic dishonesty are the sole prerogative of the dean of the school or college in which the student has been admitted. These decisions of suspension or expulsion can be appealed in accordance with established university procedures. Application for reinstatement may be made to any of the academic units within the university after the specified period of suspension. Merely having remained in a

suspended status for a period of time does not, in itself, constitute a basis for reinstatement.

Student Records

Family Educational Rights and Privacy Act of 1974

The federal Family Educational Rights and Privacy Act of 1974, also known as the Buckley Amendment or FERPA, sets forth the requirements governing the protection of the privacy of educational records of students who are or have been in attendance at ASU.

Definitions

Eligible Student. For the purpose of this act, an *eligible student* is defined as any individual formally admitted to and enrolled at ASU.

Record. The term *record* includes any information or data recorded in any medium, including, but not limited to, hand-writing, print, tapes, film, microfilm, microfiche, and electronic means.

Types of Information

Education Record. The term *education record* refers to those records directly related to a student and maintained by an educational institution. Two types of education records

UNDERGRADUATE ENROLLMENT

are subject to the provisions of this act: (1) directory information and (2) personally identifiable information. The term does not include those records specifically excluded by Section 99.3 of the privacy act.

Directory Information. The term *directory information* includes the following student information: name, local, permanent and ASU e-mail addresses, local telephone number, date of birth, residency status, academic level, major field of study, college of enrollment, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, and the most recent previous educational agency or institution attended by the student.

Personally Identifiable Information. The term *personally identifiable information* includes all information not defined as directory information. This includes, but is not limited to, the name of a student's parent or other family member(s), a personal identifier such as the student's ASU ID number or Social Security number, a list of personal characteristics, or other information that would make the student's identity easily traceable and any information, including directory information, that the student has indicated should not be released.

Access to Records

An eligible student may inspect and review his or her own education records. Some form of photo identification must be displayed before access to education records is allowed.

Directory information may be released to anyone without consent of the student unless the student has indicated otherwise. Students may request that this information not be released by completing a form in the Office of the Registrar. A request to withhold this information excludes the student from being listed in the annual directory only if the request is submitted to the Office of the Registrar before the end of the third week of the fall semester.

All other education records that contain personally identifiable information may not be released without the written consent of the student. A parent of a dependent student may challenge denial of such access by producing the most current copy of Internal Revenue Form 1040. If that form lists the student in question as a dependent, the parent is required to sign an affidavit that affirms that the student is his or her dependent. The affidavit is retained by the Office of the Registrar. Upon receipt of the affidavit, the university may make student records available to the parent for the rest of that calendar year as specified under the Buckley Amendment.

Students may grant access to individuals or agencies by completing a form in the Office of the Registrar.

Location of Policy and Records

The custodian of education records at ASU is the Office of the Registrar. Copies of this policy are available in the following offices: Reserve sections of Hayden Library and the Noble Science and Engineering Library, the Office of the Registrar, Undergraduate and Graduate Admissions, and Student Life. The Office of the Registrar also maintains a directory that lists all education records maintained on students by ASU.



Leah McDonald (right) leads parents and students on an orientation tour.

Tim Trumble photo

University Graduation Requirements

UNIVERSITY REQUIREMENTS

All students enrolled in a baccalaureate degree program must fulfill the following university requirements to graduate.

Credit Requirements

A minimum of 120 semester hours is required for graduation with a baccalaureate degree. A minimum of 45 semester hours in upper-division courses is required for graduation. Some programs may require more than 45 upper-division semester hours for graduation; refer to college graduation requirements for the specific number required.

Not more than 60 semester hours in independent learning courses and/or earned by comprehensive examination (including Advanced Placement, College-Level Examination Program, and International Baccalaureate Diploma/Certificate exams) are accepted for credit toward the baccalaureate degree.

Grade Point Requirement

A minimum cumulative grade point average of 2.00 for all courses taken at ASU is required to graduate with a baccalaureate degree.

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35 semester hours of approved course work. (See “General Studies,” page 83.) For General Studies courses, see the “General Studies Courses” table, page 86, the course descriptions, the *Schedule of Classes*, and the *Summer Sessions Bulletin*.

Students transferring from Arizona community colleges with a certified completion of the appropriate Arizona General Education Curriculum (AGEC) will have satisfied all lower-division General Studies requirements of the baccalaureate degree with which the AGEC articulates. For more details regarding the different versions of AGEC, refer to az.transfer.org/cas/atass/student/agec.html.

Mathematics Requirement

All undergraduate degree-seeking students are expected to fulfill the university’s mathematics requirement by the time they have accumulated 30 hours of credit in residence at ASU. Any student who has more than 30 hours of credit and has not fulfilled the mathematics requirement must enroll in a mathematics course or an appropriate prerequisite course and continue to do so every semester until the mathematics requirement is met. A waiver may be granted for continuous enrollment if there are scheduling conflicts detrimental to the student’s academic progress.

First-Year Composition Requirement

Completion of both ENG 101 and 102 or ENG 105 with a grade of “C” or higher is required for graduation from ASU in any baccalaureate program. International students from

non-English-speaking countries may meet the First-Year Composition requirement by completing ENG 107 and 108 with a grade of “C” or higher.

New or Transfer Students. Before new students or transfer students can register for the first time at ASU, they must determine what courses to take to complete the university First-Year Composition requirement; the students must then enroll immediately in composition courses and continue to do so every term until composition requirements are met. *Colleges may grant waivers to the immediate and continual enrollment requirement when there are scheduling conflicts detrimental to the student’s academic progress.* Transfer students from other Arizona colleges or universities can determine the acceptability of their composition courses by referring to the *Course Applicability System* in consultation with an academic advisor. Composition courses transferred from out-of-state institutions must be evaluated and approved by the Composition Office.

The transfer student must file an application in the student’s college for Equivalency of First-Year Composition Requirements, along with a transcript and catalog descriptions of the composition courses to be transferred. The application, available in each college, should be filed immediately upon transfer of course work to ASU so that the student is able to enroll in an additional composition course, if required to do so.

For more information, the student should go to the Composition Office in LL 314.

Resident Credit Requirement

Resident credit refers to a course that is offered in a regular semester, winter session, intersession, or summer session. Credit earned through comprehensive examinations is also included when calculating ASU resident hours. Credit earned through independent learning, advanced placement, the College-Level Examination Program, or an International Baccalaureate Diploma/Certificate are excluded when calculating ASU resident hours.

Campus Resident Credit Requirement. Every candidate for the baccalaureate degree is required to earn a minimum of 30 semester hours in resident credit courses at the ASU campus from which the student will graduate.

Guidelines for Determination of Catalog Year

The *General Catalog* is published annually. Department, school, division, college, and university requirements may change and are upgraded often. In determining graduation requirements, an undergraduate student may use only one edition of the *General Catalog* but may elect to follow any subsequent catalog. Students maintaining continuous enrollment at any public Arizona community college or university may graduate according to the requirements of the catalog in effect at the time of initial enrollment or according to the requirements of any single catalog in effect

UNIVERSITY GRADUATION REQUIREMENTS

Continuous Enrollment

Student's Activity	Semester/Year	Status
Example A		
Admitted and earned course credit at an Arizona community college	Fall 2000	Active
Continued at an Arizona community college	Spring 2001	Active
	Fall 2001	
Transferred to an Arizona university	Spring 2002	Student enrolled under 2000–01 or any subsequent catalog
Example B		
Admitted and earned course credit at an Arizona community college	Fall 1997	Active
Enrolled but earned all “Ws” or “Es”	Spring 1998	Inactive
Enrolled in audit courses only	Fall 1998	Inactive
Nonattendance	Spring 1999	Inactive
Transferred to an Arizona university	Fall 1999	Student enrolled under 1999–2000 or any subsequent catalog
Example C		
Admitted and earned course credit at an Arizona community college	Fall 1997	Active
Nonattendance	Spring 1998	Inactive
	Fall 1998	
	Spring 1999	
Readmitted and earned course credit at an Arizona community college	Fall 1999	Active
Transferred to an Arizona university	Spring 2000	Student enrolled under 1999–2000 or any subsequent catalog
Example D		
Admitted and earned course credit at an Arizona community college	Fall 1996	Active
Nonattendance	Spring 1997	Inactive
Readmitted and earned course credit at an Arizona community college	Summer 1997	Active
Nonattendance	Fall 1997	Inactive
	Spring 1998	
Transferred to an Arizona university	Fall 1998	Student enrolled under 1996–98 or any subsequent catalog
Example E		
Admitted and earned course credit at an Arizona community college	Summer 1998	Active
Continued at an Arizona community college	Fall 1998	Active
	Spring 1999	
Nonattendance	Fall 1999	Inactive
Readmitted and earned course credit at an Arizona community college	Spring 2000	Active
Transferred to an Arizona university	Summer 2000	Student enrolled under 1998–99 or any subsequent catalog

during subsequent terms of continuous enrollment. Students may maintain continuous enrollment whether attending a single public community college or university in Arizona or transferring among public institutions in Arizona while pursuing their degrees.

Students transferring among Arizona public higher education institutions must meet the admission, residency, and all curricular and academic requirements of the degree-granting institution.

1. A semester in which a student earns course credit is counted toward *continuous* enrollment. Noncredit courses, audited courses, failed courses, or courses from which the student withdraws do not count toward the determination of *continuous* enrollment for catalog purposes. See examples A and B in the [“Continuous Enrollment” table, on this page.](#)
2. Students who do not meet the minimum enrollment standard stipulated in number 1 during three consecutive semesters (fall/spring/fall or spring/fall/spring) and the intervening summer term at any public Arizona community college or university are no longer considered continuously enrolled. (Note that students are not obligated to enroll and earn course credit during summer terms, but summer enrollment may be used to maintain continuous enrollment status.) These students must meet requirements of the public Arizona community college or university catalog in effect at the time they are readmitted or of any single catalog in effect during subsequent terms of *continuous* enrollment after readmission. See examples C and D in the [“Continuous Enrollment” table, on this page.](#)
3. Students admitted or readmitted to a public Arizona community college or university during a summer

term must follow the requirements of the catalog in effect the following fall semester or of any single catalog in effect during subsequent terms of *continuous* enrollment. See example E in the [“Continuous Enrollment” table, page 80](#).

4. In areas of study in which the subject matter changes rapidly, material in courses taken long before graduation may become obsolete or irrelevant. Course work that is more than eight years old is applicable to completion of degree requirements at the discretion of the student’s major department. Departments may accept such course work, reject it, or request that the student revalidate its substance. The eight-year limit on course work applies except when program accreditation agencies limit the life of course work to fewer than eight years. Departments may also require students to satisfy current major requirements rather than major requirements in earlier catalogs when completing earlier requirements is no longer possible or educationally sound.
5. Enrollment by Arizona community college students in nontransferable courses still constitutes enrollment for purposes of determining whether the student has been continuously enrolled. For example, if a student takes two semesters of cooperative education classes, which are not transferable to the university but constitute *continuous* enrollment at the community college, the university should consider it *continuous* enrollment.
6. Exceptions made by an institution apply only to the institution that made the exception. For example, if the community college departments accepted credit that was more than eight years old, the university department to which the student transfers has the right and the obligation to reevaluate any credit more than eight years old.

Inquiries about these guidelines may be directed to the student’s academic advisor.

Declaration of Graduation

Students must file a Declaration of Graduation (DOG) using the Degree Audit Reporting System (DARS). DARS is an automated process that matches courses a student has completed with the requirements of a particular academic degree program, resulting in a report that shows the student which requirements are satisfied and which requirements remain to be fulfilled, thus providing a guide for efficient selection of courses toward graduation. For example, a student majoring in Biology would request a Degree Audit Report that would show how his or her completed ASU and transfer course work would apply to the Biology degree program.

Each student must submit a DOG form no later than the semester in which he or she earns the 87th semester hour. The DOG process confirms the degree requirements under which the student is enrolled, as indicated on the degree audit report for that academic program and catalog year. The student should review his or her degree audit with an academic advisor to assure an accurate interpretation. Some departments may require the DOG earlier than the 87th

hour. Students failing to submit the DOG are prevented from further registration.

Application for Graduation Requirements

The following steps are required to complete the graduation process:

1. Register for the final semester.
2. Pay the graduation fee at Cashiering Services. Note the deadline dates listed in the “University Calendar,” page 15.
3. Submit the fee receipt to the Graduation Section, SSV 140, and apply for graduation. The Degree Audit Report or Program of Study is reviewed at this time and the graduation date and eligibility to graduate are verified.
4. Complete all course work listed on the Degree Audit Report or Program of Study by the graduation date.

For more information about application for graduation requirements at ASU West, contact ASU West Admissions and Records, UCB 120.

Students must comply with the above requirements to graduate.

The Application for Graduation along with the Degree Audit Report or Program of Study is reviewed to verify graduation eligibility.

Petition for Variance from Degree

Any student wishing to have a college or university degree requirement variance must petition the standards committee of the college in which the student is enrolled.

All petitions must originate with the student’s advisor. Refer to the college sections of this catalog for college and division, school, or department requirements.

Main Campus Standards Committee. This committee advises the Office of the Senior Vice President and Provost regarding undergraduate student petitions that concern university-wide academic requirements. These requirements include but are not limited to requirements on the amount of transfer credit, graduation requirements, limits on credit by examination, and requirements for a second baccalaureate degree (see “Overview of Graduation Requirements,” [82](#), and [“Second Baccalaureate Degree,” page 82](#)). To petition for a variance from such university requirements, the normal department, division, school, and college forms and procedures are used. Only petitions that have been denied at the college level are forwarded to the Main Campus Standards Committee.

OTHER REQUIREMENTS

The separate units of the university, such as colleges, divisions, schools, and departments, have specific requirements for graduation that must be satisfied for a baccalaureate degree. For those requirements, see the appropriate *General Catalog* section. Students are encouraged to consult with an academic advisor in planning a program to ensure that it meets the various requirements. A well-planned program may enable a student to concurrently satisfy a portion of the General Studies requirement together with a portion of a college or major requirement.

UNIVERSITY GRADUATION REQUIREMENTS

OVERVIEW OF GRADUATION REQUIREMENTS

At ASU, students take classes that fulfill four types of requirements. As illustrated in the “Graduation Requirements” diagram, on this page, some courses can fulfill two or more types of requirements, but other courses fulfill only one requirement. The total semester hours needed to graduate are represented by the largest circle. The university minimum is 120 semester hours. Some majors, however, require more than 120 semester hours.

Although the three shaded circles are equal in size and the white circle is larger than all three, the total number of semester hours for each type of requirement may vary.

University Requirements. The light gray circle represents university requirements. The General Studies requirement and the First-Year Composition requirement are among the university requirements. For General Studies, a minimum of 35 semester hours in five core and three awareness areas is required. For more information, see “General Studies,” page 83.

College Requirements. The medium gray circle represents college requirements. Some colleges and schools have additional requirements, especially the College of Liberal Arts and Sciences. It is important that you understand the requirements of your college.

Major. The dark gray circle represents the requirements of the major. The semester hours required for a major may be as low as 30 hours or as high as 63 hours.

Electives/Minor. The white circle represents electives and the requirements of a minor. A minor typically adds an additional 18 to 25 semester hours. Though every student must eventually declare a major, a minor is not required. For more information on minors, see “Minors, Certificates, and Interdisciplinary Studies,” page 108. Some courses, while providing semester hours toward graduation, fall outside the shaded circles and are not required in your program for graduation. These courses are electives. Some majors leave no room for electives within the minimum 120 semester hours required to graduate.

GENERAL GRADUATION INFORMATION

Graduation with Academic Recognition. An undergraduate student must have completed at least 60 semester hours of resident credit at ASU to qualify for graduation with academic recognition for a baccalaureate degree.

The cumulative GPA determines the designation, as shown in the “Academic Recognition” table below.

Academic Recognition	
Cumulative GPA	Designation
3.40–3.59	<i>cum laude</i>
3.60–3.79	<i>magna cum laude</i>
3.80–4.00	<i>summa cum laude</i>

The cumulative GPA for these designations is based on only ASU resident course work. For example, ASU independent learning course grades are not calculated in the

honors GPA. All designations of graduation with academic recognition are indicated on the diploma and the ASU transcript. Graduation with academic recognition applies only to undergraduate degrees.

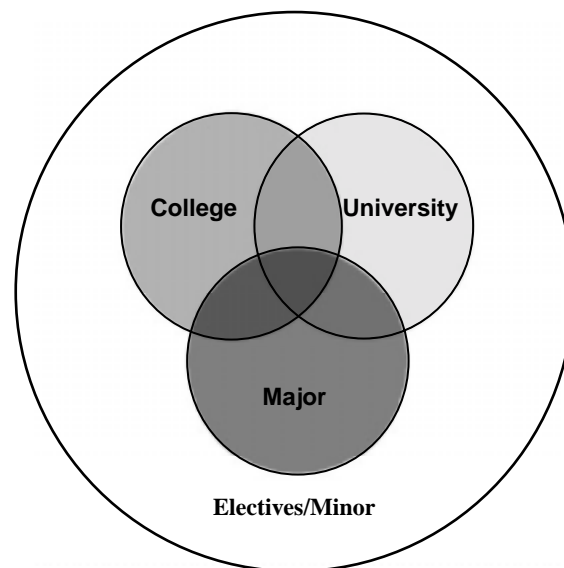
A student who has a baccalaureate degree from ASU and is pursuing a second baccalaureate degree at ASU (with a minimum of 30 hours of resident credit) is granted academic recognition on the second degree based on the semester hours earned subsequent to the posting of the first degree. If fewer than 60 semester hours are completed at ASU subsequent to completion of the first ASU degree, the level of academic recognition can be no higher than that obtained on the first degree. If 60 or more semester hours are completed at ASU after completion of the first ASU degree, the level of academic recognition is based on the GPA earned for the second ASU degree. Inquiries about graduation with academic recognition may be directed to the Graduation Section, 480/965-3256.

Second Baccalaureate Degree. The student seeking a second baccalaureate degree must meet admission criteria for that degree. After conferral of the first degree, a minimum of 30 semester hours in resident credit must be successfully completed at the ASU campus from which the second baccalaureate degree will be awarded. The student must meet all degree and university requirements of the second degree.

Concurrent Degrees. More than one baccalaureate degree may be pursued concurrently if prior approval is given by the standards committee(s) of the college(s) offering the degrees. Students may receive concurrent degrees if they meet the minimum requirements for both degrees.

Graduate Degrees. See “Graduate College,” page 516, and “College of Law,” page 323, for graduate degrees offered and statements of requirements for graduate degrees. A *Graduate Catalog* may be obtained from the Graduate College or the ASU Bookstore.

Graduation Requirements



General Studies

A baccalaureate education should not only prepare students for a particular profession or advanced study, but for constructive and satisfying personal, social, and civic lives as well. In addition to depth of knowledge in a particular academic or professional discipline, students should also be broadly educated and develop the general intellectual skills they need to continue learning throughout their lives. Thus, the General Studies requirement complements the undergraduate major by helping students gain mastery of critical learning skills, investigate the traditional branches of knowledge, and develop the broad perspective that frees one to appreciate diversity and change across time, culture, and national boundaries.

Critical learning skills include proficiency in the use of language, mathematics, and quantitative methods as tools for acquiring, renewing, creating, and communicating knowledge. A broad education includes an understanding of the methods and concerns of traditional branches of knowledge—the arts and humanities, the social sciences, and the natural sciences. Developing perspective requires historical, global, and cross-cultural examination of knowledge of all kinds.

To help students achieve these educational goals, the General Studies Program includes five *core areas* and three *awareness areas*. The five *core areas* help students acquire critical lifelong learning skills and guide their exploration of the traditional branches of knowledge:

1. literacy and critical inquiry;
2. mathematics studies;
3. humanities and fine arts;
4. social and behavioral sciences; and
5. natural sciences.

The three *awareness areas* promote appreciation of cultural diversity within the contemporary United States, develop an international perspective, and foster an understanding of current human events through study of the past:

1. cultural diversity in the United States;
2. global awareness; and
3. historical awareness.

The courses approved by the ASU Main General Studies Council (for ASU Main and ASU East) for meeting the General Studies requirement are noted in the “General Studies Courses” table, page 86; in the course descriptions; and in the *Schedule of Classes* each academic term. The courses approved by the ASU West General Studies Council can be found in the *ASU West Catalog* and in the *Schedule of Classes*.

Meeting the General Studies Requirement

All students enrolled in a baccalaureate degree program must successfully complete a minimum of 35 semester hours of approved General Studies courses. Many General Studies courses are approved as satisfying more than one requirement. The following conditions govern the application of courses toward the General Studies requirement.

1. A single course may be used to satisfy one core area and a maximum of two awareness area requirements.
2. A single course may be used to satisfy a maximum of two awareness area requirements.
3. A single course cannot be used to satisfy two core area requirements, even if it is approved for more than one core area.

There is no limit to the number of advanced placement (AP) or College-Level Examination Program (CLEP) credits that can be used to meet the General Studies requirement; see “Special Programs for Advanced Placement and Credit,” page 65. However, the natural sciences (SQ and SG) and literacy and critical inquiry (L) portions of the General Studies requirement are not satisfied by CLEP.

FIVE CORE AREAS

Literacy and Critical Inquiry (L)

Literacy is competence in written and oral discourse; critical inquiry is the gathering, interpretation, and evaluation of evidence. The literacy and critical inquiry requirement helps students sustain and extend their ability to reason critically and communicate clearly through language.

L Requirement (Six Semester Hours). Students must complete six semester hours from courses designated as L, at least three semester hours of which must be chosen from approved upper-division courses, preferably in their major. Students must have completed ENG 101, 105, or 107 to take an L course.

Mathematical Studies (MA and CS)

This core area has two categories: (1) Mathematics (MA) is the acquisition of essential skill in basic mathematics and requires the student to complete a course in college mathematics or college algebra or to demonstrate a higher level of skill by completing a course for which college algebra is a prerequisite; and (2) computer/statistics/quantitative applications (CS) applies mathematical reasoning and requires students to complete a course in either the use of statistics/quantitative analyses or the use of the computer to assist in serious math analytical work.

MA and CS Requirement (Six Semester Hours). This requirement has two parts: (1) at least three semester hours

GENERAL STUDIES

must be selected from courses designated MA, and at least three semester hours must be selected from courses designated CS; and (2) all students are expected to fulfill the MA requirement by the time they accumulate 30 hours of credit in residence at ASU. Any student who has more than 30 hours of resident ASU credit and has not fulfilled the mathematics (MA) requirement must enroll in an MA course or an appropriate prerequisite and continue to do so every semester until the mathematics requirement is met. College officers may grant waivers to the immediate and continual enrollment requirement only when there are scheduling conflicts detrimental to the student's academic progress.

Humanities and Fine Arts (HU)

The humanities and fine arts explore, through critical and creative activities, questions of human experience and expression as these articulate the human condition and reflect basic human values. Although differing in method, both probe the universality of human experience and promote a broader and deeper understanding of an individual's relationship to self, culture, and nature.

HU Requirement. The requirements for humanities and fine arts (HU) are combined with the requirements for social and behavioral sciences (SB). See "Combined HU and SB Requirement," on this page.

Social and Behavioral Sciences (SB)

The social and behavioral sciences provide scientific methods of inquiry and empirical knowledge about human behavior, both within society and individually. The forms of study may be cultural, economic, geographic, historical, lin-

guistic, political, psychological, or social. The courses in this area address the challenge of understanding the diverse natures of individuals and cultural groups who live together in a world of diminishing economic, linguistic, military, political, and social distance.

Combined HU and SB Requirement (15 Semester Hours). A total of 15 semester hours must be completed in the following two core areas: (1) humanities and fine arts (HU) and (2) social and behavioral sciences (SB). Two conditions must be satisfied: (1) six semester hours must be taken in one of these two core areas and nine hours in the other core area; and (2) three of the 15 semester hours must be at the upper-division level.

Natural Sciences (SQ and SG)

The natural sciences help students appreciate the scope and limitations of science and its contributions to society. Natural science areas of study include anthropology, astronomy, biology, biochemistry, chemistry, experimental psychology, geology, microbiology, physical geography, physics, and plant biology. Knowledge of methods of scientific inquiry and mastery of basic scientific principles and concepts are stressed, specifically those that relate to matter and energy in living and nonliving systems. Firsthand exposure to scientific phenomena in the laboratory is important in developing and understanding the concepts, principles, and vocabulary of science.

General Studies courses that satisfy the natural science requirement are given one of two classifications: quantitative and general.



Moving day is always active as parents and students make dorm rooms cozy.

Francine Enriquez photo

Natural Science-Quantitative (SQ). These laboratory courses include a substantial introduction to the fundamental behavior of matter and energy in physical and biological systems.

Natural Science-General (SG). These laboratory courses cover aspects of scientific inquiry that lend themselves to more qualitative or descriptive discussions of science.

SQ and SG Requirement (Eight Semester Hours). Eight semester hours of courses designated SQ or SG must be selected. Of these, at least four semester hours must be taken from the SQ category.

THREE AWARENESS AREAS

Students must complete courses that satisfy each of the three awareness areas. Courses that are listed for a core area and one or more awareness area may satisfy each of these requirements concurrently.

Cultural Diversity in the United States (C)

The objective of the cultural diversity requirement is to promote awareness and appreciation of cultural diversity within the contemporary United States. The objective is accomplished through the study of the cultural, social, or scientific contributions of women and minority groups, examination of their experiences in the United States, or exploration of successful or unsuccessful interactions between and among cultural groups. Awareness of cultural diversity and its multiple sources can illuminate the collective past, present, and future and also help students to achieve greater mutual understanding and respect.

Global Awareness (G)

The objective of the global awareness requirement is to help students recognize the need for an understanding of the values, elements, and social processes of cultures other than that of the United States. The global awareness area includes courses that recognize the nature of other contemporary cultures and the relationship of the American cultural system to generic human goals and welfare.

Historical Awareness (H)

The objective of the historical awareness requirement is to help students develop knowledge of the past that can be useful in shaping the present and future. History is present in the languages, art, music, literature, philosophy, religion, and the natural sciences, as well as in the social science traditionally called history.

Transfer Credit

The Arizona General Education Curriculum (AGEC), offered by Arizona community colleges, is composed of 35 semester hours of lower-division general education course work. Students who complete the AGECEC have fulfilled the ASU First-Year Composition requirement and all lower-division portions of the General Studies requirement. Students must still take six upper-division semester hours (three for L and three for SB or HU) to complete the ASU

General Studies requirement. If students transfer from Arizona community colleges without completing AGECEC or from other accredited postsecondary institutions, they receive credit for General Studies based on course-by-course equivalency. See “Arizona General Education Curriculum (AGECEC),” page 62.

College or School, and Major Requirements

In addition to General Studies requirements, students must also complete college or school, and major requirements. Students are encouraged to work with their academic advisors to develop a program of study that efficiently meets all graduation requirements. A well-planned program should enable a student to concurrently satisfy requirements at the university, college, or school levels, and within their major.

GENERAL STUDIES COURSES

The ASU Main and ASU East courses in the “General Studies Courses” table, page 86, satisfy the requirements of the five core areas and three awareness areas. General Studies courses are regularly reviewed. Since courses are occasionally added to and deleted from the list, students should always consult the *Schedule of Classes* each semester to see which courses currently meet the General Studies requirement.

A student receives the General Studies credit a course carries in the semester in which the course is taken.

The “Key to General Studies Credit Abbreviations” table, on this page, defines the abbreviations used. General Studies courses are also identified following course descriptions.

The campus codes “M” (for ASU Main) and “W” (for ASU West) identify the campus that maintains academic control over the course (i.e., course content, registration restrictions, General Studies designations, and other curricular matters). The campus code is not used in the catalogs but appears in the *Schedule of Classes*, on transcripts, and other enrollment and registration records.

Key to General Studies Credit Abbreviations

Code	Description
L	Literacy and critical inquiry core courses
MA	Mathematics core courses
CS	Computer/statistics/quantitative applications core courses
HU	Humanities and fine arts core courses
SB	Social and behavioral sciences core courses
SQ	Natural science—quantitative core courses
SG	Natural science—general core courses
C	Cultural diversity in the United States courses
G	Global awareness courses
H	Historical awareness courses
/	Or
,	And

GENERAL STUDIES

General Studies Courses

	L	MA	CS	HU	SB	SQ	SG	C	G	H
--- 493 Honors Thesis (See "Honors Courses," page 56. Only three semester hours may fulfill L requirement.)	L									
ACC 330 Enterprise Process Analysis and Design	L									
430 Taxes and Business Decisions	L									
AES 301 Air Force Leadership Studies I	L									
303 Air Force Leadership Studies II	L									
401 National Security Affairs	L									
AFH 202 Art of Africa, Oceania, and the Americas (Cross-listed as ARS 202)				HU					G	H
225 African American Religion (Cross-listed as REL 225)				HU				C		
322 Malcolm and Martin (Cross-listed as REL 322)				HU				C		
323 Black Religion: A Biographical Approach (Cross-listed as REL 323)				HU				C		
333 American Ethnic Literature (Cross-listed as ENG 333)	L			HU				C		
347 Jazz in America (Cross-listed as MUS 347)				HU						
353 African American Literature: Beginnings Through the Harlem Renaissance (Cross-listed as ENG 353)	L			HU				C		
354 African American Literature: Harlem Renaissance to the Present (Cross-listed as ENG 354)	L			HU				C		
AFR 210 Introduction to African American Studies								C		
263 Elements of Intercultural Communication (Cross-listed as COM 263)					SB			C	G	
317 Genes, Race, and Society					SB			C		H
321 Wealth Distribution and Poverty (Cross-listed as JUS 321)					SB			C		
371 Language, Culture, and Communication (Cross-listed as COM 371)					SB			C	G	
460 Race, Gender, and Media (Cross-listed as MCO 460)								C		
463 Intercultural Communication Theory and Research (Cross-listed as COM 463)					SB				G	
493 Honors Thesis	L									
AFS 202 Ethnic Relations in the United States (Cross-listed as ASB 202)								C		H
210 Introduction to Ethnic Studies in the U.S. (Cross-listed as APA 210/CCS 210)								C		
363 African American History to 1865 (Cross-listed as HST 333)					SB			C		H
364 African American History Since 1865 (Cross-listed as HST 334)					SB			C		H
366 African Civilization Before 1850 (Cross-listed as ASB 366)					SB				G	H
370 Family, Ethnic, and Cultural Diversity (Cross-listed as FAS 370)					SB			C		
466 Peoples and Cultures of Africa (Cross-listed as ASB 466)					SB				G	H
AGB 161 Computer Applications for Agribusiness Industries			CS							
258 International Agribusiness									G	
351 Management Science			CS							
360 Agribusiness Statistics			CS							
414 Agribusiness Analysis	L									
450 International Agricultural Development									G	
455 Resource Management					SB					
AIS 180 Introduction to American Indian Studies								C		
280 Indigenous Law and Society								C		
AMT 308 Air Transportation									G	
ANP 236 Introduction to Computer Modeling			CS							
APA 200 Introduction to Asian Pacific American Studies				HU	SB			C		
210 Introduction to Ethnic Studies in the U.S. (Cross-listed as AFS 210/CCS 210)								C		
310 Asian Pacific American Arts and Cultures				HU				C		
315 Asian Pacific American Literature				HU				C		
330 Asian Pacific American Genders and Sexualities					SB			C		
340 Asian Pacific Americans and Media				HU				C		
360 Asian Pacific American Experience				HU	SB			C		
450 Asian Pacific American Contemporary Issues					SB			C		
APH 100 Introduction to Environmental Design (Cross-listed as DSC 100/PUP 100)				HU					G	H
200 Introduction to Architecture				HU					G	
300 World Architecture I/Western Cultures				HU					G	H
304 American Architecture				HU						
305 Contemporary Architecture				HU						

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
313 History of Architecture I	L			HU					G	
314 History of Architecture II	L			HU					G	
411 History of Landscape Architecture (Cross-listed as PLA 310)										H
414 History of the City (Cross-listed as PUP 412)										H
441 Ancient Architecture				HU						
444 Baroque Architecture				HU						
446 20th-Century Architecture I				HU						
447 20th-Century Architecture II				HU						
ARA 311 Art Appreciation and Human Development				HU						
488 Understanding Art	L			HU						
ARB 201 Intermediate Arabic									G	
202 Intermediate Arabic									G	
ARS 100 Introduction to Art				HU						
101 Art of the Western World I				HU						H
102 Art of the Western World II				HU						H
201 Art of Asia				HU					G	H
202 Art of Africa, Oceania, and the Americas (Cross-listed as AFH 202)				HU					G	H
250 History of Photography				HU						
300 Introduction to Art				HU						
302 Art of Africa, Oceania, and the Americas				HU					G	H
340 Art in America				HU						H
400 History of Printmaking				HU						H
402 Art of Ancient Egypt				HU						H
404 Greek Art				HU						H
406 Roman Art				HU						H
410 Early Christian and Byzantine Art				HU						
412 Early Medieval Art				HU						H
414 Romanesque Art				HU						H
416 Gothic Art				HU						
418 Renaissance Art in Northern Europe				HU						
420 Early Renaissance Art in Italy				HU						H
422 Italian High Renaissance Art and Mannerism				HU						
424 Italian Baroque Art				HU						H
426 Art of the 17th Century in Northern Europe				HU						H
428 Art of the 18th Century				HU						H
430 Art of Spain and Its Colonies				HU						H
432 19th-Century French Art and Culture				HU						H
434 From Courbet to Cézanne: History of European Art 1860–WWI				HU						
436 Art at the Turn of the Century: 1885–1914				HU						
438 Art of the 20th Century I				HU						H
439 Art of the 20th Century II				HU						H
442 Critical Issues in American Painting I				HU						
443 Critical Issues in American Painting II				HU						
444 Modern American Art, 1900–1945				HU						H
458 Critical Theories in the Visual Arts				HU						
462 Pre-Columbian Art				HU						H
465 Native North American Art				HU						H
466 Native American Art of the Southwest				HU				C		H
468 Art of the Arctic and Northwest Coast				HU						
469 Mexican Art				HU						H
472 Art of China				HU						
473 Art of Japan				HU						
475 Chinese Painting				HU						
480 Research Methods	L									
485 Women in the Visual Arts	L									
ART 346 3D Computer Imaging and Animation			CS							
470 Computer Animation Portfolio			CS							

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
ASB 102 Introduction to Cultural and Social Anthropology					SB				G	
202 Ethnic Relations in the United States (Cross-listed as AFS 202)								C		H
211 Women in Other Cultures				HU	SB				G	
222 Buried Cities and Lost Tribes: Our Human Heritage				HU	SB				G	H
223 Buried Civilizations of the Americas				HU	SB				G	H
231 Archaeological Field Methods							SG			
240 Introduction to Southeast Asia (Cross-listed as GCU 240/HST 240/POS 240/REL 240)									G	
242 Asian American Experiences: An Anthropological Perspective	L							C		
250 Anthropology Topics	L									
302 Ethnographic Field Study in Mexico	L				SB				G	
311 Principles of Social Anthropology					SB					
321 Indians of the Southwest	L				SB			C		H
322 Indians of Mesoamerica					SB				G	
323 Indians of Latin America					SB				G	
324 Peoples of the Pacific									G	
325 Peoples of Southeast Asia									G	
326 Human Impacts on Ancient Environments					SB					H
330 Principles of Archaeology					SB					
333 New World Prehistory	L				SB					
335 Prehistory of the Southwest					SB			C		H
337 Pre-Hispanic Civilization of Middle America				HU	SB				G	H
338 Archaeology of North America					SB					H
351 Psychological Anthropology					SB					
353 Death and Dying in Cross-Cultural Perspective				HU	SB				G	
355 Shamanism, Healing, and Consciousness				HU	SB					
361 Old World Prehistory I										H
362 Old World Prehistory II										H
366 African Civilization Before 1850 (Cross-listed as AFS 366)					SB				G	H
400 Cultural Factors in International Business									G	
412 History of Anthropology	L				SB					
416 Economic Anthropology	L				SB					
462 Medical Anthropology: Culture and Health								C		
466 Peoples and Cultures of Africa (Cross-listed as AFS 466)					SB				G	H
471 Introduction to Museums	L									
480 Introduction to Linguistics					SB					
481 Language and Culture					SB					
483 Sociolinguistics and the Ethnography of Communication					SB					
ASE 485 Engineering Statistics			CS							
ASM 101 Bones, Stones, and Human Evolution (for SG credit, if credit also earned in ASM 103)					SB		SG			
103 Human Origins and the Development of Culture—Laboratory (if credit also earned in ASM 101)							SG			
301 Peopling of the World					SB					
342 Human Biological Variation							SG			
344 Fossil Hominids										H
348 Social Issues in Human Genetics					SB					
452 Dental Anthropology							SG			
455 Primate Behavior Laboratory	L									
AST 111 Introduction to Solar Systems Astronomy (if credit also earned in AST 113)						SQ				
112 Introduction to Stars, Galaxies, and Cosmology (if credit also earned in AST 114)						SQ				
113 Astronomy Laboratory I (if credit also earned in AST 111 or 321)						SQ				
114 Astronomy Laboratory II (if credit also earned in AST 112 or 322)						SQ				
321 Introduction to Planetary and Stellar Astrophysics (if credit also earned in AST 113)						SQ				
322 Introduction to Galactic and Extragalactic Astrophysics (if credit also earned in AST 114)						SQ				

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
BCH 467 Analytical Biochemistry Laboratory	L									
BIO 100 The Living World						SQ				
120 Human Physiology							SG			
187 General Biology I							SG			
188 General Biology II						SQ				
193 The Nature of Biological Science						SQ				
201 Human Anatomy and Physiology I							SG			
241 Human Genetics							SG			
302 Cancer and Heart Disease	L									
303 Radiation and Life	L									
304 Radiation Medicine and Biology	L									
316 History of Biology: Conflicts and Controversies (Cross-listed as HPS 330)										H
318 History of Medicine (Cross-listed as HPS 331)										H
319 Environmental Science (Nonmajor) (Cross-listed as PLB 320)									G	
321 Introductory Ecology Laboratory	L									
343 Genetic Engineering and Society	L									
406 Computer Applications in Biology (Cross-listed as PLB 432)			CS							
410 Techniques in Wildlife Conservation Biology	L									
415 Biometry			CS							
416 Professional Values in Science (Cross-listed as HPS 410)	L									
419 Research Colloquium in Biology and Society	L									
426 Limnology	L									
428 Biogeography	L									
435 Research Techniques in Animal Behavior	L									
446 Principles of Human Genetics	L									
470 Systematic Zoology	L									
493 Honors Thesis	L									
BIS 301 Foundations of Interdisciplinary Studies	L									
402 Senior Seminar	L									
BME 201 Introduction to Bioengineering	L									
202 Global Awareness Within Biomedical Engineering Design	L			HU						
413 Biomedical Instrumentation (if credit also earned in BME 423)	L									
423 Biomedical Instrumentation Laboratory (if credit also earned in BME 413)	L									
BUS 301 Fundamentals of Management Communication	L									
451 Business Research Methods	L									
CCS 101 Introduction to Chicana and Chicano Studies									C	
111 Introduction to Chicana and Chicano Culture									C	
210 Introduction to Ethnic Studies in the U.S. (Cross-listed as AFS 210/APA 210)									C	
300 Chicana and Chicano Culture and Society									C	
CDE 232 Human Development					SB					
430 Infant/Toddler Development in the Family					SB					
437 Observational and Naturalistic Methods of Studying Children	L				SB					
CEE 486 Integrated Civil Engineering Design	L									
CED 111 Exploration of Education					SB					
CET 150 Digital Systems I			CS							
CHE 352 Transport Laboratories	L									
461 Process Control			CS							
CHI 201 Second-Year Chinese I										G
202 Second-Year Chinese II										G
313 Third-Year Chinese I										G
314 Third-Year Chinese II										G
321 Chinese Literature	L			HU						
322 Chinese Literature	L			HU						G
413 Introduction to Classical Chinese				HU						
414 Introduction to Classical Chinese				HU						
CHM 101 Introductory Chemistry						SQ				
107 Chemistry and Society						SQ				

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
113						SQ				
114						SQ				
115						SQ				
116						SQ				
117						SQ				
118						SQ				
231						SQ				
235						SQ				
348	L									
349	L									
452	L									
CIS 200			CS							
440	L									
CLS 450	L									
460	L									
COM 100					SB					
110					SB					
222	L									
225	L									
230					SB					
241	L			HU						
250					SB					
263					SB			C	G	
308	L									
316					SB			C		
319					SB					
320					SB					
321	L			HU						H
323								C		
325	L									
344				HU				C		
357					SB					
371					SB			C	G	
400				HU				C		
410					SB					
411					SB					
421				HU						
426					SB					
441				HU						
445				HU						
446				HU				C		
450					SB					
463					SB				G	
CON 101				HU					G	H
389			CS							
472	L									
495			CS							
496	L									
CSE 100			CS							
180			CS							
181			CS							
200			CS							
210			CS							
423	L									
438	L									
CSH 310				HU				C		
351				HU				C		

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
363 Chicana and Chicano Literature (Cross-listed as ENG 363)	L			HU				C		
485 Chicana Writers	L			HU				C		
CSS 330 Chicana and Chicano Politics and Policy								C		
331 Policy Issues in the Chicana and Chicano Urban Settings								C		
336 Issues in Immigration and Migration								C		H
432 Issues in Chicana and Chicano Gender								C		
DAH 100 Dance in World Cultures				HU					G	
300 Focus on Dance				HU						
301 Philosophy and Criticism of Dance	L			HU						
302 Cross-Cultural Dance Studies	L			HU					G	
401 Dance History				HU						
DAN 423 Dance, Computers, and Multimedia			CS							
DSC 100 Introduction to Environmental Design (Cross-listed as APH 100/PUP 100)				HU					G	H
101 Design Awareness				HU					G	
236 Introduction to Computer Modeling			CS							
ECE 100 Introduction to Engineering Design			CS							
300 Intermediate Engineering Design	L									
380 Probability and Statistics for Engineering Problem Solving			CS							
400 Engineering Communications	L									
ECN 111 Macroeconomic Principles					SB					
112 Microeconomic Principles					SB					
306 Survey of International Economics (Cross-listed as IBS 306)					SB				G	
313 Intermediate Macroeconomic Theory					SB					
314 Intermediate Microeconomic Theory					SB					
331 Comparative Economic Systems					SB				G	
360 Economic Development					SB				G	
365 Economics of Russia and Eastern Europe					SB				G	
384 Economics of Social Behavior					SB					
404 History of Economic Thought	L				SB					
421 Earnings and Employment	L				SB					
436 International Trade Theory					SB				G	
438 International Monetary Economics					SB				G	
441 Public Finance	L				SB					
450 Law and Economics	L									
480 Introduction to Econometrics			CS							
493 Honors Thesis	L									
EDC 340 Schooling and Social Context	L									
EDP 303 Human Development	L									
310 Educational Psychology					SB					
454 Statistical Data Analysis in Education			CS							
EDT 321 Computer Literacy			CS							
323 Computer Applications			CS							
EED 498 Language and Learning	L									
EEE 488 Senior Design Laboratory I (if credit also earned in EEE 489)	L									
489 Senior Design Laboratory II (if credit also earned in EEE 488)	L									
ENG 200 Critical Reading and Writing About Literature	L			HU						
201 World Literature				HU						H
202 World Literature				HU						H
204 Introduction to Contemporary Literature				HU						
212 English Prose Style	L									
215 Strategies of Academic Writing	L									
216 Persuasive Writing on Public Issues	L									
217 Writing Reflective Essays	L									
218 Writing About Literature	L									
221 Survey of English Literature				HU						H
222 Survey of English Literature				HU						H
241 Literatures of the United States to 1860				HU						

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
242 Literatures of the United States, 1860–Present				HU						
245 Popular Culture Issues	L									
301 Writing for the Professions	L									
303 Classical Backgrounds of English Literature				HU						
312 English in Its Social Setting	L			HU	SB					
313 Phonology and Morphology	L									
321 Introduction to Shakespeare	L			HU						
326 English Drama 1660–1800				HU						
328 The Novel to Jane Austen				HU						H
331 American Drama	L			HU						
332 Major American Novels	L									
333 American Ethnic Literature (Cross-listed as AFH 333)	L			HU				C		
352 Short Story				HU						
353 African American Literature: Beginnings Through the Harlem Renaissance (Cross-listed as AFH 353)	L			HU				C		
354 African American Literature: Harlem Renaissance to the Present (Cross-listed as AFH 354)	L			HU				C		
355 European Dramatic Traditions	L			HU						
356 The Bible as Literature				HU						
357 Introduction to Folklore				HU						
359 American Indian Literatures	L			HU				C		
360 Western American Literature	L			HU						
361 Silent Film				HU						
362 Sound Film Genres				HU						
363 Chicana and Chicano Literature (Cross-listed as CSH 363)	L			HU				C		
364 Women and Literature				HU						
372 Document Production	L									
400 History of Literary Criticism	L			HU						H
413 History of the English Language				HU						
415 Topics in Medieval Literature and Culture				HU						
416 Chaucer in Middle English				HU						
418 Renaissance Literature	L			HU						
419 English Literature in the Early 17th Century	L			HU						
421 Shakespeare				HU						
422 Studies in Shakespeare				HU						
423 Renaissance Drama	L			HU						
424 Milton				HU						
425 Studies in Romanticism				HU						
427 Studies in 18th-Century Literature and Culture				HU						
430 Studies in Victorian Literature and Culture	L			HU						
440 Studies in American Literature and Culture				HU						
444 Studies in American Romanticism				HU						
445 Studies in American Realism	L			HU						
448 Studies in Irish Literature and Culture				HU						
452 Studies in the Novel				HU						
453 Studies in the American Novel				HU						
457 Studies in American Poetry				HU						
461 Studies in Women and Literature				HU						
464 Studies in Drama				HU						
470 Symbols and Archetypes in Children’s Literature	L			HU						
471 Literature for Adolescents				HU						
472 Rhetorical Studies	L									
480 Methods of Teaching English: Composition	L									
482 Methods of Teaching English: Language	L									
493 Honors Thesis	L									
EPE 100 Introduction to Health and Wellness (Cross-listed as EXW 100/HES 100)					SB					
348 Psychological Skills for Optimal Performance					SB					

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
352 Psychosocial Aspects of Physical Activity					SB			C		
400 Teaching Physical Activity Concepts	L									
414 Electromyographic Kinesiology	L									
441 Physiology of Women in Sport	L									
443 Exercise Endocrinology	L									
448 Applied Sport Psychology	L									
452 Exercise Psychology					SB					
460 Theory of Strength Training	L									
ERS 130 Introduction to Environmental Science						SQ				
246 Environmental Conservation and Ecology									G	
350 Environmental Statistics			CS							
480 Ecosystem Management and Planning	L									
ETC 100 Languages of Technology			CS							
ETM 428 International Environmental Management									G	
EXW 100 Introduction to Health and Wellness (Cross-listed as EPE 100/HES 100)					SB					
280 Global Issues in Exercise and Wellness									G	
300 Foundations of Exercise and Wellness	L				SB					
310 Computer Skills and Technology for Exercise and Wellness			CS							
400 Stress Management for Wellness	L									
442 Physical Activity in Health and Disease	L									
450 Cultural and Social Issues in Exercise and Wellness					SB			C		
FAS 330 Personal Growth in Human Relationships					SB					
331 Marriage and Family Relationships					SB					
332 Human Sexuality					SB					
361 Introduction to Family/Child Research Methods	L									
370 Family, Ethnic, and Cultural Diversity (Cross-listed as AFS 370)					SB			C		
431 Parent-Adolescent Relationships					SB					
435 Advanced Marriage and Family Relationships	L				SB					
FIN 456 International Financial Management									G	
461 Financial Cases and Modeling	L									
FLA 150 Introduction to East Asian Culture				HU					G	
323 Survey of Literature of the Soviet Era in Translation	L			HU					G	
400 Linguistics					SB					
420 Foreign Literature in Translation				HU					G	
421 Japanese Literature in Translation	L			HU					G	
FRE 201 Intermediate French I									G	
202 Intermediate French II									G	
205 Readings in French Literature									G	
207 French for International Professions II									G	
311 French Conversation									G	
312 French Composition									G	
319 Business French									G	
321 French Literature	L			HU						H
322 French Literature	L			HU						
411 Advanced Spoken French									G	
412 Advanced Written French									G	
415 French Civilization I				HU						
416 French Civilization II				HU					G	
441 French Literature of the 17th Century				HU						
442 French Literature of the 17th Century				HU						H
445 French Literature of the 18th Century	L			HU						
452 French Novel of the 19th Century				HU						
453 Theater of the 19th Century	L			HU						
461 Modern Narrative				HU						
462 Modern Poetry				HU						
471 The Literature of Francophone Africa and the Caribbean	L			HU						
GCU 102 Introduction to Human Geography					SB					

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
111 Geologic Disasters Laboratory (if credit also earned in GLG 110)							SG			
410 Computers in Geology			CS							
451 Field Geology I	L									
452 Field Geology II	L									
GPH 111 Introduction to Physical Geography						SQ				
210 Society and Environment									G	
211 Landform Processes	L									
212 Introduction to Meteorology (if credit also earned in GPH 214)							SG			
214 Introduction to Meteorology Laboratory (if credit also earned in GPH 212)							SG			
314 Global Change				HU					G	
370 Geographic Information Technologies			CS							
371 Cartography			CS							
373 Geographic Information Science I			CS							
381 Geography of Natural Resources									G	
414 Climate Change									G	
418 Landforms of the Western United States	L									
433 Alpine and Arctic Environments									G	
471 Cartographic Design			CS							
473 Geographic Information Science II			CS							
GRA 318 History of Graphic Design				HU						
345 Design Rhetoric	L									
GRK 301 Ancient Greek Literature				HU						
302 Ancient Greek Literature				HU						
GRN 430 Multidisciplinary Approaches to Gerontology					SB					
HCR 210 Clinical Health Care Ethics				HU						
220 Health Care Organizations (Cross-listed as HSA 220)	L									
230 Culture and Health								C	G	
HEB 201 Intermediate Modern Hebrew									G	
202 Intermediate Modern Hebrew									G	
375 Contemporary Culture of Israel				HU					G	
HES 100 Introduction to Health and Wellness (Cross-listed as EPE 100/EXW 100)					SB					
HON 171 The Human Event	L			HU						H
172 The Human Event	L			HU						H
371 Freedom and Authority	L			HU						
372 French Cultural Influences	L			HU					G	
373 Heroes, Heroines, and Villains	L			HU						
374 Black and White Atlantic				HU					G	
375 Science and the Modern Self	L			HU						
376 Law, Literature, and Life	L			HU						
377 Nature in Context	L			HU						
493 Honors Thesis	L									
HPS 322 History of Science				HU						H
323 History of Science				HU						H
325 Chinese Science and Medicine (Cross-listed as HST 385)				HU					G	H
330 History of Biology: Conflicts and Controversies (Cross-listed as BIO 316)										H
331 History of Medicine (Cross-listed as BIO 318)										H
410 Professional Values in Science (Cross-listed as BIO 416)	L									
HSA 220 Health Care Organizations (Cross-listed as HCR 220)	L									
HST 101 Global History Since 1500									G	H
102 Western Civilization					SB					H
103 Western Civilization					SB					H
104 Western Civilization					SB				G	H
105 Slavic Civilization					SB					H
106 Asian Civilizations					SB				G	H
107 Asian Civilizations					SB				G	H
108 Introduction to Japan					SB				G	H
109 The United States to 1865					SB					H

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
110 The United States Since 1865					SB					H
200 Historical Themes					SB					H
201 Historical Themes in Asia					SB					H
202 Historical Themes in Europe					SB					H
203 Historical Themes in Latin America					SB					H
204 Historical Themes in the United States					SB					H
210 American Social History	L				SB					H
211 American Jewish History					SB					H
212 American Military History					SB					H
240 Introduction to Southeast Asia (Cross-listed as ASB 240/GCU 240/POS 240/REL 240)									G	
300 Historical Inquiry	L				SB					H
302 Studies in History					SB					H
303 Studies in Asian History					SB					H
304 Studies in European History					SB					H
305 Studies in Latin American History					SB					H
306 Studies in United States History					SB					H
309 Exploration and Empire	L									H
310 Film as History				HU						
313 American Cultural History to 1865					SB					H
314 American Cultural History Since 1865					SB					H
315 Political History of the United States					SB					H
316 20th-Century U.S. Foreign Relations					SB				G	H
318 United States Labor History					SB					H
319 U.S. Urban History to 1850					SB					H
320 U.S. Urban History Since 1850					SB					H
321 Constitutional History of the United States to 1865					SB					H
322 Constitutional History of the United States Since 1865					SB					H
325 Immigration and Ethnicity in the United States					SB			C		H
327 Women in U.S. History, 1600–1880					SB			C		H
328 Women in U.S. History, 1880–1980					SB			C		H
329 Women in 20th-Century U.S. West								C		H
330 Mexican Women in the United States: Conquests and Migrations	L				SB			C		H
331 Mexican American History to 1900					SB					H
332 Mexican American History Since 1900					SB			C		H
333 African American History to 1865 (Cross-listed as AFS 363)					SB			C		H
334 African American History Since 1865 (Cross-listed as AFS 364)					SB			C		H
337 American Indian History to 1900					SB			C		H
338 American Indian History Since 1900					SB			C		H
341 The U.S. West in the 19th Century					SB					H
342 The U.S. West in the 20th Century					SB					H
343 The American Southwest	L				SB					H
344 Arizona					SB					H
347 Ancient Greece					SB					H
348 Rome					SB					H
349 The Early Middle Ages					SB					H
350 The Later Middle Ages					SB					H
351 Renaissance Europe	L				SB					H
352 Europe's Reformations	L				SB					H
353 The Old Regime in Europe					SB					H
354 Revolutionary Europe					SB					H
355 Total War and the Crisis of Modernity					SB				G	H
356 Europe Since 1945					SB				G	H
358 Jewish History from the Bible to 1492					SB					H
359 Jewish History from 1492 to 1948					SB				G	H
361 Witchcraft and Heresy in Europe (Cross-listed as REL 374)	L									H
362 Sex and Society in Classical and Medieval Europe					SB					H

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
363 Sex and Society in Early Modern Europe					SB					H
364 Sex and Society in Modern Europe	L				SB					H
365 Women in Europe	L			HU	SB					H
366 England to 1689					SB					H
367 Modern Britain					SB					H
368 Culture and Imagination in European History				HU						H
370 Eastern Europe in Transition					SB				G	H
372 The Modern Middle East					SB				G	H
375 Colonial Latin America					SB					H
376 Modern Latin America					SB					H
377 Women in Colonial Latin America										H
378 Latin American Women: The National Period					SB				G	H
380 Cultural History of Latin America					SB					H
383 China					SB					H
384 China					SB				G	H
385 Chinese Science and Medicine (Cross-listed as HPS 325)				HU					G	H
386 Interpreting China's Classics (Cross-listed as HUM 312)	L			HU						H
387 Japan	L				SB					H
388 Japan					SB				G	H
391 Modern Southeast Asia					SB				G	H
405 Colonial American History to 1763					SB					H
406 The American Revolution, 1763–1789					SB					H
407 The Early U.S. Republic, 1789–1850	L				SB					H
408 Civil War and Reconstruction	L				SB					H
409 The Emergence of the Modern United States, 1877 to 1918					SB					H
410 The Modern United States, 1918 to 1945					SB					H
411 The Postwar United States, 1945 to 1973					SB					H
412 The Contemporary United States, 1973 to the Present					SB					H
414 The Modern U.S. Economy					SB					H
415 Unequal Sisters: Women and Political and Cultural Change	L				SB			C		H
416 Indian History of the Southwest					SB			C		H
417 Topics in Mexican American History					SB			C		H
423 The Tudor Monarchy					SB					H
424 The Stuart Transformation of England					SB					H
426 The British Empire					SB					H
427 The French Revolution and the Napoleonic Era					SB					H
428 Modern France					SB				G	H
429 Modern Germany					SB				G	H
430 Hitler: Man and Legend					SB					H
431 Eastern Europe and the Balkans Before 1914					SB					H
432 Eastern Europe and the Balkans in the 20th Century					SB				G	H
435 The Russian Empire					SB					H
436 The Soviet Experiment					SB				G	H
437 Spain Through the Golden Age				HU	SB					H
438 Modern Spain				HU	SB				G	H
441 Spanish South America					SB					H
442 Spanish South America					SB					H
443 The United States and Latin America					SB				G	H
445 20th-Century Cuba					SB				G	H
446 Colonial Mexico					SB					H
447 Modern Mexico					SB					H
451 Chinese Cultural History					SB					H
452 Chinese Cultural History					SB				G	H
453 The People's Republic of China					SB				G	H
455 The United States and Japan					SB				G	H
456 The Vietnam War					SB				G	H
460 History of Fire	L									H

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
493 Honors Thesis	L									
498 PS: History Pro-Seminar	L									
HUM 110 Contemporary Issues in Humanities				HU						
200 Encountering the Humanities				HU						
260 Introduction to Islam (Cross-listed as REL 260)				HU					G	
301 Humanities in the Western World	L			HU						H
302 Humanities in the Western World	L			HU						H
310 Japanese Cities and Cultures to 1800 (Cross-listed as REL 355)	L			HU						H
312 Interpreting China's Classics (Cross-listed as HST 386)	L			HU						H
340 Contemporary American Film and Popular Culture				HU						
401 The Culture and Legacy of the European Enlightenment				HU						H
420 Interpreting Latin America				HU					G	H
440 Los Angeles and Cultural Theory	L			HU				C		
450 Technology and Culture	L			HU						
460 Postmodern Culture and Interpretation	L									
462 Psychoanalysis and Culture	L			HU	SB					
465 Narrative in the Human Sciences	L			HU						
498 Pro-Seminar in the Humanities: Theory and Culture	L			HU						
IBS 300 Principles of International Business									G	
306 Survey of International Economics (Cross-listed as ECN 306)					SB				G	
400 Cultural Factors in International Business								C	G	
493 International Honors Thesis	L									
IDN 201 Intermediate Indonesian I									G	
202 Intermediate Indonesian II									G	
IED 410 History of American Indian Education					SB			C		H
430 Issues in Language and Literacy of Indigenous Peoples				HU	SB			C		
444 The Role of Governments in Native Education Policy and Administration					SB					
460 Yaqui History and Culture				HU	SB			C		H
IEE 305 Information Systems Engineering			CS							
374 Quality Control			CS							
463 Computer-Aided Manufacturing and Control			CS							
475 Simulating Stochastic Systems			CS							
476 Operations Research Techniques/Applications			CS							
490 Project in Design and Development	L									
IND 316 20th-Century Design I				HU						H
317 20th-Century Design II				HU						H
470 Professional Practice for Industrial Design	L									
INT 223 Interior Design Issues and Theories				HU						
310 History of Interior Design I				HU						H
311 History of Interior Design II				HU						H
412 History of Decorative Arts in Interiors				HU						
442 Specifications and Documents for Interiors	L									
ITA 201 Intermediate Italian									G	
202 Intermediate Italian									G	
311 Italian Composition and Conversation									G	
312 Italian Composition and Conversation									G	
314 Advanced Italian									G	
325 Introduction to Italian Literature				HU						
415 Italian Civilization	L			HU					G	
425 Italian American Culture	L									
430 Italian Literature of the Middle Ages				HU						
441 Dante: <i>Divina Commedia</i>	L			HU						
443 Italian Literature of the Renaissance				HU						H
446 Italian Literature of the 18th and 19th Centuries				HU						
449 20th-Century Italian Literature				HU					G	
ITM 440 Introduction to International Business									G	
JMC 201 Journalism Newswriting	L									

General Studies Courses (continued)

		L	MA	CS	HU	SB	SQ	SG	C	G	H
	202										
	301	L									
	315	L									
JPN	201									G	
	202									G	
	311									G	
	312									G	
	313									G	
	314									G	
	321	L			HU					G	
JUS	100					SB					
	200					SB					
	302			CS							
	320					SB			C		
	321					SB			C		
	329					SB					
	350					SB			C		
	360					SB					
	375					SB					
	385					SB					
	404	L									
	405					SB				G	
	415	L								G	
	420					SB			C		
	425	L				SB			C		
	430	L				SB			C		
	440	L									
	450	L									
	463					SB					
	465	L									
	469	L				SB			C		
	470	L				SB			C		
	474	L				SB			C		
	477	L				SB					
	479					SB					
KOR	201									G	
	202									G	
	250									G	
LAT	201				HU						
	202				HU						
	421				HU						
	422				HU						
MAE	468	L									
	490	L									
MAT	114		MA								
	117		MA								
	119		MA								
	170		MA								
	210		MA								
	251		MA								
	260		MA								
	261		MA								
	262		MA								
	270		MA								
	271		MA								
	272		MA								
	274		MA								

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
275 Modern Differential Equations		MA								
290 Calculus I		MA								
300 Mathematical Structures	L									
351 Mathematical Methods for Genetic Analysis			CS							
419 Introduction to Linear Programming			CS							
421 Applied Computational Methods			CS							
423 Numerical Analysis I			CS							
425 Numerical Analysis II			CS							
427 Computer Arithmetic			CS							
451 Mathematical Modeling			CS							
MBB 245 Cellular and Molecular Biology (if credit also earned in MBB 246)						SQ				
246 Cellular and Molecular Biology Laboratory (if credit also earned in MBB 245)						SQ				
343 Genetic Engineering and Society	L									
490 Capstone: Issues in Biotechnology	L									
MCE 446 Understanding the Culturally Diverse Child								C		
MCO 110 Introduction to Mass Communication					SB					
120 Media and Society					SB					
402 Mass Communication Law	L									
418 History of Mass Communication					SB					H
430 International Mass Communication									G	
450 Visual Communication				HU						
456 Political Communication					SB					
460 Race, Gender, and Media (Cross-listed as AFR 460)								C		
MET 416 Applied Computer-Integrated Manufacturing			CS							
MHL 201 MacLiteracy for Musicians			CS							
344 Music in World Cultures				HU					G	
352 The Evolution of Jazz										H
363 Survey of Russian Music				HU						
438 Music in the Classic Era										H
439 Music in the 19th Century	L									H
441 Music of the Baroque Era	L									
447 Music Since 1900	L									
466 North American Indian Music	L			HU				C		
MIC 205 Microbiology (if credit also earned in MIC 206)							SG			
206 Microbiology Laboratory (if credit also earned in MIC 205)							SG			
302 Advanced Bacteriology Laboratory (if credit also earned in MIC 401)	L									
401 Research Paper (if credit also earned in MIC 302)	L									
MIS 410 American Defense Policy I					SB					
412 American Defense Policy II					SB					
414 Comparative Defense Policy Analysis					SB					
416 Soviet/C.I.S. Foreign and Defense Policies					SB					
MKT 460 Strategic Marketing	L									
MUE 381 Music Therapy Research	L									
MUS 340 Survey of Music History				HU						H
347 Jazz in America (Cross-listed as AFH 347)				HU						
354 Popular Music				HU						
355 Survey of American Music				HU						H
356 Survey of the Musical Theatre				HU						
NTR 344 Nutrition Services Management	L							C		
348 Cultural Aspects of Food										
448 Community Nutrition	L									
450 Nutrition in the Life Cycle I					SB					
NUR 362 Professional Development II: Nursing Research	L									
391 Registered Nurse Mobility I: Professional Development	L									
OPM 450 Changing Business Processes	L									
PGS 101 Introduction to Psychology					SB					
222 Human Sexual Behavior					SB					

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
270 Psychology of Adjustment					SB					
304 Effective Thinking	L									
306 Environmental Psychology					SB					
315 Personality Theory and Research					SB					
341 Developmental Psychology					SB					
350 Social Psychology					SB					
351 Honors Social Psychology	L				SB					
365 Community Psychology					SB					
414 History of Psychology	L				SB					
427 Psychology of Aging	L				SB					
441 Cognitive Development	L				SB					
443 Abnormal Child Psychology	L				SB					
444 Adolescent Psychology and Psychopathology	L									
445 Child Language and Drawing					SB					
446 Social Development	L									
450 Social Perception and Cognition	L									
451 Stereotyping, Prejudice, and Discrimination	L									
452 Applied Social Psychology	L									
461 Interpersonal Influence					SB					
463 Advanced Psychology of Adjustment	L									
465 Psychology of Stress and Coping	L									
466 Abnormal Psychology					SB					
467 Psychology of Magical Beliefs	L									
PHI 101 Introduction to Philosophy				HU						
103 Principles of Sound Reasoning	L			HU						
105 Introduction to Ethics				HU						
300 Philosophical Argument and Exposition	L									
301 History of Ancient Philosophy				HU						H
302 History of Modern Philosophy				HU						H
304 Existentialism				HU						
305 Ethical Theory				HU						
306 Applied Ethics				HU						
307 Philosophy of Law				HU						
308 Philosophy of Art				HU						
309 Social and Political Philosophy				HU						
310 Environmental Ethics				HU						
311 Philosophy in Literature				HU						
312 Theory of Knowledge				HU						
314 Philosophy of Science				HU						
315 Philosophy of Language				HU						
316 Metaphysics				HU						
317 Philosophy of Mind				HU						
318 Philosophy of Religion				HU						
319 Philosophy of Computing			CS	HU						
325 Philosophy of Social Science				HU	SB					
332 19th-Century Philosophy				HU						
335 History of Ethics				HU						
402 Empiricism				HU						
403 Contemporary Analytic Philosophy				HU						
PHS 110 Fundamentals of Physical Science						SQ				
208 Patterns in Nature (Cross-listed as STE 208)						SQ				
PHY 101 Introduction to Physics						SQ				
111 General Physics (if credit also earned in PHY 113)						SQ				
112 General Physics (if credit also earned in PHY 114)						SQ				
113 General Physics Laboratory (if credit also earned in PHY 111)						SQ				
114 General Physics Laboratory (if credit also earned in PHY 112)						SQ				
121 University Physics I: Mechanics (if credit also earned in PHY 122)						SQ				

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
122 University Physics Laboratory I (if credit also earned in PHY 121)						SQ				
131 University Physics II: Electricity and Magnetism (if credit also earned in PHY 132)						SQ				
132 University Physics Laboratory II (if credit also earned in PHY 131)						SQ				
150 Physics I						SQ				
151 Physics II						SQ				
201 Mathematical Methods in Physics I			CS							
252 Physics III						SQ				
334 Advanced Laboratory I (if credit also earned in PHY 420)	L									
420 Research Paper (if credit also earned in PHY 334)	L									
PLA 101 Landscape and Society				HU					G	
222 Computers in Landscape Architecture			CS							
310 History of Landscape Architecture (Cross-listed as APH 411)										H
411 Landscape Architecture Theory and Criticism	L									
420 Theory of Urban Design				HU						
485 International Field Studies in Planning and Landscape Architecture (Cross-listed as PUP 485)									G	
PLB 108 Concepts in Plant Biology						SQ				
200 Biology of Plants (if credit also earned in PLB 201)						SQ				
201 Biology of Plants Laboratory (if credit also earned in PLB 200)						SQ				
260 Plants in Cities: Introduction to Urban Horticulture							SG			
300 Comparative Plant Diversity	L						SG			
320 Environmental Science (Nonmajor) (Cross-listed as BIO 319)									G	
414 Plant Pathology	L									
430 Statistical Analyses in Environmental Science			CS							
432 Computer Applications in Biology (Cross-listed as BIO 406)			CS							
POR 201 Intermediate Portuguese									G	
313 Portuguese Composition and Conversation									G	
314 Portuguese Composition and Conversation									G	
321 Luso-Brazilian Literature				HU						
472 Luso-Brazilian Civilization				HU					G	
POS 101 Political Ideologies					SB					
110 Government and Politics					SB					
150 Comparative Government					SB				G	
160 Global Politics					SB				G	
220 Political Issues and Public Policy					SB					
230 Current Issues in National Politics	L				SB					
240 Introduction to Southeast Asia (Cross-listed as ASB 240/GCU 240/HST 240/REL 240)									G	
260 Current Issues in International Politics	L				SB				G	
270 American Legal System					SB					
300 Contemporary Controversies in Global Politics					SB				G	
301 Empirical Political Inquiry					SB					
310 American National Government					SB					
313 The Congress					SB					
314 The American Presidency					SB					
315 The Supreme Court					SB					
316 State and Local Government					SB					
320 Public Administration					SB					
325 Public Policy Development					SB					
330 Contemporary Controversies in Domestic Politics					SB					
331 Public Opinion					SB					
332 American Political Parties					SB					
333 Interest Groups					SB					
336 Electoral Behavior					SB					
340 History of Political Philosophy I				HU						H
341 History of Political Philosophy II				HU						H

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
346 Problems of Democracy				HU						
350 Comparative Politics					SB				G	
351 Democratization					SB				G	
355 Russia and Successor States					SB				G	
356 Western Europe					SB				G	
357 South Asia Politics					SB				G	
358 Southeast Asia					SB				G	
359 African Politics and Society					SB				G	
360 World Politics					SB				G	
361 American Foreign Policy					SB				G	
364 U.S. National Security Analyses					SB					
370 Law and Society					SB					
401 Political Statistics			CS							
410 Urban Government and Politics					SB					
417 The Arizona Political System					SB					
422 Politics of Bureaucracy					SB					
423 Politics of Budgeting					SB					
426 Elements of Public Policy					SB					
431 Campaigns and Elections					SB					
433 Money and Politics					SB					
434 Media and Politics					SB					
435 Women and Politics					SB			C		
439 Minority Group Politics in America					SB			C		
442 American Political Thought				HU						
443 Topics in Contemporary Political Theory				HU						
445 Asian Political Thought					SB				G	
451 China, Japan, and the Koreas					SB				G	
452 China					SB				G	
453 South America					SB				G	
454 Mexico					SB				G	
455 Central America and the Caribbean					SB				G	
459 South and Southern Africa					SB				G	
463 Inter-American Relations					SB				G	
465 International Organization and Law					SB				G	
467 International Security					SB				G	
468 Comparative Asian Foreign Policies					SB				G	
471 Constitutional Law I					SB					
472 Constitutional Law II					SB					
485 Political Economy					SB					
486 International Political Economy					SB				G	
498 Pro-Seminar	L									
PSY 230 Introduction to Statistics			CS							
290 Research Methods	L						SG			
330 Statistical Methods			CS							
390 Experimental Psychology	L									
420 Analysis of Behavior	L									
424 Genetic Psychology	L									
425 Biological Bases of Behavior	L									
426 Neuroanatomy	L									
434 Cognitive Psychology	L									
437 Human Factors	L									
498 PS: Behavioral Neuroscience Research	L									
PUP 100 Introduction to Environmental Design (Cross-listed as APH 100/DSC 100)				HU					G	H
200 The Planned Environment				HU						H
236 Introduction to Computer Modeling			CS							
301 Introduction to Urban Planning	L									
412 History of the City (Cross-listed as APH 414)										H

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
420 Theory of Urban Design				HU						
445 Women and Environments								C		
452 Ethics and Theory in Planning	L									
485 International Field Studies in Planning and Landscape Architecture (Cross-listed as PLA 485)									G	
QBA 221 Statistical Analysis			CS							
321 Applied Quality Analysis I	L									
REC 120 Leisure and the Quality of Life					SB					
160 Leisure and Society					SB					
305 Introduction to Travel and Tourism									G	
330 Programming of Recreation Services	L									
380 Wilderness and Parks in America					SB					H
458 International Tourism									G	
REL 100 Religions of the World				HU					G	
200 The Study of Religious Traditions	L			HU					G	
201 Religion and the Modern World	L			HU						
202 Religion and Popular Culture				HU				C		
203 Saints and Sinners: Explorations in Sacred Biography				HU						H
205 Living and Dying				HU						
210 Introduction to Judaism	L			HU						H
225 African American Religion (Cross-listed as AFH 225)				HU				C		
240 Introduction to Southeast Asia (Cross-listed as ASB 240/GCU 240/HST 240/POS 240)									G	
260 Introduction to Islam (Cross-listed as HUM 260)				HU					G	
270 Introduction to Christianity				HU						
301 Comparative Mysticism				HU						
305 Ritual, Symbol, and Myth	L			HU						
310 Western Religious Traditions				HU						H
315 Hebrew Bible (Old Testament)	L			HU						H
317 Introduction to Rabbinic Judaism				HU						H
318 Contemporary American Jewish Identities (Cross-listed as SOC 375)				HU	SB			C		
320 American Religious Traditions				HU				C		H
321 Religion in America				HU				C		H
322 Malcolm and Martin (Cross-listed as AFH 322)				HU				C		
323 Black Religion: A Biographical Approach (Cross-listed as AFH 323)				HU				C		
326 U.S. Latino Religion and Culture				HU				C		
330 Native American Religious Traditions				HU				C		
331 History of Native American Religious Traditions	L			HU				C		H
332 South American Indian Religions				HU					G	
344 Religion and Values in Japanese Life				HU					G	
345 Asian Religious Traditions				HU					G	
350 Hinduism	L			HU					G	
351 Buddhism	L			HU					G	
355 Japanese Cities and Cultures to 1800 (Cross-listed as HUM 310)	L			HU						H
365 Islamic Civilization				HU						H
366 Islam in the Modern World				HU					G	H
371 New Testament				HU						
372 Formation of the Christian Tradition				HU						H
374 Witchcraft and Heresy in Europe (Cross-listed as HST 361)	L									H
377 Religion in Russia				HU						H
379 Religion, Nationalism, and Ethnic Conflict				HU					G	
381 Religion and Moral Issues	L			HU						
382 Religion, Magic, and Science	L			HU						
385 Contemporary Western Religious Thought	L			HU						
386 America and the Holocaust				HU	SB					
390 Women and Religion				HU					G	
410 Judaism in Modern Times				HU						H

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
415 The Jewish Mystical Tradition				HU						
420 Religion in American Life and Thought				HU						
426 American Preachers and Preaching: The Sermon in America				HU						
427 American Religious Thought				HU						H
444 Religion in Japan				HU					G	H
460 Studies in Islamic Religion				HU					G	
470 Religion in the Middle Ages				HU						H
471 Reformation and Modern Christianity				HU						H
480 Religion and Global Politics									G	
RUS 201 Intermediate Russian									G	
202 Intermediate Russian									G	
211 Basic Russian Conversation									G	
212 Basic Russian Conversation									G	
311 Russian Composition and Conversation									G	
312 Russian Composition and Conversation									G	
321 Survey of Russian Literature				HU						H
322 Survey of Russian Literature	L			HU						
323 Survey of Literature of the Soviet Era	L			HU					G	
411 Advanced Composition and Conversation I									G	
412 Advanced Composition and Conversation II									G	
420 Russian Poetry	L			HU						
421 Pushkin	L			HU						
423 Dostoyevsky	L			HU						
424 Tolstoy	L			HU						
425 Chekhov	L			HU						
426 Literatures of the Nationalities of the Former Soviet Union	L			HU					G	
430 Russian Short Story	L			HU						
441 Survey of Russian Culture	L			HU					G	H
SCA 250 Introduction to Scandinavian Culture				HU					G	H
316 Scandinavian Cinema				HU					G	
450 Masterpieces of Scandinavian Literature	L			HU						
SCM 455 Research and Negotiation	L									
SHS 367 Language Science					SB					
465 Speech and Language Acquisition					SB					
SOC 101 Introductory Sociology					SB					
220 Sport and Society					SB					
270 Racial and Ethnic Relations					SB			C		
301 Principles of Sociology					SB					
312 Sociology of Adolescence					SB					
315 Courtship and Marriage					SB					
318 Overview of Aging					SB					
321 Sociology of Work					SB					
331 Environmental Sociology					SB				G	
332 Urban Sociology					SB				G	
333 Population					SB				G	
340 The Sociology of Deviance					SB					
341 Modern Social Problems					SB					
352 Social Change					SB				G	H
360 Sociological Psychology					SB					
361 Variant Sexuality					SB					
363 Men and Masculinity					SB					
365 The Sociology of Mass Communication					SB					
375 Contemporary American Jewish Identities (Cross-listed as REL 318)				HU	SB			C		
390 Social Statistics I			CS							
391 Sociological Research					SB					
415 The Family					SB					
416 Marriage Problems in Contemporary Society	L				SB					

GENERAL STUDIES

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
417 Family Violence					SB					
418 Aging and the Life Course					SB					
420 Sociology of Religion	L				SB					
421 Education and Society					SB					
422 Sociology of Complex Organizations	L				SB					
423 Social Class and Stratification	L				SB					
424 Women and Health	L				SB					
427 Sociology of Health and Illness	L				SB					
429 Sociology of Law					SB					
433 Applied Demography					SB					
446 Sociology of Crime					SB					
448 Epidemics and Society					SB				G	
451 Comparative Sociology					SB				G	
455 Social Movements					SB					
456 Political Sociology					SB				G	
464 Sociology of Women	L				SB			C		
474 African Americans in Modern Society					SB			C		
483 History of Social Thought					SB					
485 Sociology of Knowledge	L				SB					
486 Contemporary Theory					SB					
SPA 201 Intermediate Spanish									G	
202 Intermediate Spanish									G	
203 Intermediate Spanish for Bilinguals									G	
204 Intermediate Spanish for Bilinguals									G	
207 Spanish for International Professions II									G	
313 Spanish Conversation and Composition									G	
314 Spanish Conversation and Composition									G	
319 Business Correspondence and Communication									G	
325 Introduction to Hispanic Literature				HU						
412 Advanced Conversation and Composition									G	
413 Advanced Spanish Grammar									G	
420 Applied Spanish Linguistics	L									
421 Spanish in the Southwest	L				SB			C		
425 Spanish Literature				HU						
426 Spanish Literature				HU						
427 Spanish American Literature	L									
428 Spanish American Literature	L								G	
464 Mexican American Literature				HU						
471 Civilization of the Spanish Southwest				HU						
472 Spanish American Civilization				HU					G	H
473 Spanish Civilization				HU	SB				G	
485 Mexican American Short Story	L									
SPE 311 Orientation to Education of Exceptional Children					SB					
SPF 301 Culture and Schooling	L									
STE 208 Patterns in Nature (Cross-listed as PHS 208)						SQ				
STP 220 Conceptual Statistics			CS							
226 Elements of Statistics			CS							
326 Intermediate Probability			CS							
420 Introductory Applied Statistics			CS							
429 Experimental Statistics			CS							
SWU 271 Introduction to Social Work					SB					H
301 Human Behavior in the Social Environment I	L				SB					
321 Statistics for Social Workers			CS							
340 Human Behavior in the Social Environment II					SB					
374 Diversity and Oppression in a Social Work Context								C		
493 Honors Thesis	L									
THA 201 Intermediate Thai I									G	

General Studies Courses (continued)

	L	MA	CS	HU	SB	SQ	SG	C	G	H
202 Intermediate Thai II									G	
THE 100 Introduction to Theatre				HU						
220 Principles of Dramatic Analysis	L									
300 Film: The Creative Process I				HU						
301 Film: The Creative Process II				HU						
320 History of the Theatre I				HU						H
321 History of the Theatre II				HU						H
403 Independent Film				HU						
404 Foreign Films and Filmmakers									G	
405 Film: Great Performers and Directors				HU						
421 History of the English Theatre	L			HU						
THP 482 Theatre for Social Change								C		
TWC 200 Impact of Communications Technology on Society	L									
301 General Principles of Multimedia Writing	L									
400 Technical Communications	L									
401 Principles of Technical Communication	L									
411 Principles of Visual Communication	L									
421 Principles of Writing with Technology	L									
431 Principles of Technical Editing	L									
446 Technical and Scientific Reports	L									
447 Business Reports	L									
VTN 201 Intermediate Vietnamese I									G	
202 Intermediate Vietnamese II									G	
WSH 413 Lesbian Culture: Images and Realities				HU				C		
464 Voices and Visions				HU				C		
470 Women and Popular Culture				HU				C		
WST 100 Women and Society					SB			C		
300 Women in Contemporary Society					SB			C		
313 Women and Sexuality					SB					
373 Latina/Chicana Issues					SB			C		
375 Women and Social Change					SB			C		
377 Creation of Feminist Consciousness	L							C		
378 Contemporary Feminist Theory	L							C		
380 Gender, Race, and Class	L				SB			C		
457 Gender, Culture, and Development	L				SB				G	
460 Women and the Body					SB			C		
477 Women and Violence					SB			C		
498 PS: Theoretical Issues in Women's Studies	L									

Minors, Certificates, and Interdisciplinary Studies

Interdisciplinary studies are available to students through an interdisciplinary degree, such as the Bachelor of Interdisciplinary Studies, or an extensive choice of minors or certificates that may be taken in conjunction with other majors. Since interdisciplinary studies provide skills that support employment in a rapidly changing workplace, students are encouraged to consider these options. Consult the academic advisor in your major about the impact of enrolling in a minor or certificate program.

MINORS

A minor is an approved, coherent concentration of academic study in a single discipline, involving substantially fewer hours of credit than a corresponding major. Most ASU colleges offer undergraduate minors in addition to majors; see the [“ASU Minors” table, page 109](#).

Students in most majors may pursue one or more minors and, upon successful completion of the prescribed course work, have that accomplishment officially recognized on the ASU transcript at graduation if (1) the college/department of the minor officially certifies, through established verification procedures, that all requirements for the minor have been met and (2) the college (and, in certain colleges, the department) of the student’s major allows the official recognition of the minor.

A student wishing to pursue a specific minor should consult an academic advisor in the unit offering that minor to ensure that an appropriate set of courses is taken.

Note: Certain major and minor combinations may be deemed inappropriate either by the college or department of the major or minor. Inappropriate combinations include (but would not be limited to) ones in which an excessive number of courses in the minor are simultaneously being used to fulfill requirements of the student’s major.

CERTIFICATES

Students may pursue some certificate programs along with a major and other certificate programs independently. Graduate certificates and postbaccalaureate certificates are available to students who already hold a bachelor’s degree. For more information, see the [“ASU Undergraduate Certificates” table, page 111](#); [“ASU Postbaccalaureate Certificates” table, page 112](#); and [“ASU Graduate Certificates” table, page 112](#). Graduate certificates constitute graduate work; postbaccalaureate certificates are distinct from graduate certificates and are an extension of the undergraduate curriculum.

CONCURRENT AND DUAL DEGREE

Graduate students have the opportunity to pursue more than one degree at the same time as part of an organized

program. For more information, see the “Dual Degrees” table, page 534, and the *Graduate Catalog*.

INTERDISCIPLINARY STUDIES

Bachelor of Interdisciplinary Studies. For information about the Bachelor of Interdisciplinary Studies at ASU Main or ASU East, see “Bachelor of Interdisciplinary Studies,” page 114, or “Interdisciplinary Studies—B.I.S.,” page 641.

Energy Studies. An opportunity for instructional and research involvement in energy matters exists through the following three curricular paths:

1. general studies, which emphasize energy as an elective beyond the scope of a chosen major (for more information, call 480/965-4548);
2. specific studies in the College of Architecture and Environmental Design, for those pursuing the Master of Architecture degree and the Master of Science degree in Building Design; and
3. specific studies in the College of Engineering and Applied Sciences, usually for those seeking a degree in a branch of engineering.

Environmental Studies. The Center for Environmental Studies encourages and coordinates interdisciplinary environment-related activities in the natural and social sciences within the university. The center sponsors special courses, conferences, and workshops on environmental topics. Drawing from faculty and students throughout the university, the center participates in research and community programs relating to environmental problem areas. It does not formally offer courses or a degree program. For more information, see “Center for Environmental Studies,” page 37.

Film Studies. The Film Studies Program exists not only to provide information and experience but also to serve as a means of creative expression for the student and as a useful subject and tool in teaching. The program is not designed to produce professional filmmakers, but it may provide practical preparation for students desiring further film study at other institutions.

Inquiries about this program should be directed to the Film Studies coordinator at 480/965-7644.

Gerontology. The Gerontology Program brings together faculty from several disciplines to teach courses related to adult development and aging, to collaborate on gerontological research, and to participate in projects of service to older adults.

MINORS, CERTIFICATES, AND INTERDISCIPLINARY STUDIES

ASU Minors

Minor	Administered By	Campus	Page
African American Studies	African American Studies Program	Main	329
American Indian Studies	American Indian Studies Program	Main	488
American Studies	Department of American Studies	West	690
Anthropology	Department of Anthropology	Main	329
Architectural Studies	School of Architecture	Main	123
Art History	School of Art	Main	280
Asian Languages (Chinese/Japanese)	Department of Languages and Literatures	Main	329
Astronomy	Department of Physics and Astronomy	Main	437
Biology	Department of Biology	Main	354
Business ¹	College of Business	Main	156
Chemistry	Department of Chemistry and Biochemistry	Main	360
Chicana and Chicano Studies	Department of Chicana and Chicano Studies	Main	365
Communication	Hugh Downs School of Human Communication	Main	492
Communication Studies	Department of Communication Studies	West	692
Computational Mathematical Sciences	Department of Mathematics and Statistics	Main	417
Dance	Department of Dance	Main	298
Design Studies	School of Design	Main	139
Economics for Students Planning a Career in Law	Department of Economics	Main	367
English	Department of American Studies	West	692
English with a Concentration in Linguistics	Department of English	Main	368
English with a Concentration in Literature	Department of English	Main	368
Environmental Resources	Morrison School of Agribusiness and Resource Management	East	633
Ethnic Studies	College of Arts and Sciences	West	692
Exercise Science/Physical Education	Department of Exercise Science and Physical Education	Main	375
Family and Human Development	Department of Family and Human Development	Main	379
Film and Video Studies	Department of Interdisciplinary Arts and Performance	West	692
Food and Nutrition Management	Department of Nutrition	East	652
French	Department of Languages and Literatures	Main	402
General Economics	Department of Economics	Main	367
Geography	Department of Geography	Main	383
Geological Sciences	Department of Geological Sciences	Main	387
German	Department of Languages and Literatures	Main	402
Gerontology	Gerontology Program	Main	<u>108</u>
		West	692
History	Department of American Studies	West	692
	Department of History	Main	390
Human Nutrition	Department of Nutrition	East	653
Humanities	Interdisciplinary Humanities Program	Main	397
Interdisciplinary Arts and Performance	Department of Interdisciplinary Arts and Performance	West	692
Interior Design History	School of Design	Main	141
Italian	Department of Languages and Literatures	Main	402
Justice Studies	School of Justice Studies	Main	500
Landscape Studies	School of Planning and Landscape Architecture	Main	145
Life Sciences	Department of Life Sciences	West	692
Mass Communication	Walter Cronkite School of Journalism and Mass Communication	Main	497
Mathematics	Department of Integrative Studies	West	692
	Department of Mathematics and Statistics	Main	420
Microbiology	Department of Microbiology	Main	427
Music	School of Music	Main	308

¹ This minor is for nonbusiness majors only.

² The program is in the process of transferring to the faculty of Business Administration in East College at ASU East.

MINORS, CERTIFICATES, AND INTERDISCIPLINARY STUDIES

ASU Minors (continued)

Minor	Administered By	Campus	Page
Philosophy	Department of Integrative Studies	West	692
	Department of Philosophy	Main	434
Physics	Department of Physics and Astronomy	Main	438
Plant Biology	Department of Plant Biology	Main	445
Political Science	Department of Political Science	Main	450
	Department of Social and Behavioral Sciences	West	692
Prelaw	College of Human Services	West	692
Psychology	Department of Psychology	Main	456
	Department of Social and Behavioral Sciences	West	692
Public Relations and Strategic Communications	Department of Communication Studies	West	692
Recreation Management	Department of Recreation Management and Tourism	Main	507
Religious Studies	College of Arts and Sciences	West	692
	Department of Religious Studies	Main	460
Russian	Department of Languages and Literatures	Main	402
Small Business ²	College of Business	Main	181
Social and Behavioral Sciences	Department of Social and Behavioral Sciences	West	692
Sociocultural Anthropology	Department of Social and Behavioral Sciences	West	692
Sociology	Department of Sociology	Main	464
	Department of Social and Behavioral Sciences	West	692
Spanish	Department of American Studies	West	692
	Department of Languages and Literatures	Main	402
Special Events Management	Department of Recreation and Tourism Management	West	692
Speech and Hearing Science	Department of Speech and Hearing Science	Main	467
Statistics	Department of Mathematics and Statistics	Main	417
Theatre	Department of Theatre	Main	318
Tourism	Department of Recreation Management and Tourism	Main	507
Tourism Management	Department of Recreation and Tourism Management	West	692
Urban Planning	School of Planning and Landscape Architecture	Main	146
Wellness Foundations	Department of Exercise and Wellness	East	647
Women's Studies	Women's Studies Program	Main	471
		West	692

¹ This minor is for nonbusiness majors only.

² The program is in the process of transferring to the faculty of Business Administration in East College at ASU East.

A certificate at the postbaccalaureate level and an undergraduate minor are available in Gerontology. The certificate consists of 24 semester hours—12 hours of required course work and 12 hours of electives. The minor consists of 18 semester hours—six hours of required course work and 12 hours of electives. Courses related to aging are taught throughout the university by faculty who are active contributors to research, theory, and public policy and practice. In addition, gerontology provides students with opportunities to gain practical experience in working with elderly people. A practicum, held at the Veterans Administration Hospital, is available to students who have completed some gerontology course work. Gerontology also helps students find rewarding internships in community programs for older adults. For more information, see “Gerontology Certificate Program,” page 707, and “Gerontology,” page 518, or refer to the current *Student Handbook in Gerontology*.

Islamic Studies. The art, history, geography, and religion of the Islamic world are the subjects of several courses offered by departments in the Herberger College of Fine Arts and the College of Liberal Arts and Sciences. For information, call the Department of Religious Studies at 480/965-7145.

Linguistics. Linguistics concentrations are offered in master's degree programs in the Departments of Anthropology, English, and Languages and Literatures through the Graduate College. Numerous linguistics courses are offered in these and other departments. For information, call the University Committee on Linguistics at 480/965-3168.

MILITARY OFFICER TRAINING

U.S. Air Force and U.S. Army ROTC units are active on the ASU campus. See “Department of Aerospace Studies,” page 340, and “Department of Military Science,” page 429, for more information.

Defense Activity for Nontraditional Education Support (DANTES). ASU is a participating institution with DANTES and is listed in the DANTES Directory of Inde-

MINORS, CERTIFICATES, AND INTERDISCIPLINARY STUDIES

pendent Study. DANTEs is an executive agency of the Department of Defense that provides educational support for the voluntary education programs of all services. The primary missions of DANTEs are (1) to provide nationally recognized examination and certification programs as part of the voluntary education programs of military services and (2) to facilitate the availability of high-quality independent institutions for service men and women.

WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION (WICHE)

For Arizona residents who wish to attend professional schools of dentistry, occupational therapy, optometry, oste-

opathy, and veterinary medicine in one of the other western states, Arizona has joined with other states to create the Western Interstate Commission for Higher Education. Through WICHE, qualified Arizona residents may attend schools in other western states at essentially the same expense to the students as to residents of the state in which the school is located. Students must have maintained at least average grades in their preprofessional work and must have been legal residents of Arizona for at least the last five years. Recipients are required to return to Arizona to practice or to repay a portion of the funds expended on their behalf.

For applications and more information, call 602/229-2500, or access the Web site at www.wiche.edu.

ASU Undergraduate Certificates

Certificate	Administered By	Campus	Page
Advanced Business English Certificate*	College of Extended Education	Extended	707
African American Studies Certificate	African American Studies Program	Main	343
American Indian Studies Certificate	American Indian Studies Program	Main	489
American Public Policy Certificate	Department of Political Science	Main	449
Asian Pacific American Studies Certificate	Asian Pacific American Program	Main	490
Asian Studies Certificate	Center for Asian Studies	Main	390
Business English Certificate*	College of Extended Education	Extended	707
Civic Education Certificate	Department of Political Science	Main	449
Classical Studies Certificate	Department of Languages and Literatures and Interdisciplinary Humanities Program	Main	336
East Asian Studies Certificate	Center for Asian Studies	Main	336
English as a Second Language Certificate*	College of Extended Education	Extended	707
Enriched College Certificate	College of Liberal Arts and Sciences	Main	336
Ethics Certificate	Department of Philosophy	Main	434
Ethnic Studies, Certificate in	College of Arts and Sciences	West	692
Film and Video Studies, Certificate in	Department of Interdisciplinary Arts and Performance	West	692
Hazardous Materials and Waste Management Certificate	Department of Information and Management Technology	East	671
Health Physics Certificate	Pre-Health Professions Office	Main	337
History and Philosophy of Science Certificate	Department of Philosophy	Main	434
Human Performance Improvement Certificate*	College of Extended Education and the American Society of Training and Development	Extended	707
International Business Studies Certificate	College of Business	Main	174
International Studies Certificate	Department of Political Science	Main	449
Jewish Studies Certificate	Jewish Studies Committee	Main	338
Latin American Studies Certificate	Latin American Studies Center	Main	338
Maintenance Management Certificate*	College of Extended Education	Extended	707
Medieval and Renaissance Studies Certificate	Arizona Center for Medieval and Renaissance Studies	Main	338
Multimedia Writing and Technical Communication Certificate	East College	East	650
Nonprofit Management Certificate*	College of Extended Education and the Valley of the Sun United Way	Extended	708
Nonprofit/Youth Agency Administration: American Humanics Certificate	Department of Recreation Management and Tourism	Main	507
Professional Purchasing Certificate*	College of Extended Education	Extended	708
Public Administration and Public Management Certificate	School of Public Affairs	Main	504
Quality Analysis Certificate	College of Business	Main	161
Russian and East European Studies Certificate	Russian and East European Studies Consortium	Main	338

* This certificate is not for academic credit.

MINORS, CERTIFICATES, AND INTERDISCIPLINARY STUDIES

ASU Undergraduate Certificates (continued)

Certificate	Administered By	Campus	Page
Scandinavian Studies Certificate	Department of Languages and Literatures	Main	339
Small Business and Entrepreneurship Certificate	College of Business	Main	181
Southeast Asian Studies Certificate	Program for Southeast Asian Studies	Main	339
Spanish Language Court Interpreter Certificate*	College of Extended Education	Extended	708
Symbolic Systems Certificate	Department of Philosophy	Main	339
Translation Certificate	Department of Languages and Literatures	Main	402
Women's Studies, Certificate in	Women's Studies Program	West	692
		Main	339
Writing, Certificate in	Department of American Studies	West	692
	Department of English	Main	369

* This certificate is not for academic credit.

ASU Postbaccalaureate Certificates

Certificate	Administered By	Campus	Page
Accountancy, Postbaccalaureate Certificate in*	Department of Accounting and Information Systems Management	West	692
Communication and Human Relations, Postbaccalaureate Certificate in*	Department of Communication Studies	West	692
Multimedia Writing and Technical Communication, Postbaccalaureate Certificate in	East College	East	650
Professional Accountancy, Postbaccalaureate Certificate in*	Department of Accounting and Information Systems Management	West	692

* For more information, see the *ASU West Catalog*.

ASU Graduate Certificates

Certificate	Administered By	Campus	Page
Geographic Information Science, Interdisciplinary Certificate in*	Graduate College	Main	—
Gerontology, Certificate in	College of Human Services	West	692
	Graduate College	Main	518
		Extended	707
Indian Law Certificate	College of Law	Main	—
Medieval Studies Certificate	Arizona Center for Medieval and Renaissance Studies (ACMRS)	Main	390
Museum Studies Certificate*	Department of Anthropology	Main	—
Nonprofit Leadership and Management Certificate	College of Public Programs	Main	488
Post-Bachelor's Artist Diploma*	School of Music	Main	—
Post-Master's Nurse Practitioner Certificate*	College of Nursing	Main	—
Renaissance Studies Certificate*	ACMRS	Main	—
Scholarly Publishing Certificate*	Department of History	Main	—
Statistics, Certificate in	Committee on Statistics and the Graduate College	Main	—
Translation Certificate	Department of Languages and Literatures	Main	402
Transportation Systems Certificate	Committee on Transportation Systems and the Graduate College	Main	519

* For more information, see the *Graduate Catalog*.

Division of Undergraduate Academic Services

www.asu.edu/duas

[William S. Johnson, Ph.D., Executive Director](#)

The Division of Undergraduate Academic Services is a primary source of academic support for students, faculty, and staff. The division coordinates and offers academic programs and services designed to enhance the academic experience of ASU undergraduate students. The goals of the division are to play a major role in student retention, provide students the support necessary for successful completion of their first year and beyond, and offer students learning experiences that complement those provided by other academic units.

The division includes Education Support Services, Bachelor of Interdisciplinary Studies, Advising Services, and General Studies.

EDUCATION SUPPORT SERVICES

This unit provides university-wide teaching and learning support to students and faculty in defined academic areas.

For more information, call 480/965-3097.

Campus Match

Campus Match is a first-semester fall program that gives freshmen the opportunity to attend classes in small learning communities according to their academic interest. Students choose a “cluster” of classes from a wide variety of offerings. Each cluster is limited to 25 students who enroll in and attend classes together. All students attend a weekly peer-led seminar that facilitates their social and academic adjustment to the university.

Academic Success at the University Courses

The purpose of the UNI courses is to assist first-year, transfer, and reentry students in making a successful transition to the university. Students learn university resources, policies and procedures, study skills, values and goal setting, human diversity, academic and career planning, and other skills.

ACADEMIC SUCCESS AT THE UNIVERSITY (UNI)

UNI 100 Academic Success at the University. (3)

fall, spring, summer

Orientation to campus resources, study skills, and other academic and social issues for college students. Introduces an understanding of human diversity, values, and perspectives as they relate to student success. Lecture, seminar, discussion. Prerequisite: freshman or sophomore or transfer student.

UNI 101 Student Success Seminar. (1)

fall and summer

Understanding human diversity, perspectives, and values as they relate to student success. Orientation to ASU resources, study skills, and academic and social issues for students. Seminar, discussion.

UNI 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Science is Magic Internship. (3)
Presents science demonstrations to K–8 children at their schools. Interns are trained by personnel from the Center for Solid State Science. This internship does not follow the format of the others.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

Supplemental Instruction

Supplemental Instruction (SI) works to improve student performance and increase retention in historically difficult courses (those with high rates of “D,” “E,” and “W” grades). An SI leader attends class and offers voluntary study sessions to all students enrolled in the class. During the study sessions, students work together to learn course content and to enhance study skills.

Summer Bridge

Summer Bridge is a program designed to assist first-semester freshmen in making the transition from high school to university life. Summer Bridge is a five-week, residential program that provides a full academic curriculum in conjunction with a rich residence hall experience. The program assists participants in acclimating to campus, accessing student support programs and services, and enhancing classroom skills.

Service Learning Program

The Service Learning Program uses community service to enhance education. The program is based on the concept of reciprocal learning. Service Learning sections of regular courses are linked to credit-bearing internships where students apply what they are learning in the community to their course work.

For example, some Service Learning students contribute one-on-one homework tutoring, reading development, educational enrichment workshops, and learning readiness programs for children and youth for six hours a week during the semester. In turn, the tutors’ community experiences and research form the basis of their classroom papers and research. Other Service Learning students lead elementary and middle-school students in hands-on learning activities based on the content of the linked ASU courses.

Students may enroll in the internships with previous or current enrollment in one of the following linked courses or equivalent, approved courses.

See appropriate course listings for more details.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

DIVISION OF UNDERGRADUATE ACADEMIC SERVICES

Linked Courses

EED 420	Science Methods, Management, and Assessment in the Elementary School	3
ENG 102	First-Year Composition	3
ENG 217	Writing Reflective Essays <i>L</i>	3
ENG 312	English in Its Social Setting <i>L/HU/SB</i>	3
ENG 471	Literature for Adolescents <i>HU</i>	3
SOC 332	Urban Sociology <i>SB, G</i>	3
SOC 341	Modern Social Problems <i>SB</i>	3

Sciences and Additional Courses

GLG 101	Introduction to Geology I (Physical) <i>SQ, G</i>	3
GLG 103	Introduction to Geology I—Laboratory <i>SQ</i>	1
GPH 111	Introduction to Physical Geography <i>SQ</i>	4
MTE 180	Theory of Elementary Mathematics	3
PHS 208	Patterns in Nature <i>SQ</i>	4
PLB 108	Concepts in Plant Biology <i>SQ</i>	4

Service Learning Internships

ENG 484	Writing Internship	3
GLG 484	Geology Internship	3
GPH 484	Physical Geography Internship	3
MTE 484	Theory of Elementary Mathematics Internship	3
PHS 484	Physical Science Internship	3
PLB 498	PS: Plant Biology Internship	3
SOC 484	Internship	3
UNI 494	ST: Science is Magic Internship	3

Writing Across the Curriculum (WAC)

Curriculum Development and Support. WAC Curriculum Development and Support is designed to assist in enhancing the quality of writing and critical thinking skills of university students.

WAC specialists consult with faculty on methods of developing and integrating writing assignments into course content. The specialists also provide customized in-class writing workshops designed to assist students in researching and responding to writing assignments.

Writing Center. The Writing Center provides students with one-on-one and group tutoring in writing skills. Rather than proofreading or editing students' writing, the Writing Center teaches students the skills they need to improve their writing processes and products.

BACHELOR OF INTERDISCIPLINARY STUDIES

The Bachelor of Interdisciplinary Studies (B.I.S.) is a university-wide program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations and an interdisciplinary core, students in the B.I.S. are expected to take an active role in creating their educational plan and defining their vocational goals. The B.I.S. emphasizes written communication, versatility, and critical thinking—skills desired in a changing workplace environment. Self-assessment and appraisal of opportunities to support academic and career goals are key elements in the core courses.

At ASU Main, students, other than entering freshmen, must attend an informational session conducted by an academic advisor before declaring the B.I.S. major. For more information, visit Academic Advising Services in UASB 129 or call 480/965-4464. For information about the B.I.S. at ASU East, see [“Interdisciplinary Studies—B.I.S.,” page 641](#).

The combination of areas of concentration gives students flexibility in creating a unique program to accomplish individualized academic goals. These combinations illustrate a range of examples:

1. anthropology and religious studies;
2. communication and small business;
3. communication and sociology;
4. dance and exercise science/physical education;
5. economics and Spanish;
6. environmental resources and geology;
7. environmental resources and political science;
8. justice studies and political science;
9. nonprofit/youth agency development and theatre; and
10. psychology and women's studies.

Basic Requirements

The B.I.S. requires 120 semester hours. The major is composed of a 12-semester-hour core and a minimum of 36 semester hours in two concentrations (18 hours each). Throughout the core sequence, the student assembles a portfolio including self-assessment of progress toward career goals and an evaluation of key educational and personal activities that may apply. All core courses must be completed with a grade of “C” or higher.

Core Courses

BIS 301	Foundations of Interdisciplinary Studies <i>L</i>	3
BIS 302	Interdisciplinary Principles	3
BIS 401	Applied Interdisciplinary Studies	3
BIS 402	Senior Seminar <i>L</i>	3
Total		12

Other Requirements

In addition to the basic requirements, students must complete all university requirements, including First-Year Composition and General Studies. Early advising is recommended to facilitate selecting courses that may apply to both the General Studies requirements and the areas of concentration.

Declaring the B.I.S. Major. Academic advising from Academic Advising Services is required before being approved to declare the B.I.S. In addition, the following requirements must be met:

1. 45 semester hours of college credit;
2. cumulative G.P.A. of 2.00; and
3. selection of two concentrations, with a minimum of two courses in each (minimum grade of “C”) completed or one completed and one in progress (i.e., after the drop/add period) in each area.

All incoming students and continuing students with a minimum GPA of 2.00 who do not meet the above requirements are placed in a pre-B.I.S. major until the requirements have been met.

Approved Concentrations

Each concentration requires 18 semester hours, with a grade of “C” or higher. Twelve of these hours must be in

upper-division courses. The concentrations—shown in the “[B.I.S. Concentrations](#)” table, page 116—are mostly based on existing minors or certificate programs and should represent academic interests that the student wishes to integrate into a meaningful program. Concentrations based on minors or certificates with fewer than 18 hours have additional semester hours required. Complete information on each concentration is available by visiting Academic Advising Services in UASB 129 or by accessing the B.I.S. Web site at www.asu.edu/duas/bis.

A minimum of three semesters is required to complete the core sequence. BIS 301 is taken first and is the prerequisite to BIS 302. BIS 301 and 302 are prerequisites to 401 and 402, which may be taken concurrently; however, BIS 401 is a corequisite or prerequisite for 402. To enroll in BIS 401, a student must apply for the course during the semester before desired enrollment.

BACHELOR OF INTERDISCIPLINARY STUDIES (BIS)

BIS 301 Foundations of Interdisciplinary Studies. (3)

fall and spring

Introduces concepts and methods of interdisciplinary study by critically examining anticipated 21st-century workplace and civic trends. Lecture, seminar, discussion. Prerequisites: B.I.S. major; 2.00 GPA. *General Studies: L*

BIS 302 Interdisciplinary Principles. (3)

fall and spring

Explores interdisciplinarity and integration as applied to various approaches of human inquiry. Lecture, seminar, discussion. Prerequisite: BIS 301.

BIS 401 Applied Interdisciplinary Studies. (3)

fall and spring

Applies interdisciplinary problem-solving skills in internships, service-learning, or research; may involve individual or group projects combining both concentrations. Prerequisites: BIS 301, 302; prior application.

BIS 402 Senior Seminar. (3)

fall and spring

Capstone course helps integrate classroom and experiential learning. Students choose among course topics that address their interests. Lecture, seminar, discussion. Prerequisites: BIS 301, 302. Pre- or corequisite: BIS 401.

General Studies: L

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “[Omnibus Courses](#),” page 56.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges and the Division of Undergraduate Academic Services to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university’s three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning. The ASU Extended Campus also offers a variety of professional continuing education and community outreach programs.



William Boyes, professor of Economics, leads a class discussion.

Tim Trumble photo

For more information, see “[ASU Extended Campus](#),” page 703, or access the Web site at www.asu.edu/xed.

ADVISING SERVICES

Academic Advising Services

Academic Advising Services is a central advising, referral, and information facility whose staff is available to assist students in their academic careers at ASU. Emphasis is placed on advising services to undeclared first-time and transfer students, and students in transition, such as those changing majors and those without majors. In addition to guidance in the exploration or selection of a major, Academic Advising Services provides general academic information and referrals to all areas of student academic support.

Academic Advising Services is located in UASB 129 and can be reached by phone at 480/965-4464.

Degree Audit Reporting System (DARS)

DARS is an online tool that provides students with consistent, accurate information regarding their academic requirements. Through this system, a degree audit is produced that matches a student’s completed courses against degree program requirements in a matter of seconds. The audit allows students to assess their progress toward their degree or to determine how their earned credits would apply if they were to pursue another degree program. Audits may be obtained from the student’s academic advisor.

GENERAL STUDIES

All students enrolled in a baccalaureate degree program must satisfy the General Studies requirement. For more information, see “[University Graduation Requirements](#),” page 79, and “[General Studies](#),” page 83.

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See “[General Studies](#),” page 83.

DIVISION OF UNDERGRADUATE ACADEMIC SERVICES

B.I.S. Concentrations

Concentration	College	Campus	Page
African American studies	College of Liberal Arts and Sciences	Main	342
American Indian studies	College of Public Programs	Main	489
Anthropology	College of Liberal Arts and Sciences	Main	347
Art history	Herberger College of Fine Arts	Main	279
Asian Pacific American studies	College of Public Programs	Main	490
Asian studies	College of Liberal Arts and Sciences	Main	336
Astronomy	College of Liberal Arts and Sciences	Main	437
Biology ¹	College of Liberal Arts and Sciences	Main	354
Business	College of Business	Main	181
Chemistry	College of Liberal Arts and Sciences	Main	360
Chicana and Chicano studies	College of Liberal Arts and Sciences	Main	365
Chinese	College of Liberal Arts and Sciences	Main	403
Classical studies—Greek	College of Liberal Arts and Sciences	Main	336
Classical studies—Latin	College of Liberal Arts and Sciences	Main	336
Communication	College of Public Programs	Main	491
Computational mathematical sciences	College of Liberal Arts and Sciences	Main	419
Dance	Herberger College of Fine Arts	Main	296
Design studies	College of Architecture and Environmental Design	Main	139
East Asian studies	College of Liberal Arts and Sciences	Main	460
Economics	College of Liberal Arts and Sciences	Main	367
Economics for students planning a career in law	College of Liberal Arts and Sciences	Main	367
Education	College of Education	Main	194
English—creative writing ²	College of Liberal Arts and Sciences	Main	368
English with a concentration in linguistics ²	College of Liberal Arts and Sciences	Main	368
English with a concentration in literature ²	College of Liberal Arts and Sciences	Main	368
English—writing certificate ²	College of Liberal Arts and Sciences	Main	369
Environmental geography ³	College of Liberal Arts and Sciences	Main	382
Environmental resources	Morrison School of Agribusiness and Resource Management	East	632
Environmental science ⁴	—	East	633
Ethics	College of Liberal Arts and Sciences	Main	337
Exercise science/physical education	College of Liberal Arts and Sciences	Main	375
Family studies/child development	College of Liberal Arts and Sciences	Main	379
Food and nutrition management	East College	East	651
French	College of Liberal Arts and Sciences	Main	402
Geographical information science ³	College of Liberal Arts and Sciences	Main	381
Geography ³	College of Liberal Arts and Sciences	Main	381
Geography for business ³	College of Liberal Arts and Sciences	Main	381
Geological sciences	College of Liberal Arts and Sciences	Main	387
German	College of Liberal Arts and Sciences	Main	402
Gerontology	Graduate College	Main	518
Global family ⁴	—	Main	—
Hazardous materials and waste management	College of Technology and Applied Sciences	East	671
History	College of Liberal Arts and Sciences	Main	390
History and philosophy of science	College of Liberal Arts and Sciences	Main	434
Human nutrition	East College	East	652
Humanities	College of Liberal Arts and Sciences	Main	397
Interior design history	College of Architecture and Environmental Design	Main	141
International business studies ⁴	College of Business	Main	161
International geography ³	College of Liberal Arts and Sciences	Main	381

¹ Students may not use more than one concentration in the life sciences: biology, microbiology, and plant biology.

² Students may not use more than one English concentration.

³ Students may not use more than one geography concentration.

⁴ The program may award a certificate upon completion.

B.I.S. Concentrations (continued)

Concentration	College	Campus	Page
Italian	College of Liberal Arts and Sciences	Main	402
Japanese	College of Liberal Arts and Sciences	Main	402
Jewish studies	College of Liberal Arts and Sciences	Main	338
Justice studies	College of Public Programs	Main	500
Landscape studies	College of Architecture and Environmental Design	Main	145
Latin American studies	College of Liberal Arts and Sciences	Main	367
Mass communication	College of Public Programs	Main	497
Mathematics	College of Liberal Arts and Sciences	Main	420
Medieval and Renaissance studies	College of Liberal Arts and Sciences	Main	390
Microbiology ¹	College of Liberal Arts and Sciences	Main	427
Multimedia writing and technical communication	East College	East	650
Music	Herberger College of Fine Arts	Main	301
Nonprofit/youth agency administration	College of Public Programs	Main	507
Organizational studies	—	—	—
Philosophy	College of Liberal Arts and Sciences	Main	434
Physics	College of Liberal Arts and Sciences	Main	438
Plant biology ¹	College of Liberal Arts and Sciences	Main	445
Plant biology—environmental science and ecology ¹	College of Liberal Arts and Sciences	Main	443
Plant biology—molecular biosciences/biotechnology ¹	College of Liberal Arts and Sciences	Main	432
Plant biology—urban horticulture ¹	College of Liberal Arts and Sciences	Main	444
Political science	College of Liberal Arts and Sciences	Main	448
Psychology	College of Liberal Arts and Sciences	Main	456
Public administration	College of Public Programs	Main	504
Quality analysis	College of Business	Main	161
Recreation management	College of Public Programs	Main	506
Religious studies	College of Liberal Arts and Sciences	Main	459
Russian	College of Liberal Arts and Sciences	Main	402
Russian and East European studies	College of Liberal Arts and Sciences	Main	338
Scandinavian studies	College of Liberal Arts and Sciences	Main	339
Sociology	College of Liberal Arts and Sciences	Main	464
Southeast Asian studies—area studies option	College of Liberal Arts and Sciences	Main	339
Southeast Asian studies—language option	College of Liberal Arts and Sciences	Main	339
Spanish	College of Liberal Arts and Sciences	Main	402
Spanish for native speakers	College of Liberal Arts and Sciences	Main	402
Statistics	College of Liberal Arts and Sciences	Main	420
Symbolic systems	College of Liberal Arts and Sciences	Main	434
Theatre	Herberger College of Fine Arts	Main	317
Tourism	College of Public Programs	Main	506
Translation (Spanish/English)	College of Liberal Arts and Sciences	Main	402
Urban planning	College of Architecture and Environmental Design	Main	146
Wellness foundations	East College	East	646
Women's studies	College of Liberal Arts and Sciences	Main	471

¹ Students may not use more than one concentration in the life sciences: biology, microbiology, and plant biology.

² Students may not use more than one English concentration.

³ Students may not use more than one geography concentration.

⁴ The program may award a certificate upon completion.

The Barrett Honors College

www.asu.edu/honors

Ted Humphrey, Ph.D., Dean

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MISSION

The Barrett Honors College is a community of learners dedicated to superior undergraduate education based on the pursuit of excellence, respect for the individual, commitment to integrity, and service to society.

The college offers talented, motivated students educational opportunities designed to enrich and further their personal academic and career goals. It is a portal through which academically talented students gain unique access to the university's human and physical resources. Transdisciplinary in nature, the college develops curricular and other learning opportunities to meet general and disciplinary undergraduate educational objectives. The college supports undergraduate research, encourages study abroad, guides students to relevant internships, mentors applicants for fellowships and scholarships, and assists students with application to graduate school.

The Barrett Honors College serves students seeking degrees at ASU Main, in Tempe; ASU West, in northwest Phoenix; and ASU East (Williams Campus) in southeast Mesa. Students across the university can take advantage of the university's full resources with the assurance of consistently distinguished teaching and research and with commensurately rigorous expectations for performance.

Students from all disciplinary colleges and academic majors can enroll in the Barrett Honors College.

CURRICULUM

Students seeking to graduate from the Barrett Honors College must also graduate from a disciplinary college. The ASU honors curriculum normally allows students to finish all requirements within the 120 semester hours of credit usually required for graduation.

SPECIAL PROGRAMS

Office of National Scholarship Advisement

The Office of National Scholarship Advisement assists honors and other high-achieving students by identifying nationally competitive programs appropriate to each person's intellectual and career goals, nurturing these prospective applicants, and advancing their candidacy. This office, administered by the college, serves the entire ASU community. ASU students regularly earn distinction in the most rigorous and prestigious scholarship competitions. Many pursue enhanced degree programs and research projects under the auspices of Goldwater or Truman Scholarships. Other students undertake postgraduate study in the United States and abroad as Rhodes, Marshall, Fulbright, Udall, National Science Foundation, or Mellon Scholars. Many others have been recognized by a range of postgraduate awards, fellowships, and assistantships. *This office does not administer any need- or merit-based student financial assistance.* For more information, call 480/965-5894.

The Undergraduate Research Office

The Undergraduate Research Office maintains a database of research opportunities available throughout the university. This office is administered by the Barrett Honors College and serves the entire university.

Study Abroad

Students participating in the Barrett Honors College have exclusive access to four study abroad programs—one in Britain; one in Paris; one that travels to Athens, Rome, and Tunis; and one to Latin America—and to the ASU International Programs office, which offers more flexible course registration and transfer arrangements. These plans allow students to earn honors credit while overseas.

Internships/Mentorships

Students in the Barrett Honors College may participate in special internship opportunities or mentoring by leaders—in government, industry, and the private sector—throughout metropolitan Phoenix. For more information, call 480/965-2354.

Events/Programming

Students enrolled in the Barrett Honors College participate in a range of cultural enrichment activities and are offered discounted tickets to selected performing arts events throughout Arizona, invited to lunches and dinners with the dean, and given special access to important contributors to contemporary thought who visit ASU. Each year the college hosts the university's premier scholar-in-residence program, the Centennial Lecture. Past guests include novelist Carlos Fuentes, paleontologist Steven Jay Gould, psychiatrist Rob-

ert Coles, microbiologist Lynn Margulis, essayist Susan Sontag, and paleoanthropologist Meave Leakey.

The college is home to the John J. Rhodes Chair, designed to bring to the college persons who have significantly contributed to civic life and distinguished themselves as public service leaders. Students have unique opportunities to engage intellectually with these outstanding visiting lecturers. In 1998, the college was honored to have Dr. Henry A. Kissinger serve as the inaugural chair, and Pulitzer Prize-winning science writer Jonathan Weiner served in 2001.

ADDITIONAL BENEFITS

The Barrett Honors College and all its facilities and services are fully available to every student, regardless of where he or she lives. The Honors Halls of Residence offer students an integrated living-learning environment; faculty and academic advisors serve the students there. Classrooms, recreational and study lounges, and a computing lab compose the principal facilities of the college.

Students enrolled in the Barrett Honors College receive priority at preregistration and have extended checkout privileges in the campus libraries. Honors courses in disciplinary departments are typically limited to 25 students. Honors courses (with the prefix HON) are usually limited to 18.

Students can receive transcript recognition for lower-division honors studies. Students who meet all upper-division requirements of both their disciplinary college and the Barrett Honors College receive transcript recognition of that accomplishment, as well as special acknowledgment during the graduation ceremonies and collegiate honors convocations.

Participants in the honors college have diverse interests and strong records of success. Many go on to the nation's finest graduate and professional programs, including Chicago, Cornell, Harvard, Michigan, MIT, Northwestern, Stanford, UC-Berkeley, Virginia, Wisconsin, and Yale. Many students have published portions of their honors theses and have presented their work at national and regional meetings of scientific and honors societies.

ADMISSION

Students who have demonstrated high levels of academic achievement at the high school or university level are invited to apply for admission to the Barrett Honors College. All candidates for admission must file a separate application to the college.

Applicants are initially evaluated on the basis of their high school GPA (Arizona Board of Regents GPA based on 16 competency courses), high school class rank, and performance on the SAT or ACT; or a student may possess other talents that contribute to academic leadership and community service. Continuing ASU or transfer students are evaluated on their college GPA.

All students who believe they can better succeed at the university by participating in the Barrett Honors College are encouraged to apply. Application forms and additional information about the college and its activities are available by calling 480/965-2359.

RETENTION

Honors students must maintain high standards of academic performance and show progress toward completion of graduation requirements in their disciplinary majors and the Barrett Honors College. Students must complete an average of one honors course each semester. The associate dean of the college must approve any deviation from this standard. Good standing in the college requires students to maintain the following cumulative ASU GPAs (4.00 = A):

1. fewer than 45 semester hours, 3.25;
2. between 45 and 80 semester hours, 3.33; and
3. above 80 semester hours, 3.40.

A student with a lower cumulative ASU GPA is placed on probation and is withdrawn from the college if he or she does not make reasonable progress in raising the cumulative GPA during the following semester. Students who fail to complete at least one honors course in two semesters may be placed on inactive status. A student on inactive status within the college is not eligible for honors housing, extended library privileges, early registration, or honors internship placement. Reinstatement to active status requires a formal application and appointment with an honors advisor.

COURSE REQUIREMENTS

Only courses in which a student receives at least a grade of "C" may be used to meet the Barrett Honors College requirements.

Freshmen and students entering the college with fewer than 45 semester hours of course work must take HON 171 and 172 the Human Event. This cross-disciplinary seminar acquaints them with ideas that form the foundation of a university education and emphasizes critical thinking, discussion, and writing. Barrett Honors College students complete HON 171 and 172 during their first two semesters.

Students entering the college after completing 45 semester hours must take a 300-level honors course; junior-level seminar courses introduce them to critical thinking, discussion, and writing in a topical area chosen by the instructor. It is expected that all students complete this course no later than the first or second semester after transferring.

Departmental courses carrying footnote number 19 in the *Schedule of Classes* are limited to honors students and others who receive special permission from the instructor to enroll. Enrollment in these courses is limited. Compared to their non-honors equivalents, these courses are designed to offer a richer, more complex intellectual experience appropriate to the discipline and the level of the course for all students enrolled. Other disciplinary honors courses group honors students in small cohorts to work on research projects of common interest.

Departmental courses carrying footnote number 18 in the *Schedule of Classes* allow honors students to contract with the instructor of designated non-honors courses to earn

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

THE BARRETT HONORS COLLEGE

honors credit by pursuing enrichment activities, which may include supplemental sessions with the instructor. Footnote 18 contracts must be filed during the first four weeks of class and completed during the semester in which the course is offered. Each contract form offers guidelines to aid students and faculty in developing appropriate contracts.

Course numbers listed in the *Schedule of Classes* as 298, 492 Honors Directed Study, 493 Honors Thesis, 497 Honors Colloquium, and all classes with the HON prefix are reserved for students in the Barrett Honors College and always carry footnote 19. Students may receive credit for more than one of each of these courses in a given department.

Departmental courses with the number 493 are reserved for honors students completing their honors theses. A student may enroll for these courses only with the approval of the sponsoring academic department and of the faculty member who serves as the student's thesis director. Course numbers listed in the *Schedule of Classes* as 493 fulfill the student's literacy and critical inquiry (L) General Studies requirement. Students in the Honors College may also enroll in graduate-level courses that automatically earn honors credit.

All courses a student takes for honors credit may be used toward graduation, even if the student does not graduate from the Barrett Honors College.

HONORS TRANSCRIPT RECOGNITION

All courses used to fulfill lower-division or upper-division/graduation requirements for the Barrett Honors College

must carry earned letter grades of at least "C." A "Y" grade does not meet college requirements.

Lower Division

To receive transcript recognition for lower-division honors work, students must complete 18 semester hours of honors course work within 60 earned semester hours with a cumulative ASU GPA greater than or equal to 3.40 (4.00 = A).

Courses *must* include HON 171 and 172 the Human Event. Courses that earn automatic honors credit, although not carrying a footnote number 19 in the *Schedule of Classes*, include ENG 105 (any section) and CHM 117 and 118 (any section).

Students may apply upper-division honors course work toward lower-division requirements; however, those classes may not also be used to meet the Barrett Honors College upper-division/graduation requirements.

Intent to Graduate

Students must complete and file with the college an Intent to Graduate form no later than the semester in which they complete 75 earned semester hours (including AP, IB, CLEP, and dual enrollment credits). This form is available online at the college's Web site, www.asu.edu/honors, and is located in the section devoted to forms.

The Intent to Graduate form includes sections in which students indicate

1. their intended major(s), minor(s), and certificate program(s);
2. the courses they intend to use to satisfy the requirements for "Lower Division with Honors"; and



President Coor sits in on a class with students.

Jeff Havir photo

- the courses they intend to use to satisfy the requirements for graduation through the Barrett Honors College.

Normally, only students who complete the requirements for “Lower Division with Honors” or their equivalent at the institutions from which they transfer are allowed to pursue completion of the requirements for graduation through the Barrett Honors College.

Normally, students admitted to ASU as first-time, first-year students are required to complete HON 171 and 172, even if they seek admission to the college at a later date.

Upper Division/Graduation

To graduate through the Barrett Honors College, students must

- complete HON 171 and 172 the Human Event for continuing ASU or transfer students with fewer than 45 semester hours *or* one of the 300-level honors seminar courses for transfer students with 45 or more semester hours;
- unless otherwise provided for by the Barrett Honors College and the student’s disciplinary college, complete 18 additional semester hours of upper-division honors course work for an earned letter grade, which must include three to six semester hours of Honors Thesis and six semester hours outside the academic major (these may include graduate courses);
- complete ASU graduation requirements in an academic major; and
- earn a cumulative ASU GPA greater than or equal to 3.40 (4.00 = A).

The Barrett Honors College

www.asu.edu/honors

480/965-2359

IRISH A121

Ted Humphrey, Dean

Professor: Humphrey

Senior Lecturers: Dalton, Facinelli, Stanford

Lecturers: Beggs, Bruhn, Burke, Heindl, J. Lynch, J.M. Lynch, McManus, Pickus, Susser

HONORS (HON)

HON 171 The Human Event. (3)

fall and spring

Landmarks in the social and intellectual development of the human race, with emphasis on Western civilization. Enrollment restricted to members of the Barrett Honors College. Consult the college for applicability to disciplinary college distribution requirements.

General Studies: L/HU, H

HON 172 The Human Event. (3)

fall and spring

Continuation of HON 171, with emphasis on the Renaissance through the modern period. Prerequisite: HON 171.

General Studies: L/HU, H

HON 371 Freedom and Authority. (3)

fall and spring

Historical overview of concepts of liberty, responsibility, and power in Western societies, emphasizing 18th- to 20th-century developments. Seminar.

General Studies: L/HU

HON 372 French Cultural Influences. (3)

summer session 1

Explores textual and cultural artifacts formative of French culture as a series of contacts and conflicts with other peoples and lifeways. Seminar.

General Studies: L/HU, G

HON 373 Heroes, Heroines, and Villains. (3)

fall and spring

Examines concepts of heroic and villainous characteristics as expressed in the literature and visual arts of various cultures throughout history. Seminar.

General Studies: L/HU

HON 374 Black and White Atlantic. (3)

fall and spring

Examines development (18th- to 20th-century) and cultural manifestations of Black/White race relations within the U.S. and between the U.S. and other nations. Seminar.

General Studies: HU, G

HON 375 Science and the Modern Self. (3)

fall and spring

Concentrates on texts of the 19th and 20th centuries; explores how scientific discourse determines our notions of self. Seminar, lecture, discussion.

General Studies: L/HU

HON 376 Law, Literature, and Life. (3)

fall and spring

Multidisciplinary approach to the subject of law, examining it through literature, history, and legal philosophy. Seminar.

General Studies: L/HU

HON 377 Nature in Context. (3)

fall

Explores perspectives on the nature of nature, the history of ecology, and the rise of environmentalism. Seminar. Cross-listed as HPS 377. Credit is allowed for only HON 377 or HPS 377.

General Studies: L/HU

HON 394 Special Topics. (3)

fall, spring, summer

HON 484 Internship. (1–6)

selected semesters

HON 485 Biosphere 2—Study Opportunity. (1–18)

fall and spring

For students participating in the ASU-sponsored program at Biosphere 2.

HON 493 Honors Thesis. (1–6)

selected semesters

General Studies: L

HON 497 Honors Colloquium. (1–6)

selected semesters

HON 498 Pro-Seminar. (1–7)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 56.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

College of Architecture and Environmental Design

www.asu.edu/caed

School of Architecture	127
School of Design	135
School of Planning and Landscape Architecture	145

PURPOSE

The practice of architecture and environmental design is the culturally responsible shaping of our environment—from the scale of the cities in which we live to the buildings and interiors we inhabit and the artifacts and products we use. What we design must be durable, useful, beautiful, appropriate to its context, and not a waste of resources, energy, or materials. Designing our environment is an art, a technology, and a social science that has a history as long as human culture. The goals of the faculty include offering students an education that becomes the basis for life-long growth and improvement as professionals, advancing the discipline in both theory and practice, and improving the quality of the environment by making the expertise and knowledge of the faculty available to other professionals and to the public.

ORGANIZATION

Academic Organization. The college is composed of three academic units:

- School of Architecture
- School of Design
- School of Planning and Landscape Architecture

Administration of the college is the responsibility of the dean, who in turn is responsible to the president of the university through the senior vice president and provost.

College Facilities. All of the College of Architecture and Environmental Design's programs are housed in a single complex. Facilities include the Architecture and Environmental Design Library; computer laboratories; design studios; the Gallery of Design; lecture and seminar rooms; the Media Center; offices for faculty, the administration, and student organizations; the shop; the slide collection; Materials Resource Center; and technology laboratories. The bridge between the original building and the expansion places the college's review and display space at the heart of the complex.

Architecture and Environmental Design Library. As a branch of the University Libraries, the Architecture and

Environmental Design Library provides easy access to more than 30,000 books, periodicals, and reference materials for students, faculty, and the professional community. The library's special collections include archives of Blaine Drake, Victor Olgyay, Calvin Straub, Will Bruder, and others, as well as research materials on Paolo Soleri and Frank Lloyd Wright. The Alternative Energy Collection and the Materials Resource Center provide additional sources for research.

Gallery of Design. The Gallery of Design is one of eight university galleries and museums. It provides space for traveling exhibits and exhibitions of student and faculty work.

Special Facilities. College programs are supplemented by several special laboratories, including the computer-aided design and graphics lab; the high-bay research lab; the lighting lab; the solar research lab; the solar roofdeck work area; an extensive shop equipped to handle wood, plastic, and metal; the Herberger Center for Design Excellence; and the Joint Urban Design Program, which also has a studio at the ASU Downtown Center. The Media Center includes traditional graphics and audiovisual equipment as well as portable gear. The slide collection, with more than 100,000 images, is available for instructional use, and the college maintains an array of materials testing equipment.

ADMISSION

Lower-Division Programs. A new or transfer student who has been admitted to the university and has selected a college major is admitted to the lower-division program of his or her choice. A separate application procedure is required for entry to upper-division programs and graduate programs. Acceptance into lower-division programs does not guarantee acceptance to upper-division programs. Acceptance into lower-division programs requires a TOEFL score of 500 or higher for international students whose native language is not English.

Transfer Credits. While the university accepts credits transferred from other accredited institutions, transfer credits are not applied to specific degree programs until reviewed and accepted by the appropriate academic units. Transfer course work must be equivalent in both content and level of offering. In addition, a review of samples of work (portfolio format) from previous studio classes is required. Students who change majors to transfer into the college or one of its program areas must have a minimum cumulative GPA of 2.50.

College of Architecture and Environmental Design Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Architectural Studies	B.S.D.	—	School of Architecture
Design Science ¹	B.S.D.	—	School of Design
Graphic Design	B.S.D.	—	School of Design
Housing and Urban Development	B.S.D.	—	School of Planning and Landscape Architecture
Industrial Design	B.S.D.	—	School of Design
Interior Design ²	B.S.D.	—	School of Design
Landscape Architecture	B.S.L.A.	—	School of Planning and Landscape Architecture
Urban Planning	B.S.P.	—	School of Planning and Landscape Architecture

¹ Applications for this program are not being accepted at this time.

² This major requires more than 120 semester hours to complete.

Upper-Division Programs. Admission to upper-division programs is competitive. Consult requirements of each major for details. Students applying to more than one program must make a separate application to each and must submit separate portfolios. Students not enrolled at ASU when they apply to upper-division programs must also make a separate application to the university. Students not admitted to the upper division are not dismissed from the university and may reapply or transfer to other programs. Students who plan to reapply should contact a college academic advisor. Transfers into upper-division programs are considered only if vacancies occur, and such transfers are limited to students with equivalent course work who are competitive with continuing students. Acceptance into some upper-division programs requires a TOEFL score of 500 or higher for international students whose native language is not English.

ADVISING

While the college and its academic units provide academic advising, *it is ultimately the responsibility of each student to fulfill academic and program requirements.* Advising and record keeping for lower-division programs are the responsibility of a college academic advisor (located in ARCH 141). Records for upper-division program students are kept in the appropriate academic units, and advising is by the faculty and the head of the academic unit. General career advising is available from all faculty members. Administration of program requirements is the responsibility of the head of the academic unit and the dean.

Appeals Procedures. Academic appeals and requests for variances are typically made first to the student’s advisor and then, if necessary, to the head of the appropriate academic unit, the Governance and Grievance Committee, and, finally, the dean. A student who feels unjustly treated in academic or other matters relating to his or her career as a student may contact a college academic advisor or may take the grievance to the college ombudsperson.

DEGREES

Undergraduate. The college offers curricula for four- or five-year degree programs: the Bachelor of Science in Design (B.S.D.) degree in Architectural Studies, Graphic Design, Housing and Urban Development, Industrial Design, and Interior Design; the Bachelor of Science in

Landscape Architecture (B.S.L.A.) degree; and the Bachelor of Science in Planning (B.S.P.) degree in Urban Planning. Applications for the B.S.D. degree in Design Science are not being accepted at this time. For more information, see the “College of Architecture and Environmental Design Baccalaureate Degrees and Majors” table, on this page.

Each undergraduate program is divided into lower-division and upper-division programs. Completion of a lower-division program does not guarantee advancement to an upper-division program.

MINORS

The faculty in the School of Architecture offer a minor in Architectural Studies, see [“Architectural Studies Minor,” page 130](#). The faculty in the School of Planning and Landscape Architecture offer two minors: Landscape Studies and Urban Planning. See [“Minors,” page 145](#), for more information. The faculty in the School of Design offer minors in Design Studies and Interior Design History, see [“Minor,” pages 139 and 141](#), respectively.

GRADUATE PROGRAMS

The faculty in the College of Architecture and Environmental Design offer the National Architectural Accrediting Board-accredited Master of Architecture (M.Arch.) professional degree; Planning Accreditation Board-accredited Master of Environmental Planning (M.E.P.) professional degree; M.S. degree in Building Design; Master of Science in Design (M.S.D.) degree; and Ph.D. degree in Environmental Design and Planning. For more information, see the [“College of Architecture and Environmental Design Graduate Degrees and Majors” table, page 124](#), and the *Graduate Catalog*.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

College of Architecture and Environmental Design Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Architecture	M.Arch.	—	School of Architecture
Building Design	M.S.	Design knowledge and computing, energy performance and climate-responsive architecture, facilities development and management	School of Architecture
Design	M.S.D.	Graphic design, industrial design, interior design	School of Design
Environmental Design and Planning*	Ph.D.	Design; history, theory, and criticism; planning	College of Architecture and Environmental Design
Environmental Planning	M.E.P.	Landscape ecological planning, urban and regional development, urban design	School of Planning and Landscape Architecture

* Doctoral courses for these interdisciplinary programs administered by ASU Main are also offered at ASU East.

ASU colleges, including the College of Architecture and Environmental Design, to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning. The Extended Campus also offers a variety of professional continuing education and community outreach programs.

For more information, see "ASU Extended Campus," page 703, or access the Web site at www.asu.edu/xed.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students seeking a bachelor's degree must meet all university graduation requirements. See "University Graduation Requirements," page 79.

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35 semester hours of approved course work in General Studies, as described under "General Studies," page 83. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. General Studies courses are listed in the "General Studies Courses" table, page 86, in the course descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*.

COLLEGE DEGREE REQUIREMENTS

College of Architecture and Environmental Design degree requirements supplement the General Studies requirement. Each curriculum offered by the college includes sufficient approved course work to fulfill the General Studies requirement.

To be eligible for the Bachelor of Science in Design (B.S.D.), Bachelor of Science in Landscape Architecture (B.S.L.A.), or Bachelor of Science in Planning (B.S.P.) degrees in the college of Architecture and Environmental Design, a student must have

1. attained a cumulative GPA of 2.00 or higher for all course work taken at ASU;
2. earned a "C" or higher in each studio course; and
3. met all university degree requirements.

MAJOR REQUIREMENTS

Students seeking the Bachelor of Science in Design degree must satisfactorily complete a curriculum of 120 or 150 semester hours, depending on the major. The Bachelor of Science in Planning degree requires 120 semester hours. The Bachelor of Science in Landscape Architecture degree requires 120 semester hours. Students majoring in Interior Design must take 150 semester hours. All other majors require 120 hours.



Patio courtyard in the College of Architecture and Environmental Design/North building

Tim Trumble photo

Special Honors at Graduation. At the time of graduation, students with academic distinction are awarded the respective designation *cum laude*, *magna cum laude*, or *summa cum laude*. For more information, see “Graduation with Academic Recognition,” page 82.

ACADEMIC STANDARDS

Lower-Division Retention Standards. A student in one of the college’s lower-division programs is placed on probation when he or she fails to maintain a cumulative GPA of 2.00. Students on probation must observe rules or limitations the college imposes on their probation as a condition of retention. If, after one semester on probation, the overall GPA is not at least 2.00 and the conditions of probation have not been met, the student is disqualified for a minimum of two full academic semesters. Appeals may be made to the college Governance and Grievance Committee. For more information, see “Retention and Academic Standards,” page 75.

Upper-Division Retention Standards. Students in upper-division programs are placed on probation when *any* of the following occur:

1. failure, incomplete, or withdrawal from any required course;
2. a semester GPA below 3.00;
3. a grade of “D” or “E” in a design studio, a design laboratory, or a design lecture; or
4. violation of the college *Code of Student Responsibilities* or any admission agreement.

Students on probation must observe rules or limitations that the college or academic unit places on their probation as a condition of continuation. Students may be removed from a program (but not necessarily the university) if

1. the requirements imposed are not met or the probationary semester GPA is below 3.00 after one semester on probation;
2. failures or withdrawals in required courses are not resolved at the next offering of the course;
3. they fail or withdraw from required sequential courses; or
4. incompletes in required sequential courses are not completed before the first day of class of the next semester.

A student removed from a program is not guaranteed reinstatement in the program even if probation requirements or requirements placed on readmission are fulfilled. Appeals may be made first to the appropriate academic unit and, if necessary, to the college Governance and Grievance Committee. For more information, see “Retention and Academic Standards,” page 75.

Incompletes. It is the student’s responsibility to contact the instructor regarding the process of requesting and fulfilling an incomplete. Tardiness in contacting the instructor may result in a failing grade. Students must obtain an official “Request for Grade of Incomplete” form from their academic units. The completed form must include a justification, a listing of requirements that have not been fulfilled,

and a proposed schedule of completion. The instructor reviews the request, proposes modifications if necessary, and submits a copy of the request to the appropriate program head (for upper-division students) or a college academic advisor (for lower-division students). An incomplete in an upper-division course that is a prerequisite for sequential courses automatically places the student on probation and denies enrollment in subsequent courses. For more information, see “Incomplete,” page 72.

Withdrawals. University withdrawal regulations apply to lower-division courses. In addition, because the college’s upper-division curricula are modular and sequential and because space in the programs is limited, a student is expected to progress through the curriculum with his or her class. Withdrawal from a required upper-division course automatically places a student on probation. Withdrawal from a required upper-division course in a required sequence automatically removes the student from the program beginning the subsequent semester. For more information, see “Grading System,” page 72.

Credit/No Credit. The only courses accepted toward graduation with a grade of pass/fail or credit/no credit are internships and field studies.

Foreign Study. The College of Architecture and Environmental Design maintains active communications with several foreign institutions offering professional course work similar to the programs of the college. This opportunity is available for students who wish to pursue professional studies at a foreign institution in lieu of resident course work for up to one academic year. Any interested student is encouraged to inform the head of his or her academic unit at the earliest possible date of any intentions for foreign study.

Exchange programs currently exist with the Stuttgart University, Germany; Wageningen Agricultural University, the Netherlands; the University of Valladolid, Spain; the University of British Columbia, Canada; and the Autonomous University of Guadalajara, Mexico. Foreign study programs in France, Italy, and Spain and summer off-campus courses are offered by the School of Architecture. The School of Planning and Landscape Architecture offers a summer landscape planning course in Europe.

Students are also encouraged to consider foreign travel for either a semester or an entire academic year. A leave of absence must be requested for foreign study and foreign travel. Each academic unit reserves the right to evaluate the content and the student’s competency in each of the courses completed at foreign institutions.

Internship. Upper-division students in the college are required to complete an internship program during the summer, normally between the third and fourth years of study.

Attendance. Attendance is expected at all classes, laboratories, and seminars and is a criterion for evaluating

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

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performance. Absences and missing work due to absences may result in failure of a course or academic probation. A student may not be excused from attending a class except for medical reasons or other serious personal conditions beyond his or her control. Requests for special consideration must be submitted in writing to the instructor. If accepted, a student may be allowed to take a late or special examination or to submit missing work. Tardiness in contacting the instructor is cause for denying acceptance. For university policy regarding religious holidays, see "Equal Opportunity and Affirmative Action," page 21.

Employment. It is difficult for students in professional programs to carry part-time employment while in school. Acceptance to any of the college's upper-division programs presumes a commitment of a minimum of eight hours a day for professional studies. Prior work experience is not a requirement for admission to upper-division programs.

Retention of Student Work. The college reserves the right to retain any or all projects or work submitted to meet course requirements for the college's future use in instruction, publication, and exhibition.

Student Leave of Absence. Upper-division students who withdraw from classes or do not continue sequentially in enrollment must request both a leave of absence and readmission in writing from the head of the appropriate academic unit. Leaves of absence are for one-year increments and may be approved for personal reasons, travel, work, or additional study in other disciplines. A student on leave must make the written request for readmission before May 1 for the fall semester of the year of return or before November 1 for the spring semester so that a space may be reserved. Failure to request a leave of absence may result in removal from the program.

STUDENT RESPONSIBILITY

The purpose of this code is to promulgate standards of conduct for students of the College of Architecture and Environmental Design and to establish procedures for reviewing violations. Students are expected to support and maintain the highest professional standards with regard to their individual conduct and their personal and common environments in the college. Copies of the *Code of Student Responsibilities* are available from the Office of the Dean and a college academic advisor.

SPECIAL PROGRAMS

The college and its academic units regularly sponsor lecture series, symposia, and exhibits. In addition, faculty and students attend regional and national meetings of educators and professionals. Academic units sponsor student awards programs and regularly invite professionals and critics to reviews of student projects. The college also participates with the Barrett Honors College, offering courses accepted in that college.

GENERAL INFORMATION

Accreditation. Most states require that an individual intending to become an architect hold an accredited degree.

There are two types of degrees that are accredited by the National Architectural Accrediting Board (NAAB): (1) the Bachelor of Architecture, which requires a minimum of five years of study, and (2) the Master of Architecture, which requires a minimum of three years of study following an unrelated bachelor's degree or two years following a related preprofessional bachelor's degree. These professional degrees are structured to educate those who aspire to registration/licensure as architects.

The four-year preprofessional degree, where offered, is not accredited by NAAB. The preprofessional degree is useful for those wishing a foundation in the field of architecture, as preparation for either continued education in a professional degree program or for employment options in architecturally related areas. For more information, see "Accreditation and Affiliation," page 715.

Dean's List. Undergraduate students who earn 12 or more graded semester hours ("A," "B," "C," "D," or "E") during a semester in residence at ASU with a GPA of 3.50 or higher are eligible for the Dean's List. A notation of achieving the distinction of being listed on the Dean's List appears on the final grade report for that semester.

College of Architecture and Environmental Design

Alumni Association. The College of Architecture and Environmental Design Alumni Association encourages graduates to contribute to the college by acting as liaisons among the college community, students, and practicing professionals. The college also calls on the members of the Architecture Guild of Arizona State, the Arizona Design Institute, the Council for Design Excellence, and the Planning Advisory Committee for advice and to promote the goals of the college.

Council for Design Excellence. The Council for Design Excellence has been created to consolidate a partnership between the College of Architecture and Environmental Design and key community leaders who share a vital interest in the development of high quality in the built environment of the Phoenix metropolitan area. By joining together professionals, business and civic leaders, students, and faculty in a common pursuit of design excellence, the council seeks to make a profound difference in the quality of life.

Affiliations. For information on affiliations maintained by the college, see "Accreditation and Affiliation," page 715.

Student Professional Associations. The purpose of the student associations is to assist students with the transition into professional life and to acquaint them with the profession relating to their program of study. These include the following associations:

- American Institute of Architecture Students
- College of Architecture and Environmental Design Pre-Studies Organization
- Sigma Phi Zeta
- Student Association of the College of Architecture and Environmental Design
- Student Association of Interior Designers (ASID, IALD, IFDA, IFMA, IIDA)

Student Chapter/American Center for Design
 Student Chapter/American Planning Association
 Student Chapter/American Society of Landscape Architects
 Student Chapter/Industrial Designers Society of America
 Student Chapter/Society of Environmental Graphic Designers
 Student Chapter/Society for Range Management
 Student Chapter/Soil and Water Conservation Society

School of Architecture

www.asu.edu/caed/architecture

480/965-3536

AED 162D

Ron McCoy, Director

Regents' Professor: Cook

Professors: Hoffman, McCoy, Meunier, Ozel, Rotondi, Underhill, Underwood

Associate Professors: Bryan, Ellin, Hartman, Krolloff, Kupper, Loope, Spellman, Van Duzer, Zygas

Assistant Professors: Burnette, Caicco, Hahn, Hejduk, Innes, Kobayashi, Lerum, Murff, Petrucci, Soroka

PURPOSE

The architecture program at ASU offers an integrated curriculum of professional courses and focuses on the design laboratory. The program reflects an awareness of the complex factors affecting the quality of the built environment. The program seeks through scholarship, teaching, research, design, and community service to develop the discipline and the knowledge necessary to address the important environmental and design issues faced by society.

In addition to developing knowledge and skills in architectural design, building technology, and professional practice, students are encouraged to select electives from a broad range of approved courses both within the college and across the university. These electives may be selected to devise a minor, to further professional study, or in some other fashion to enrich the student's academic experience.

ORGANIZATION

The School of Architecture's program is organized by the faculty under the direction and administration of the director and standing committees of the faculty.

DEGREES

The faculty in the School of Architecture offer the Bachelor of Science in Design degree with a major in Architectural Studies.

The program in architecture culminates with the professional degree Master of Architecture, which is accredited by the National Architectural Accrediting Board (NAAB). Completion of the program is intended to take six years.

In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The NAAB, which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards.

Master's degree programs may consist of a preprofessional undergraduate degree and a professional graduate degree, which, when earned sequentially, compose an accredited professional education. However, the preprofessional degree is not, by itself, recognized as an accredited degree.

Admission to the professional program in architecture is competitive and begins after completion of lower-division requirements, as described in "Admission," on this page and "[Degree Requirements,](#)" [page 129](#). The professional program includes two years of upper-division study leading to the Bachelor of Science in Design (B.S.D.) and two years of graduate study leading to the Master of Architecture, as described in "[Upper-Division Professional Program,](#)" [page 128](#).

Applicants who already hold a bachelor's degree in another field should apply to the 3+ year Master of Architecture degree program. See the *Graduate Catalog* for more information.

In cooperation with the Barrett Honors College, the school offers a special honors curriculum for students with Barrett Honors College standing. Consult the advising officers in the school for information.

ADMISSION

Lower-Division Program. New and transfer students who have been admitted to the university and who have selected Architectural Studies as their major are admitted to the lower-division architecture program without separate application to the School of Architecture. Completion of lower-division requirements does not ensure acceptance to the upper-division professional program.

Transfer credits for the lower-division program are reviewed by the college faculty. To be admissible to this curriculum, transfer courses must be equivalent in both content and level of offering. A review of samples of work is required for studio classes. Consult a college academic advisor for an appointment.

Entering lower-division students who are not prepared to enroll in some of the required courses are required to complete additional university course work. These additional

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

prerequisite courses do not apply to the Bachelor of Science in Design degree requirements.

Upper-Division Professional Program. Admission to the upper-division professional program is competitive and limited by available resources. Admission is awarded to those applicants demonstrating the highest promise for professional success.

Transfer students who have completed the equivalent required lower-division course work may apply to the upper-division program. Prior attendance at ASU is not required for application to the upper-division program.

To be eligible for admission to the upper-division program, the following requirements must be met:

1. admission to ASU (note that application and admission to ASU are separate from application and admission to the upper-division program);
2. completion of lower-division requirements or equivalents as approved by a college academic advisor and the faculty of the school;
3. a minimum university cumulative GPA of 3.00 as well as a 3.00 GPA based only on the required lower-division courses or equivalents; and
4. submission of a portfolio (for detailed information about this requirement, see "Portfolio Format Requirements," on this page).

In an unusual circumstance, when the admission standard deficiency is slight, written evidence of extenuating circumstances is convincing, and promise for success is evident, a student may be granted admission to the upper division on a *provisional* basis.

Students not admitted to the upper-division program are not dismissed from the school and may reapply or may transfer to other programs. Students who intend to reapply should meet with a college academic advisor.

Applications for transfer into the upper-division professional program are considered only if vacancies occur. Transfer applicants must demonstrate that equivalent course work has been completed, and applicants must be academically competitive with continuing students.

Students who successfully complete the upper-division requirements receive the Bachelor of Science in Design degree in Architectural Studies. This is not a professional degree. To complete the professional architecture program, students must attain the NAAB-accredited Master of Architecture degree. Students who receive the B.S.D. are eligible to apply for the graduate program and should see the *Graduate Catalog* for proper application procedures. This application process is competitive and based on a thorough review of a student's undergraduate preparation and performance.

Students with the four-year Bachelor of Science in Design degree (with a major in Architectural Studies or an equivalent degree from another school that offers an accredited professional degree in architecture) should apply directly to the graduate program.

APPLICATION TO UPPER-DIVISION PROGRAMS

Upper-Division Application Procedures. Students should write to a college academic advisor for the application form well in advance of the application deadline. The following dates and procedures are for students applying to 2003–2004 upper-division programs.

Upper-Division Application Deadlines. *April 25, 2003.* Portfolio and application documents are due in the school office by 5 P.M.

June 3, 2003. If the spring 2003 semester includes transfer course work (i.e., course work taken at an institution other than ASU), a student must submit his or her transcripts to the school no later than June 3. These transcripts may be unofficial copies. A second set of official transcripts must be sent to the university Undergraduate Admissions office. Application is not complete until the university receives official transcripts for transfer course work. For those transfer students whose academic term ends in June rather than May, this deadline may be extended upon the written request of the applicant.

July 1, 2003. Acceptance notices are mailed no later than July 1.

Return of Letter of Acceptance. A signed receipt of acceptance of admission must be received by the school by the date indicated on the Notice of Acceptance. Alternates may be accepted at a later date if space becomes available.

Matriculation. An accepted student is expected to begin his or her upper-division professional program at the beginning of the immediate fall term. There is no spring admission to the upper division.

Portfolio Format Requirements. Each applicant is responsible for obtaining the following documents and including them in the portfolio. Application materials are submitted at one time in a presentation binder (portfolio) with plastic sleeves (8.5" x 11" format only). Items must appear in the following order:

Page 1. The application form should be completely filled out with the first page visible. Application forms are available from the college Academic Advising Office.

Page 2. The second page of the application should be visible.

Page 3. Application Essay. The student's name should not appear on the essay.

Page 4. All college transcripts for both ASU and transfer work should be included through the fall 2002 semester. Copies are acceptable. An academic advisor forwards 2003 ASU transcripts. (Applicants wishing to transfer work are responsible for submitting these transcripts by June 3 so that they may be added to their portfolios. The student is also responsible for getting an official transfer transcript sent directly to the Office of the Registrar.)

Page 5. A certificate of admission is necessary only for those students who have been newly admitted for fall 2003 and who are applying directly into an upper-division program. The certificate is not required for students currently attending ASU.

Following Pages (Usually from 10 to 20 Sheets). Students should present work sufficient to demonstrate the depth and breadth of their creative activity. This work should include (but is not limited to) examples of two- and three-dimensional design and graphics. Each project should be clearly identified (course, length of project, etc.), with a concise accompanying description of the assignment.

Students should obtain a portfolio requirements addendum for their major from the college's Academic Advising Office, ARCH 141, at the beginning of the academic year in which they intend to apply to the upper-division program. Requirements or instructions indicated in the addendum for that academic year take precedence over any other printed material.

Students are encouraged to include additional materials, written or pictorial, that provide additional evidence of skills and abilities and of the aptitude and commitment to the major. When any work submitted is not completely original, the source must be given. When work is of a team nature, the applicant's role should be clearly indicated. Original examples or slides must not be submitted. All examples must be photographs or other reproduction graphic media.

Return of Portfolios. Application documents (pages 1–5) remain the property of the College of Architecture and Environmental Design. However, the remaining portfolio is returned after the admissions review, provided the applicant encloses a self-addressed return mailer with sufficient prepaid postage. Portfolios may be claimed in person after July 1, 2003. If the applicant provides written permission, another person may claim the portfolio. After one year, unclaimed portfolios are discarded. While care is taken in handling the portfolios, no liability for lost or damaged materials is assumed by the college or school.

ADVISING

Advising for the lower-division curriculum is through the college Academic Advising Office. Advising for upper-division students is by assigned faculty advisors and administrative personnel from the School of Architecture.

DEGREE REQUIREMENTS

The Bachelor of Science in Design degree in Architectural Studies requires a minimum of 120 hours of course work. Most lower-division students pursue option A; however, those who intend eventually to seek an advanced degree in either engineering or building science are encouraged to fulfill the requirements outlined in option B. See an advisor in the Academic Advising/Student Services Office (ARCH 141) for further information about option B.

Option B students who intend to pursue graduate degrees in an engineering discipline should also consult with the College of Engineering and Applied Sciences advising office for any additional requirements.

GENERAL STUDIES REQUIREMENT

The following curriculum includes sufficient approved course work to fulfill the General Studies requirement. See "General Studies," page 83, for requirements and a list of approved courses. Note that all three General Studies awareness areas are required. Consult an advisor for an approved list of courses.

GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation and college degree requirements. See "University Graduation Requirements," page 79, and "[College Degree Requirements](#)," page 124.

The accredited professional degree Master of Architecture requires an additional 56 hours of approved graduate-level course work. For more information, see the *Graduate Catalog*.

**Architectural Studies—B.S.D.
Lower-Division Requirements
Option A¹
First Year**

Fall	
APH 100 Introduction to Environmental Design <i>HU, G, H</i>	3
or ADE 120 Design Fundamentals I ² (3)	3
ENG 101 First-Year Composition	3
Elective.....	3
Elective (MAT 170 Precalculus may be needed)	3
SB elective	3
Total	15
Spring	
ADE 120 Design Fundamentals I ²	3
or APH 100 Introduction to Environmental Design <i>HU, G, H</i> (3)	3
ENG 102 First-Year Composition	3
MAT 210 Brief Calculus <i>MA</i>	3
Elective.....	3
C elective.....	3
Total	15

Second Year

Fall	
ADE 221 Design Fundamentals II ²	3
ADE 223 Design Fundamentals II Lecture	1
APH 200 Introduction to Architecture <i>HU, G</i>	3
PHY 111 General Physics <i>SQ</i> ³	3
PHY 113 General Physics Laboratory <i>SQ</i> ³	1
L elective.....	3
Total	14
Spring	
ADE 222 Design Fundamentals III ²	3
ADE 224 Design Fundamentals III Lecture.....	1
ANP 236 Introduction to Computer Modeling <i>CS</i>	3
SB elective	3

¹ L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See "General Studies," page 83.

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SG or SQ elective.....	4
Total	14
Option A lower-division total.....	58

- ¹ Transfer credits are reviewed by the college and evaluated for applicability to this curriculum. To be applicable, transfer courses must be equivalent in both content and level of offering.
- ² Portfolio review is required for transfer studio work. Submit the portfolio to the Academic Advising Office, ARCH 141.
- ³ Both PHY 111 and 113 must be taken to secure SQ credit.

**Architectural Studies—B.S.D.
Upper-Division Requirements
Option A**

Third Year

Fall	
ADE 321 Architectural Studio I.....	5
APH 313 History of Western Architecture I <i>L/HU*</i>	3
ATE 353 Architectural Construction.....	3
Elective*.....	3
Total	14

Spring	
ADE 322 Architectural Studio II.....	5
ANP 331 Programming for Design.....	3
APH 314 History of Western Architecture II <i>L/HU*</i>	3
ATE 361 Building Structures I.....	3
Total	14

Summer	
ARP 484 Clinical Internship.....	3
Total	3

Fourth Year

Fall	
ADE 421 Architectural Studio III.....	5
ATE 451 Building Systems I.....	3
ATE 462 Building Structures II.....	3
Elective*.....	3
Professional elective*.....	3
Total	17

Spring	
ADE 422 Architectural Studio IV.....	5
ATE 452 Building Systems II.....	3
Architectural history elective.....	3
Elective*.....	3
Total	14
Option A upper-division total	62
B.S.D. option A minimum total	120

* These courses may be completed before admission into the upper division.

**Master of Architecture
Graduate-Level Professional Program Requirements**

Fifth Year

Fall	
ADE 521 Advanced Architectural Studio I.....	5
APH 505 Foundation Theory Seminar.....	3
ATE 553 Building Systems III.....	3
ATE 563 Building Structures III.....	3
Total	14

Spring	
ADE 522 Advanced Architectural Studio II.....	5
APH 515 Current Issues and Topics.....	3
ATE 556 Building Development.....	3
Professional elective*.....	3
Total	14

Sixth Year

Fall	
AAD 551 Architectural Management I.....	3
ADE 621 Advanced Architectural Studio III.....	5
ANP 681 Project Development.....	3
Professional elective*.....	3
Total	14

Spring	
AAD 552 Architectural Management II.....	3
ADE 622 Advanced Architectural Studio IV.....	5
Approved elective.....	3
Professional elective*.....	3
Total	14
Graduate division total.....	56

* At least one professional elective must be a CAD course.

ARCHITECTURAL STUDIES MINOR

The Architectural Studies minor is available to non-architecture majors interested in this field, but who are pursuing another major. A minimum of 18 semester hours are required for the minor. The courses are designed to provide an overview of architecture throughout history while focusing on architectural design with the intention to explore the process of design thinking.

Required Courses

APH 200 Introduction to Architecture <i>HU, G</i>	3
APH 300 World Architecture I/Western Cultures <i>HU, G, H</i>	3
APH 313 History of Architecture I <i>L/HU, G</i>	3
APH 314 History of Architecture II <i>L/HU, G</i>	3
Total	12

Six additional semester hours of electives in the architectural history and theory concentration, with a course prefix of APH or approved PUP/PLA prefix, must be selected from the following list for a total of 18 semester hours:

ANP 331 Programming for Design*.....	3
APH 394 Special Topics.....	3
APH 411 History of Landscape Architecture <i>H</i>	3
APH 414 History of the City <i>H</i>	3
APH 446 20th-Century Architecture I <i>HU</i>	3
APH 447 20th-Century Architecture II <i>HU</i>	3
APH 494 Special Topics.....	3
APH 499 Individualized Instruction*.....	3
APH 511 Energy Environmental Theory.....	3
PLA 420 Theory of Urban Design <i>HU</i>	3
or PUP 420 Theory of Urban Design <i>HU</i> (3)	
Total	30

* These courses require a petition to the School of Architecture.

A minimum GPA of 3.00 is required to pursue the minor in Architectural Studies.

COURSES

Subject matter within the school is categorized in the following instructional areas.

Architectural Administration and Management. AAD courses focus on the organizational and management aspects of architectural practice, including management coordination, administrative procedures, ethics, legal constraints, and the economics of practice.

Architectural Design and Technology Studios. ADE courses require the synthesis of knowledge and understanding gained from other course work and develop an understanding of design theory and design skill through a series of comprehensive design projects. Students apply analytical methods, compare alternative solutions, and develop sophisticated technical and conceptual results.

Environmental Analysis and Programming. ANP courses develop the ability to analyze and program environmental and human factors as preconditions for architectural design using existing and emerging methods of evaluation and analysis.

Architectural Philosophy and History. APH courses develop an understanding of architecture as both a determinant and a consequence of culture, technology, needs, and behavior in the past and present. Studies are concerned with the theory as well as the rationale behind methods and results of design and construction. Case studies are both domestic and international.

Architecture Professional Studies. ARP courses provide students with off-campus opportunities, educational experience in group and individual studies relative to specific student interests, and faculty expertise, including summer internships and field trips.

Architectural Technology. ATE courses develop knowledge of the technical determinants, resources, and processes of architecture. These studies focus on the science and technology of design and construction, including materials, building systems, acoustics, lighting, structural systems, environmental control systems, computer applications to design and technology, and both passive and active solar systems. Emphasis is on measurable and quantifiable aspects.

Architectural Communication. AVC courses develop the student's understanding of communication theory as it applies to architectural design and practice as well as skills in drawing, graphics, photography, presentation design, and the design process.

The courses required in the upper-division and graduate levels of the professional program are not open to nonmajors and students not admitted to the upper-division program.

GRADUATE PROGRAMS

The faculty of the School of Architecture offer a Master of Architecture and a M.S. degree in Building Design. Concurrent application to both degree programs is possible, and each application is evaluated by the respective admission

committees separately. Also, a dual career program, Master of Architecture/Master of Business Administration, has been established in cooperation with the College of Business. Also offered is a collegewide, interdisciplinary Ph.D. degree in Environmental Design and Planning with concentrations in design; history, theory, and criticism; and planning. For more information, see the *Graduate Catalog*.

ARCHITECTURAL ADMINISTRATION AND MANAGEMENT (AAD)

AAD 494 Special Topics. (1–4)
selected semesters

AAD 551 Architectural Management I. (3)
fall

Design delivery, coordination of construction documents, cost estimating, bidding and negotiations, construction observation, and post-construction services. Lecture, discussion, case studies. Prerequisite: graduate-level standing. Corequisites: ADE 621; ANP 681.

AAD 552 Architectural Management II. (3)
spring

Organizational, human performance, and market influences on architecture firms and projects. Readings, case studies, and analysis of managerial problems and solutions. Lecture, discussion. Prerequisite with a grade of "C" or higher: AAD 551. Corequisite: ADE 622.

AAD 555 Architect as Developer. (3)
once a year

Development building, real estate, construction funding, land acquisition, and the sources for capital. Prerequisite: instructor approval.

AAD 598 Special Topics. (1–4)
selected semesters

AAD 599 Thesis. (1–12)
fall or spring
Fee.

AAD 681 Professional Seminar: Capstone. (3)
selected semesters

Examines ethical, political, social, economic, ecological, and cultural issues confronting the practice of architecture. Seminar, readings, case studies.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

ARCHITECTURAL DESIGN AND TECHNOLOGY STUDIOS (ADE)

ADE 120 Design Fundamentals I. (3)
fall, spring, summer

Development of visual literacy. Introduces drawing and graphic representation as methods of seeing and problem solving. Studio. Prerequisite: major in College of Architecture and Environmental Design.

ADE 221 Design Fundamentals II. (3)
fall

Exercises in basic design, stressing creative problem-solving methods, principles of composition, and aesthetic evaluation. Development of vocabulary for environmental design. Lecture, studio. Prerequisite with a grade of "C" or higher: ADE 120. Corequisite: ADE 223.

ADE 222 Design Fundamentals III. (3)
spring

Applies design fundamentals with an emphasis on architectural issues. Lecture, studio. Prerequisite: APH 200. Prerequisite with a grade of "C" or higher: ADE 221. Corequisite: ADE 224.

ADE 223 Design Fundamentals II Lecture. (1)
fall

Theory and applications of basic design principles, history and theory of how architecture design is impacted by basic design. Lecture, discussion. Corequisite: ADE 221.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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ADE 224 Design Fundamentals III Lecture. (1)

spring

History and theory of design fundamentals with an emphasis on architectural issues. Lecture, discussion. Corequisite: ADE 222.

ADE 321 Architectural Studio I. (5)

fall

Introductory building design problems. Emphasizes design process, communication methods, aesthetics, construction, and technology. Lecture, studio, field trips. Fee. Prerequisite: admission to upper division. Corequisite: ATE 353.

ADE 322 Architectural Studio II. (5)

spring

Site and building design problems. Emphasizes programmatic and environmental determinants and building in natural and urban contexts. Lecture, studio, field trips. Fee. Prerequisite with a grade of "C" or higher: ADE 321. Corequisite: ANP 331.

ADE 421 Architectural Studio III. (5)

fall

Topical design problems of intermediate complexity, including interdisciplinary problems. Lecture, studio, field trips. Fee. Prerequisite with a grade of "C" or higher: ADE 322. Corequisite: ARP 484.

ADE 422 Architectural Studio IV. (5)

spring

Topical design problems of advanced complexity, including interdisciplinary problems. Lecture, studio, field trips. Fee. Prerequisite with a grade of "C" or higher: ADE 421.

ADE 510 Foundation Architectural Studio. (6)

summer

Fundamentals of architectural design, methodology, visualization, and representation. Lecture, studio, field trips. Fee. Prerequisite: admission to Master of Architecture degree program. Corequisite: APH 509.

ADE 511 Core Architectural Studio I. (6)

fall

Applies design fundamentals in architectural problems, including construction, technology, programmatic and environmental determinants. Lecture, studio, field trips. Fee. Prerequisite with a grade of "C" or higher: ADE 510. Corequisite: ATE 353.

ADE 512 Core Architectural Studio II. (6)

spring

Applies architectural design fundamentals to increasingly complex problems, including specific sites and activities. Lecture, studio, field trips. Fee. Prerequisite with a grade of "C" or higher: ADE 511.

ADE 521 Advanced Architectural Studio I. (5)

fall

Design problems emphasizing theory, aesthetics, and tectonics as influences on architectural form. Lecture, studio, field trips. Fee. Prerequisite: admission to Master of Architecture degree program. Corequisite: APH 505.

ADE 522 Advanced Architectural Studio II. (5)

spring

Design problems emphasizing the comprehensive integration of building systems and technologies as influences on architectural form. Lecture, studio, field trips. Fee. Prerequisite with a grade of "C" or higher: ADE 521. Corequisites: APH 515; ATE 556.

ADE 621 Advanced Architectural Studio III. (5)

fall

Design problems emphasizing the urban context, planning issues, and urban design theory as influences on architectural form. Lecture, studio, field trips. Fee. Prerequisite with a grade of "C" or higher: ADE 522. Corequisites: AAD 551; ANP 681.

ADE 622 Advanced Architectural Studio IV. (5)

spring

Individual, student-initiated project reflecting a culminating synthesis of architectural ideas. Studio. Fee. Prerequisites with a grade of "C" or higher: ADE 621; ANP 681. Corequisite: AAD 552.

ADE 631 Building Systems Simulation Studio. (5)

fall

Design of energy-efficient medium and large commercial complexes; synthesis to optimize performance using new and advanced algorithms. Lecture, lab, studio. Prerequisite: admission to graduate program.

ADE 661 Bioclimatic Design Studio. (6)

once a year

Sustainable architectural and site synthesis at a variety of scales emphasizing bioclimatic criteria and the use of passive and low-energy systems. Prerequisite: admission to graduate program.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

ENVIRONMENTAL ANALYSIS AND PROGRAMMING (ANP)

ANP 236 Introduction to Computer Modeling. (3)

fall and spring

Fundamentals of computer operation, geographic information systems, geometric modeling of three-dimensional forms and rendering of light, mathematical modeling of processes using spreadsheets. Lab. Prerequisite: major in the School of Architecture. *General Studies: CS*

ANP 331 Programming for Design. (3)

spring

Theory and methods for refracting "constraints" into opportunities for design excellence. Corequisite: ADE 322.

ANP 475 Computer Programming in Architecture. (3)

fall and spring

Computer programming for architectural problems and applications. Lecture, lab. Prerequisite: CSE 183 (or its equivalent).

ANP 477 Computer Applications to Design Problems. (3)

fall

Examines generic microcomputer software in solving architectural design problems. Emphasizes the logic of problem formulation. Lecture, lab. Prerequisite: instructor approval.

ANP 494 Special Topics. (1–4)

fall, spring, summer

ANP 500 Research Methods. (1–12)

fall

Fee. Prerequisite: admission to graduate program. Corequisite: ANP 561.

ANP 530 Computer Graphics in Architecture. (3)

spring

Fundamentals of computer graphics programming in architecture, including graphics hardware, device-independent packages, 2- and 3-dimensional transformations, and data structures. 2 hours lecture, 3 hours lab. Prerequisite: instructor approval. Corequisite: ANP 563.

ANP 561 Architectural Information Processing Systems. (3)

fall

Applies information processing systems to architectural problems. Analyzes computing tools with respect to assumptions and theories. Lecture, lab. Prerequisite: admission to graduate program. Corequisite: ANP 500.

ANP 563 Methods in Architectural Design Computation. (3)

spring

Concepts and models for research in computer-aided architectural design with an emphasis on computational methods and a system framework. Discussion, lab. Prerequisite: ANP 500 or instructor approval. Corequisite: ANP 530.

ANP 590 RC: Computer Programming and Architecture. (1–12)

fall

ANP 598 Special Topics. (1–4)

fall or spring

ANP 599 Thesis. (1–12)

fall or spring

Fee.

ANP 681 Project Development. (3)

fall

Defines and elaborates on major ideas for implementation in ADE 622 in relation to contemporary theory and practice. Seminar. Prerequisite with a grade of "C" or higher: ADE 522. Corequisites: AAD 551; ADE 621.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

ARCHITECTURAL PHILOSOPHY AND HISTORY (APH)

APH 100 Introduction to Environmental Design. (3)

fall and spring

Survey of environmental design: includes historic examples and the theoretical, social, technical, and environmental forces that shape them. Cross-listed as DSC100/PUP 100. Credit is allowed for only APH 100 or DSC 100 or PUP 100.

General Studies: HU, G, H

APH 200 Introduction to Architecture. (3)

fall and summer

Survey of issues and polemics affecting current architectural theory and practice. Lecture, discussion.

General Studies: HU, G

APH 300 World Architecture I/Western Cultures. (3)

fall

Historical and contemporary built environments of Western civilizations: Mediterranean, Europe, and the Americas as manifestations of cultural history and responses to environmental determinants. Prerequisite: nonmajor.

General Studies: HU, G, H

APH 304 American Architecture. (3)

selected semesters

Architecture in the United States from earliest colonial times to present. Prerequisite: nonmajor.

General Studies: HU

APH 305 Contemporary Architecture. (3)

selected semesters

Europe and America from the foundations of the modern movement to the present. Prerequisite: nonmajor.

General Studies: HU

APH 313 History of Architecture I. (3)

fall

Survey of the monuments, buildings, and cities of Europe and Africa from the earliest human settlements to the present day. Prerequisite: junior standing or instructor approval.

General Studies: L/HU, G

APH 314 History of Architecture II. (3)

spring

Survey of the monuments, buildings, and cities of Asia and the Americas from the earliest human settlements to the present day. Prerequisite: APH 313.

General Studies: L/HU, G

APH 394 Special Topics. (1–4)

selected semesters

APH 411 History of Landscape Architecture. (3)

fall

Physical record of human attitudes toward the land. Ancient through contemporary landscape planning and design. Cross-listed as PLA 310. Credit is allowed for only APH 411 or PLA 310.

General Studies: H

APH 414 History of the City. (3)

fall

The city from its ancient origins to the present day. Emphasizes European and American cities during the last five centuries. Cross-listed as PUP 412. Credit is allowed for only APH 414 or PUP 412.

General Studies: H

APH 441 Ancient Architecture. (3)

selected semesters

Architecture of the ancient Mediterranean world with selective emphasis on major historical complexes and monumental sites. Prerequisite: APH 313.

General Studies: HU

APH 442 Preservation Planning. (3)

selected semesters

Principles and practices in planning for preservation, conservation and neighborhood redevelopment. Emphasizes evaluation of historic resources. Requires off-campus field practicum. Prerequisite: instructor approval.

APH 444 Baroque Architecture. (3)

selected semesters

Selected examples of Baroque architecture and urbanism with emphasis on relationships between architecture and other arts. Prerequisite: APH 314.

General Studies: HU

APH 446 20th-Century Architecture I. (3)

fall

Architecture in Europe and America from the foundations of the modern movement to the culmination of the international style. Prerequisite: instructor approval.

General Studies: HU

APH 447 20th-Century Architecture II. (3)

spring

Developments in architecture since the international style. Prerequisite: APH 446.

General Studies: HU

APH 494 Special Topics. (1–4)

once a year

APH 499 Individualized Instruction. (1–3)

selected semesters

APH 505 Foundation Theory Seminar. (3)

fall

Foundation of conceptual architectural inquiry, stressing the reciprocal and interdependent relationship between design and theory. Lecture, seminar. Corequisite: ADE 521.

APH 509 Foundation Seminar. (3)

summer

Historical, technical, theoretical, environmental, and professional issues in architecture. Lecture, seminar, field trips. Corequisite: ADE 510.

APH 511 Energy Environment Theory. (3)

fall

Solar and other energy sources in designed and natural environments; architectural, urban, and regional implications of strategies using other renewable resources.

APH 515 Current Issues and Topics. (3)

spring

Critical examination of current architectural issues, topics, and discourse. Prerequisite with a grade of "C" or higher: APH 505. Corequisites: ADE 522; ATE 556.

APH 581 Contemporary Urban Design. (3)

spring

Explores contemporary city and urban design issues related to contemporary cities. Seminar, lecture, discussion.

APH 598 Special Topics. (1–4)

fall or spring

APH 681 Architectural Theory. (3)

selected semesters

Examines architectural theory. Emphasizes application of theory to practice. Seminar. Prerequisite: instructor approval.

APH 683 Critical Regionalism. (3)

spring

Critical inquiry in cultural grounding; the definition of place in architectural theory and practice. Lecture, field studies.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

ARCHITECTURE PROFESSIONAL STUDIES (ARP)

ARP 451 Architecture Field Studies. (1–6)

selected semesters

Organized field study of architecture in specified national and international locations. Credit/no credit. May be repeated with approval of director.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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ARP 484 Clinical Internship. (1–3)

fall

Full-time internship under the supervision of practitioners in the Phoenix area or other locales. Credit/no credit. Corequisite: ADE 421.

ARP 584 Clinical Internship. (1)

fall

Structured practical experience following a contract or plan, supervised by faculty and practitioners. Prerequisite: admission to graduate program.

ARP 684 Professional Internship. (2–6)

fall

Field experience in an architectural firm specializing in an area directly related to the student's advanced study. Integrates theory and state-of-the-art practices. Credit/no credit. Prerequisite: admission to graduate program.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

ARCHITECTURAL TECHNOLOGY (ATE)

ATE 353 Architectural Construction. (3)

fall

Materials and methods of construction. Aesthetic, code, and cost considerations. Lecture, lab. Corequisite: ADE 321 or 511.

ATE 361 Building Structures I. (3)

spring

Introduces load distribution on structures. Static analysis of determinant beams, trusses, arches, and rigid frames. Computer applications. Lecture, lab. Prerequisite: admission to upper division or Master of Architecture program.

ATE 451 Building Systems I. (3)

fall

Principles of solar radiation, heat and moisture transfer, and environmental control systems as form influences. Energy-conscious design. Lecture, lab. Prerequisite: admission to upper division or Master of Architecture program.

ATE 452 Building Systems II. (3)

spring

Architectural design implications of heating, ventilation, and air conditioning systems. Principles of lighting, daylighting, and acoustics, and their applications. Lecture, lab. Prerequisite: ATE 451.

ATE 462 Building Structures II. (3)

fall

Strength of materials. Stresses in beams and columns. Thermal effects on structures. Analysis, design, and detailing of wood structural systems. Lecture, lab. Prerequisite: ATE 361.

ATE 494 Special Topics. (1–4)

selected semesters

ATE 521 Building Environmental Science. (3)

fall

Scientific principles relating to comfort and environmental control. Heat and moisture transfer. Solar/natural energies for heating, cooling, and lighting. Lecture, lab. Prerequisite: admission to graduate program. Corequisite: ATE 562.

ATE 530 Daylighting Design. (3)

selected semesters

Daylight analysis, availability, design sky measurements, modeling and simulation. Integration with passive heating, cooling, building design, and energy considerations. Lecture, lab.

ATE 550 Passive Cooling and Heating I. (3)

spring

Theory, analysis, and application of passive and low-energy systems for thermal comfort in buildings emphasizing heating. Prerequisite: instructor approval.

ATE 551 Passive Cooling and Heating II. (3)

fall

Theory, analysis, and application of passive and low-energy heating systems for thermal comfort in buildings emphasizing cooling. Prerequisite: ATE 550.

ATE 553 Building Systems III. (3)

fall

Design and integration of building systems, including mechanical, electrical, plumbing, security, communications, fire protection, and transportation. Prerequisite: admission to Master of Architecture program.

ATE 554 Building Energy Efficiency. (3)

selected semesters

Impact of building design on energy performance. Climate responsiveness, operations dynamics, and subsystems integration in thermal comfort and efficiency. Prerequisite: instructor approval.

ATE 556 Building Development. (3)

spring

Comprehensive design development through the understanding and integration of building materials and systems. Lecture, seminar. Prerequisite: admission to graduate program. Corequisites: ADE 522; APH 515.

ATE 557 Construction Documents. (3)

selected semesters

Production of architectural working drawings; legal status, organization, layout, site survey plans, sections, elevations, details, schedules, and coordination. Lecture, lab. Prerequisite: admission to upper division or graduate program.

ATE 560 Building Energy Analysis. (3)

selected semesters

Computer simulation of building thermal behavior. Software review. Detailed study of selected simulation models using case study projects. Lab. Prerequisites: ANP 475 (or 477); ATE 582.

ATE 562 Experimental Evaluation. (3)

selected semesters

Instrumentation, measurement and computational techniques for analysis of building components, and assessment of thermal and luminous performance. Fee. Corequisite: ATE 521.

ATE 563 Building Structures III. (3)

fall

Analysis, design, and detailing of steel buildings and frames. Lateral analysis of small rigid and braced frame systems. Lecture, lab. Prerequisites: ATE 462 (or its equivalent); admission to graduate program.

ATE 564 Advanced Structures: Concrete. (3)

selected semesters

Analysis, design, and detailing of concrete systems, considering continuity, multistory frames and shear walls, and lateral analysis. Computer application. Prerequisite: ATE 563 or instructor approval.

ATE 565 Advanced Structures: High Rise. (3)

selected semesters

Developments in high-rise construction. Effects of wind and seismic forces. Preliminary analysis, design, and detailing considering code requirements. Lecture, lab. Prerequisite: ATE 563 or instructor approval.

ATE 582 Environmental Control Systems. (3)

spring

Heating, ventilation, and air-conditioning systems. Loads, psychometrics, refrigeration cycle, air/water distribution, controls, energy performance standards, and utility rates. 2 hours lecture, 3 hours lab, field trips. Prerequisite: ATE 451 or 521.

ATE 599 Thesis. (1–12)

fall or spring

Fee.

ARCHITECTURAL COMMUNICATION (AVC)

AVC 161 Advanced Freehand Perspective Drawing. (2)

selected semesters

Introduces color media and analytical and design drawing exercises. 4 hours studio. Prerequisite: major in the College of Architecture and Environmental Design.

AVC 494 Special Topics. (1–4)

once a year

AVC 598 Special Topics. (1–4)

fall or spring

ENVIRONMENTAL DESIGN AND PLANNING (EPD)

See the *Graduate Catalog* for the EPD courses.

School of Design

www.asu.edu/caed/design

480/965-4135

AED 154B

Jacques Giard, Director

Professors: Brandt, Giard, Kroelinger

Associate Professors: Bernardi, Cutler, Johnson, McDermott, Patel, Ratner, Sanft, Witt

Assistant Professors: Boradkar, Herring, McCoy, Niederhelman, Rothstein, Thibeau Catsis, Weed

Faculty Associates: Fife, Johannes, Kelly, Kroeger, Montgomery, Sentinery, Sneed, Sola, Verch, White

PURPOSE

The School of Design educates individuals for the professional worlds of graphic design, industrial design, and interior design. The curricula focuses on the skills and knowledge that are necessary in these design professions and are undertaken in a learning environment that bridges the academic milieu to the professional world. This direction is further conditioned by the belief that designers have a responsibility to the public and communities they serve. Consequently, students are exposed to a full breadth of learning experiences, from courses in design history, human factors, and the theories of the profession, to the rigors and demands of the design studio. Students learn to integrate aesthetic values into their designs while considering contextual issues. The goal of the school's academic program is to graduate designers who are accomplished and visually sophisticated and who will continue to evolve in their chosen profession. To this end, the school provides an environment that is conducive to design excellence. It has a faculty of active professionals, excellent facilities and resources, and a network that is international in scope.

More information about the School of Design may be obtained via the Web address provided or by sending electronic mail to caed.advising@asu.edu.

ORGANIZATION

Programs in the School of Design are organized by the faculty of the school under the direction and administration of the director, and standing committees of the faculty.

DEGREES

The faculty in the School of Design offer the Bachelor of Science in Design degree with three majors: Graphic

Design, Industrial Design, and Interior Design. Applications are not being accepted to the major in Design Science.

Graphic Design. The Graphic Design program not only prepares individuals for the graphic design profession, but also for graduate work as well. The goal of the faculty is to offer the best graphic design education, allowing the graduating student every option available. Studio classroom projects are planned to strengthen and refine students' proficiency in the language, process, and technical aspects of the profession. Projects are intended to help students think critically, both as individuals and as members of a group. Students opting for the profession can expect to work in the areas of advertising design, brand identity, broadcast graphics, corporate identity, environmental graphics, informational graphics, in-house corporate design, museum informational design, publication design, and Web site design. Students pursuing graduate studies can expect to be equally well prepared with critical and analytical thinking skills coupled with a diversified portfolio. The program is dedicated to a comprehensive education in graphic design as it relates to the changing communication standards of today and in the future.

Industrial Design. The program in Industrial Design prepares creative individuals to design manufactured objects used by people on a daily basis. The industrial design profession serves the needs of consumers and manufacturers by developing products that are attractive, useful, safe, convenient, and comfortable to use. The designer's special talents and skills include a sense of the aesthetic, knowledge of materials and processes, and an understanding of the physical and psychological needs of the user. Industrial designers often serve as a catalyst among management, marketing, and engineering.

By way of studio projects, students learn to visualize ideas, to communicate them to others, and to refine their skills in freehand sketching, computer-aided design, and model making. Assignments are a balance of conceptual aspects and practical techniques. Typical projects include electronics, toys, furniture, sports equipment, and packaging. Focus is placed on the role of the industrial designer as a member of a team. Third-year students perform internships in a large corporation or in a consulting design agency.

Interior Design. The program in Interior Design is accredited by the Foundation for Interior Design Education Research, the national accrediting agency. The five-year curriculum emphasizes design process, technical skill development, problem solving, and the management skills needed to work in collaboration with the allied design professions. The goal of interior design is to create high-quality environments for human use.

Significant changes in the interior design profession over the last two decades are reflected in the program. The school is committed to integrating computer technology into each level of the curriculum. In doing so, the program offers an

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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excellent environment for experimenting with and testing innovative applications of computer-aided design and simulation to interior design.

ADMISSION

Lower-Division Program. New and transfer students who have been admitted to the university and who have selected Graphic Design, Industrial Design, or Interior Design as a major are admitted to the appropriate lower-division program. Transfer credits for the lower-division program are reviewed by the college and evaluated for applicability to this curriculum. To be applicable, transfer courses must be equivalent in both content and level of offering. A review of samples of work is required for studio classes; consult a college academic advisor for further information.

Lower-division students entering the program who are not prepared for certain courses in the curriculum (for example, algebra and trigonometry or a second course in computer programming) are required to take additional courses that do not apply to the Bachelor of Science in Design degree. If such courses are required, an additional year of study may be necessary to complete the lower-division program.

Completion of lower-division requirements does not ensure acceptance to an upper-division professional program.

Upper-Division Program. When students have completed the lower-division curriculum requirements, they may apply for acceptance to upper-division programs in Graphic Design, Industrial Design, or Interior Design. The limited spaces available each year are awarded to applicants with the highest promise for professional success, as determined by each program. The faculty of the School of Design retain the right to admit any meritorious student who may be deficient in a published school criterion. Such admission requires an extraordinary review of the applicant by the school's admissions committee. Should the faculty choose to admit such an applicant, the student is placed automatically on a provisional admission status with stipulations as to what is required to be removed from probation. See "Application to Upper-Division Programs," below.

Students not admitted to upper-division programs are not dismissed from the university and may reapply or transfer to other programs. Students who intend to reapply should meet with a college academic advisor.

GRADUATE PROGRAMS

The School of Design offers a Master of Science in Design (M.S.D.) degree with concentrations in graphic design, industrial design, and interior design. Additionally, a distance learning M.S.D. degree with an area of study in design analysis is offered. The faculty also participates in a collegewide, interdisciplinary Ph.D. degree in Environmental Design and Planning with concentrations in design; history, theory, and criticism; and planning. For more information, see the *Graduate Catalog*.

APPLICATION TO UPPER-DIVISION PROGRAMS

Upper-Division Application Procedures. Students should write to a college academic advisor for the application form well in advance of the application deadline. For more information on portfolios, ask for a copy of the *Portfolio Seminar* brochure from a college academic advisor. The following dates and procedures are for students applying to 2003–2004 upper-division programs.

Upper-Division Application Deadlines. The following dates and procedures apply to Industrial and Interior Design portfolio submission only. Information regarding portfolio submission for Graphic Design is listed separately.

April 15, 2003. Portfolio and application documents are due in the school office by 5 P.M.

June 3, 2003. If the spring 2003 semester includes transfer course work (i.e., course work taken at an institution other than ASU), a student must submit his or her transcripts to the school no later than June 3. These transcripts may be unofficial copies. A second set of official transcripts must be sent to the university Undergraduate Admissions office. Application is not complete until the university receives official transcripts for transfer course work. For those transfer students whose academic term ends in June rather than May, this deadline may be extended upon the written request of the applicant.

July 1, 2003. Acceptance notices are mailed no later than July 1.

March 17, 2003. The application deadline for Graphic Design is March 17, 2003. In addition to the portfolio submission, Graphic Design requires an aptitude test, which is part of the application packet. Application packets can be obtained from the Academic Advising Office one month before the due date. Students may obtain their application results by contacting the academic coordinator for Graphic Design at the end of the first week of April. Acceptance notices are mailed to admitted students.

Return of Letter of Acceptance. A signed receipt of acceptance of admission must be received by the school by the date indicated on the Notice of Acceptance. Alternates may be accepted at a later date if space becomes available.

Matriculation. An accepted student is expected to begin his or her upper-division professional program at the beginning of the immediate fall term. There is no spring admission to the upper division.

Graphic Design Application Requirements. Individual applicants are responsible for obtaining the Graphic Design Application Packet by visiting the College of Architecture and Environmental Design Academic Advising Office in ARCH 141. Application materials are submitted in a portfolio organized by the individual applicant. The student's name must be affixed to the outside, with completed materials appearing in the following order:

1. application to the Graphic Design upper-division program;
2. "Commonly Asked Questions" form; and
3. the Graphic Design Aptitude Test.

The packet contains complete instructions for completing the standard test. This test requires the completion of five problems that are reviewed by the faculty and that become the portfolio of materials considered for admission to the upper-division program.

Industrial and Interior Design Portfolio Format

Requirements. Each applicant is responsible for obtaining the following documents and including them in the portfolio. Application materials are submitted at one time in a presentation binder (portfolio) with plastic sleeves (8.5" x 11" format only). The student's name must be affixed to the outside. Items must appear in the following order:

Page 1. The application form should be completely filled out with the first page visible. Application forms are available from the college Academic Advising Office.

Page 2. The second page of the application should be visible.

Page 3. Application Essay or Letter of Intent.

Page 4. All college transcripts for both ASU and transfer work should be included through the fall 2002 semester. Copies are acceptable. An academic advisor forwards 2003 ASU transcripts. (Applicants wishing to transfer spring semester 2003 work are responsible for submitting these transcripts by June 3 so that they may be added to their portfolios. The student is also responsible for getting an official transfer transcript sent directly to the Office of the Registrar.)

Page 5. A certificate of admission to ASU is necessary only for those students who have been newly admitted for fall 2003 and who are applying directly into an upper-division program. The certificate is not required for students currently attending ASU.

Following Pages (Usually from 10 to 20 Sheets). Students should present work sufficient to demonstrate the depth and breadth of their creative activity. This work should include (but is not limited to) examples of two- and three-dimensional design and graphics. Each project should be clearly identified (course, length of project, etc.), with a concise accompanying description of the assignment.

Students should obtain a portfolio requirements addendum for their major from the college's Academic Advising Office, ARCH 141, at the beginning of the academic year in which they intend to apply to the upper-division program. Requirements or instructions indicated in the addendum for that academic year take precedence over any other printed material.

Students are encouraged to include additional materials, written or pictorial, that provide further evidence of skills and abilities and of the aptitude and commitment to the major. When any work submitted is not completely original, the source must be given. When work is of a team nature, the applicant's role should be clearly indicated. Original examples or slides must not be submitted. All examples must be photographs or other reproduction graphic media.

Return of Portfolios. Application documents (pages 1–5) remain the property of the College of Architecture and Environmental Design. However, the remainder of the portfolio is returned after the admissions review, provided the appli-

cant encloses a self-addressed return mailer with sufficient prepaid postage. Portfolios may be claimed in person after July 2, 2003. If the applicant provides written permission, another person may claim the portfolio. After one year, unclaimed portfolios are discarded. While care is taken in handling the portfolios, no liability for lost or damaged materials is assumed by the college or school.

ADVISING

Advising for the lower- and upper-division curricula is through a college academic advisor (ARCH 141).

DEGREE REQUIREMENTS

The Bachelor of Science in Design degree requires a minimum of 120 semester hours for a major in Graphic Design and Industrial Design and a minimum of 150 semester hours for a major in Interior Design. The program includes required field trips. Students are responsible for these additional costs. Foreign study opportunities are available for students. An internship is a required part of the program.

Graphic Design

The curriculum in Graphic Design is divided into a pre-professional (first year) and a professional program (second, third, and fourth years):

Preprofessional program	30
Professional program	90
Total	120

The lower-division curriculum balances a foundation in academic subjects such as English, numeracy, and computer technology with design courses that include history and theory, as well as studio courses in drawing and design fundamentals as they relate to conceptual design. Students apply for entry into the professional program after fulfilling the first year School of Design core foundation courses. The upper-division curriculum includes studio work in graphic design and its relationship to problem solving at multiple scales. Projects are intended to educate students to think critically as individuals and as team participants in small and large corporate facilities. A formal eight-week summer internship is required in the professional program. The internship is coordinated by the faculty. Students intern in a variety of settings, including in-house corporate design, publication design, and advertising design agencies.

General Studies Requirement. The following curriculum includes sufficient approved course work to fulfill the General Studies requirement. See "General Studies," page 83, for requirements and a list of approved courses. Note that all three General Studies awareness areas are required. Consult an advisor for an approved list of courses.

Graduation Requirements. In addition to fulfilling college and major requirements for this professional degree, students must meet all university graduation and college degree

COLLEGE OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

requirements. See “University Graduation Requirements,” page 79, and [“College Degree Requirements,” page 124.](#)

Graphic Design—B.S.D. Preprofessional Program Requirements¹

First Year

Fall

DSC 101 Design Awareness <i>HU, G</i>	3
DSC 121 Design Principles I ¹	3
ENG 101 First-Year Composition.....	3
or ENG 105 Advanced First-Year Composition (3) if qualified	
Elective ²	3
MA elective ²	3
Total	15

Spring

ARS 102 Art of the Western World II <i>HU, H</i>	3
DSC 120 Design Drawing ¹	3
DSC 122 Design Principles II ¹	3
ENG 102 First-Year Composition.....	3
or elective if ENG 105 is taken (3)	
PGS 101 Introduction to Psychology <i>SB</i>	3
Total	15
Preprofessional program total	30

¹ Transfer credits for the lower-division program must be equivalent in both content and level of offering. Samples of studio work to be accepted for credit must be submitted for evaluation through the college’s Academic Advising Office, ARCH 141. Most studio courses and some lecture courses are sequential. They must be taken in, and may be offered only during, the semester noted.

² A list of courses that fulfill design electives, general studies, and other electives is available from the college academic advisor.

Graphic Design—B.S.D. Professional Program Requirements

Second Year

Fall

DSC 494 ST: Finding Purpose: Survival in Design.....	3
GRA 283 Letterform I ¹	3
GRA 284 Visual Communication I ¹	3
L elective ²	3
SB elective ²	3
Total	15

Spring

GRA 286 Visual Communication II ¹	3
GRA 287 Letterform II ¹	3
Design elective ²	3
CS elective ²	3
SQ, SG elective with laboratory I ²	4
Total	16

Third Year

Fall

GRA 345 Design Rhetoric <i>L</i>	3
GRA 383 Typography I.....	3
GRA 386 Visual Communication III ¹	3

Electives ²	6
Total	15

Spring

DSC 483 Preinternship Seminar.....	1
GRA 318 History of Graphic Design <i>HU</i>	3
GRA 385 Typography II ¹	3
GRA 387 Visual Communication IV ¹	3
C elective ²	3
Upper-division design elective ²	3
Total	16

Summer

DSC 484 Internship ¹	3
Total	3

Fourth Year

Fall

GRA 481 Visual Communication V ¹	3
GRA 494 ST: Graphic Design.....	3
SQ, SG elective with laboratory II ²	4
Upper-division design elective ²	3
Total	13

Spring

GRA 482 Visual Communication VI ¹	3
GRA 494 ST: Graphic Design.....	3
Elective ²	3
Upper-division elective ²	3
Total	12
Professional program total	90
B.S.D. minimum total	120

¹ Transfer credits for the lower-division program must be equivalent in both content and level of offering. Samples of studio work to be accepted for credit must be submitted for evaluation through the college’s Academic Advising Office, ARCH 141. Most studio courses and some lecture courses are sequential. They must be taken in, and may be offered only during, the semester noted.

² A list of courses that fulfill design electives, general studies, and other electives is available from the college academic advisor.

Industrial Design

The curriculum in Industrial Design is divided into a pre-professional (first and second years) and a professional program (third and fourth years):

Preprofessional program.....	61
Professional program.....	59
Total	120

The preprofessional curriculum balances a foundation in academic subjects such as English, algebra and trigonometry, computing, and physics with departmental courses that include history as well as studio courses in drawing, design fundamentals, human factors, and materials and processes.

The professional curriculum includes studio and laboratory work in industrial design, graphics, project development, and professional practice. Students also take a number of approved program electives. A supervised summer internship is part of the curriculum.

Upper-division studios emphasize projects that promote an interdisciplinary approach to solving problems and that

develop the student’s intellectual understanding of the philosophy, methodology, and theories related to industrial design. Problems proceed from small consumer products with simple task functions to larger and more complex problems and systems. Studio projects also emphasize the design processes: problem resolution through concept ideation, dialogue with specialists in related areas, and product development, presentation, and marketing.

Graduates of the program accept positions in industry and with firms involved in industrial design. Designers may focus on consumer products, transportation, electronics, medical devices, health products, or recreational products, among others. Designers may also choose to continue their education with graduate studies to enrich their design knowledge, to specialize, or to prepare for college-level teaching.

General Studies Requirement. The following curriculum includes sufficient approved course work to fulfill the General Studies requirement. See “General Studies,” page 83, for requirements and a list of approved courses. Note that all three General Studies awareness areas are required. Consult an advisor for an approved list of courses.

Graduation Requirements. In addition to fulfilling college and major requirements, students must meet all university graduation and college degree requirements. See “University Graduation Requirements” page 79, and [“College Degree Requirements,” page 124.](#)

**Industrial Design—B.S.D.
Preprofessional Program Requirements¹**

First Year

Fall

DSC 101 Design Awareness <i>HU, G</i>	3
DSC 121 Design Principles I ¹	3
ENG 101 First-Year Composition.....	3
or ENG 105 Advanced First-Year Composition (3) if qualified	
MAT 170 Precalculus <i>MA</i>	3
Elective.....	3
Total	15

Spring

DSC 120 Design Drawing ¹	3
DSC 122 Design Principles II ¹	3
ENG 102 First-Year Composition.....	3
or elective if ENG 105 is taken (3)	
PGS 101 Introduction to Psychology <i>SB</i>	3
PHY 111 General Physics <i>SQ</i> ²	3
PHY 113 General Physics Laboratory <i>SQ</i> ²	1
Total	16

Second Year

Fall

DSC 236 Introduction to Computer Modeling <i>CS</i>	3
IND 227 Visual Methods for Problem Solving.....	3
IND 242 Materials and Design	3
IND 260 Industrial Design I.....	3
IND 316 20th-Century Design I <i>HU, H</i>	3
Total	15

Spring

ECN 112 Microeconomic Principles <i>SB</i>	3
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IND 228 Imaging and Visualization.....	3
IND 243 Process and Design	3
IND 261 Industrial Design II	3
IND 317 20th-Century Design II <i>HU, H</i>	3
Total	15
Preprofessional program total	61

¹ Transfer credits for the lower-division program must be equivalent in both content and level of offering. Samples of studio work must be provided for evaluation. See a college academic advisor for an appointment.

² Both PHY 111 and 113 must be taken to secure SQ credit.

**Industrial Design—B.S.D.
Professional Program Requirements**

Third Year

Fall

DSC 344 Human Factors in Design.....	3
IND 327 Presentation Graphics	3
IND 354 Principles of Product Design	3
IND 360 Industrial Design III.....	5
Total	14

Spring

IND 328 Graphics for Industrial Design.....	3
IND 361 Industrial Design IV.....	5
MKT 300 Principles of Marketing.....	3
Elective.....	3
Total	14

Summer

DSC 484 Internship	2
Total	2

Fourth Year

Fall

ENG 301 Writing for the Professions <i>L</i>	3
IND 460 Design Project I.....	5
IND 470 Professional Practice for Industrial Design <i>L</i>	3
Elective.....	3
Total	14

Spring

IND 461 Design Project II	5
Elective.....	3
C elective.....	3
SQ, SG elective with approved laboratory.....	4
Total	15
Professional program total	59
B.S.D. minimum total	120

MINOR

Design Studies

The minor in Design Studies is available to students interested in design courses but who do not wish to major in graphic, industrial, or interior design. The courses are designed to appeal especially to students who have not been accepted to the upper-division of graphic, industrial, or

L literacy and critical inquiry / *MA* mathematics / *CS* computer/statistics/quantitative applications / *HU* humanities and fine arts / *SB* social and behavioral sciences / *SG* natural science—general core courses / *SQ* natural science—quantitative / *C* cultural diversity in the United States / *G* global / *H* historical / See “General Studies,” page 83.

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interior design but who wish to pursue the study of design within the Bachelor of Interdisciplinary Studies degree.

The selected courses satisfy the minimum requirement (18 semester hours) for the minor. Furthermore, 12 semester hours must be taken in upper-division course work. To enhance understanding of the subject matter, some of the selected courses are sequential in nature and require certain prerequisites; consequently, students should carefully note the semester in which these particular courses are offered. All courses are non-studio courses.

Designated Courses for the Minor

Graphic Design

DSC 344	Human Factors in Design	.....3
GRA 318	History of Graphic Design <i>HU</i>	.....3

Industrial Design

IND 242	Materials and Design	.....3
IND 243	Process and Design	.....3
IND 316	20th-Century Design I <i>HU, H</i>	.....3
IND 317	20th-Century Design II <i>HU, H</i>	.....3
IND 354	Principles of Product Design	.....3
IND 470	Professional Practice for Industrial Design <i>L</i>	.....3
IND 474	Design Seminar	.....3

Interior Design

INT 223	Interior Design Issues and Theories <i>HU</i>	.....3
INT 235	User Needs and Behavior in Interior Design	.....3
INT 310	History of Interior Design I <i>HU, H</i>	.....3
INT 311	History of Interior Design II <i>HU, H</i>	.....3
INT 341	Interior Materials and Finishes	.....3
INT 366	Construction Methods in Interior Design	.....3
INT 412	History of Decorative Arts in Interiors <i>HU</i>	.....3
INT 413	History of Textiles in Interior Design	.....3
INT 442	Specifications and Documents for Interiors <i>L</i>	.....3
INT 455	Environmental Control Systems	.....3
INT 457	Acoustics for Interior Design	.....3
INT 458	Lighting for Interior Design	.....3
INT 472	Professional Practice for Interior Design	.....3

The minor in Design Studies is open to all students of the university. It is especially suited to students pursuing the Bachelor of Interdisciplinary Studies degree. To pursue the minor in Design Studies, students must have a minimum cumulative GPA of 2.50.

Interior Design

The curriculum in Interior Design is divided into a pre-professional program (first and second year) and a professional program (third, fourth, and fifth years):

Preprofessional program	.....55
Professional program	.....95
Total	.....150

The preprofessional curriculum balances a foundation in academic subjects such as English, algebra and trigonometry, computer technology, and physics with departmental courses that include history and theory, as well as studio courses in drawing, design fundamentals, and conceptual design.

The professional curriculum includes studio work in interior design, furniture design, construction methods/structures, codes as related to materials and finishes, human factors, environmental control systems, as well as lecture courses in the history of interior design, decorative arts, and

textiles. An eight-week supervised summer internship is part of the curriculum. The fifth year is an interdisciplinary year in which students address real-life environmental problems. This final year is a capstone experience that utilizes all previous learning within and outside the professional program. The student's final design project is completed in consultation with a member of the local professional community.

Graduates from the program accept entry-level professional positions in a variety of settings, including interior design firms, departments of space planning, architectural firms, public institutions, and industry. Students may also choose to continue their education through graduate studies, which offer greater enrichment in studio disciplines and which contribute to the possibility for postsecondary-level academic appointments, giving the recipients highly sought-after academic credentials.

General Studies Requirement. The following curriculum includes sufficient approved course work to fulfill the General Studies requirement. See "General Studies," page 83, for requirements and a list of approved courses. Note that all three General Studies awareness areas are required. Consult with your advisor for an approved list of courses.

Graduation Requirements. In addition to fulfilling college and major requirements, students must meet all university graduation and college degree requirements. See "University Graduation Requirements," page 79, and "[College Degree Requirements](#)," page 124.

Interior Design—B.S.D. Preprofessional Program Requirements¹

First Year

Fall

DSC 101	Design Awareness <i>HU, G</i>	.....3
DSC 121	Design Principles I ¹	.....3
ENG 101	First-Year Composition	.....3
	or ENG 105 Advanced First-Year Composition (3)	
	if qualified	
MAT 170	Precalculus <i>MA</i>	.....3
Elective	.....3	
Total	.....15	

Spring

DSC 120	Design Drawing ¹	.....3
DSC 122	Design Principles II ¹	.....3
ENG 102	First-Year Composition	.....3
	or elective if ENG 105 is taken (3)	
PHY 111	General Physics <i>SQ</i> ²	.....3
PHY 113	General Physics Laboratory <i>SQ</i> ²	.....1
SB elective	.....3	
Total	.....16	

Second Year

Fall

DSC 236	Introduction to Computer Modeling <i>CS</i>	.....3
INT 194	ST: Drafting for Interior Design ¹	.....3
INT 223	Interior Design Issues and Theories <i>HU</i> ¹	.....3
INT 235	User Needs and Behavior in Interior Design ¹	.....3
Total	.....12	

Spring	
ARS 102 Art of the Western World II <i>HU, H</i>	3
INT 220 Media for Design Development ¹	3
INT 231 Concepts for Interior Design ¹	3
Elective.....	3
Total	12
Preprofessional program total	55

¹ Transfer credits for the lower-division program must be equivalent in both content and level of offering. Samples of studio work must be provided for evaluation. See a college academic advisor for an appointment.

² Both PHY 111 and 113 must be taken to secure SQ credit.

**Interior Design—B.S.D.
Professional Program Requirements**

Third Year

Fall	
DSC 344 Human Factors in Design.....	3
INT 310 History of Interior Design I <i>HU, H</i>	3
INT 340 Interior Codes: Public Welfare and Safety.....	3
INT 364 Interior Design Studio I	5
INT 366 Construction Methods in Interior Design	3
Total	17

Spring	
DSC 483 Preinternship Seminar.....	1
INT 311 History of Interior Design II <i>HU, H</i>	3
INT 341 Interior Materials and Finishes	3
INT 365 Interior Design Studio II.....	5
INT 455 Environmental Control Systems	3
Total	15

Summer	
DSC 484 Internship	3
Total	3

Fourth Year

Fall	
INT 412 History of Decorative Arts in Interiors <i>HU</i>	3
INT 442 Specifications and Documents for Interiors <i>L</i>	3
INT 457 Acoustics for Interior Design.....	3
INT 464 Interior Design Studio III.....	5
L elective.....	3
Total	17

Spring	
INT 413 History of Textiles in Interior Design	3
INT 458 Lighting for Interior Design.....	3
INT 465 Interior Design Studio IV.....	5
Natural science elective with laboratory.....	4
Total	15

Fifth Year*

Fall	
INT 422 Facilities Planning and Management I.....	3
INT 446 Furniture Design and Production	3
INT 466 Interior Design Studio V	5
SB and C elective.....	3
Total	14

Spring	
INT 423 Facilities Planning and Management II	3
INT 467 Interior Design Studio VI.....	5

INT 472 Professional Practice for Interior Design.....	3
Elective.....	3
Total	14
Professional program total	95
B.S.D. minimum total	150

* See "Fifth Year," below.

Fifth Year. During the fifth year, the student concentrates on research and application of that research related to the development of a comprehensive project. This year is self-directed in nature and prepares the student for independent thinking and creative problem solving. The fifth-year experience promotes high expectations for producing professional work that represents the culmination of the major's academic experience. It should be noted that the fifth-year studio sequence is designed to draw majors from the upper-division programs of industrial design, graphic design, and architecture, thus furthering a real-life interdisciplinary problem-solving experience.

MINOR

Interior Design History

The minor in Interior Design History is available to students interested in design and culture. The courses designated for the minor are part of the professional studies in interior design within the School of Design. Moreover, the courses serve to inform the students about the importance of the global community, especially sociocultural groups, and the impact of the global community on the design of the interior environment.

The selected courses satisfy the minimum requirement (18 semester hours) for the minor. To enhance the understanding of the subject matter, the selected courses are sequential in nature and require certain prerequisites. Consequently, students should carefully note the semester in which any of these courses is offered.

Required Courses

DSC 101 Design Awareness <i>HU, G</i>	3
INT 223 Interior Design Issues and Theories <i>HU</i>	3
INT 310 History of Interior Design I <i>HU, H</i>	3
INT 311 History of Interior Design II <i>HU, H</i>	3
INT 412 History of Decorative Arts in Interiors <i>HU</i>	3
INT 413 History of Textiles in Interior Design	3
Total	18

The minor in Interior Design History is open to students majoring in Architectural Studies, Art, Communication, Psychology, or Sociology and students in any College of Business major or the Bachelor of Interdisciplinary Studies program. All other majors are considered on an individual basis and approved by the coordinators of the Interior Design program within the School of Design. To pursue the minor in Interior Design History, students must have a minimum cumulative GPA of 2.50.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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DESIGN (DSC)

DSC 100 Introduction to Environmental Design. (3)

fall and spring

Survey of environmental design: includes historic examples and the theoretical, social, technical, and environmental forces that shape them. Cross-listed as APH 100/PUP 100. Credit is allowed for only APH 100 or DSC 100 or PUP 100.

General Studies: HU, G, H

DSC 101 Design Awareness. (3)

fall

Survey of cultural, global, and historical context for the design professions.

General Studies: HU, G

DSC 120 Design Drawing. (3)

spring

Drawing as language to explore and communicate ideas. Development of drawing aptitude as language and process for design thinking. 1 hour lecture, 5 hours studio.

DSC 121 Design Principles I. (3)

fall

Design as a language and process for creative thinking and realization. 1 hour lecture, 5 hours studio. Prerequisite: major in the College of Architecture and Environmental Design.

DSC 122 Design Principles II. (3)

spring

Continued exploration of design as a language and process for creative thinking and realization. 1 hour lecture, 5 hours studio. Prerequisite: DSC 121.

DSC 236 Introduction to Computer Modeling. (3)

fall and spring

Computers in design, including software concepts, specific packages, and problem solving, illustration, typography, modeling, and animation. Lab. Prerequisite: Design major.

General Studies: CS

DSC 344 Human Factors in Design. (3)

fall

Man-machine environment systems; human characteristics and behavior applied to design of products, systems, and their operating environment.

DSC 483 Preinternship Seminar. (1)

spring

Preparation of internship materials that produce and enhance a successful internship experience. Seminar. Prerequisite: 3rd-year major in the School of Design.

DSC 484 Internship. (1–3)

summer

Full-time summer internship under supervision of practitioners in the Phoenix area or other locales. Prerequisite: instructor approval.

DSC 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Finding Purpose: Survival in Design. (3)

DSC 500 Research Methods. (1–12)

selected semesters

Fee.

DSC 520 Contemporary Design Issues. (3)

fall and spring

Projected applications in design production, planning, and decision-making processes. Lecture, seminar. Prerequisites: INT 310 and 311 (or their equivalents).

DSC 524 Illumination and Acoustics. (3)

selected semesters

Research and laboratory investigation of advanced illumination and acoustics issues of facility design. Emphasizes human factors and performance aspects. Prerequisites: INT 457 and 458 (or their equivalents).

DSC 525 Design Methodologies. (3)

fall

Practical exercises and studies in problem-solving strategies; problem definition and supporting theory for the designer. Lecture, seminar, lab. Fee. Prerequisite: senior or graduate standing.

DSC 527 Modern Design Theory. (3)

spring

Aesthetic, political, economic, and social theories that have shaped modern design; theory as the basis for design philosophies. Lecture, seminar. Prerequisite: DSC 525 (or its equivalent).

DSC 529 Design Criticism. (3)

fall

Critical methods applied to design as material culture and human expression; evaluation of achievement versus intention. Lecture, seminar. Prerequisite: DSC 527 (or its equivalent).

DSC 544 Human Factors Systems and Documentation. (3)

fall

Advanced topics associated with theory and methods of human factors in design. Individual projects stressing problem organization, evaluation, and documentation. Lecture, seminar, lab. Prerequisite: DSC 344 (or its equivalent).

DSC 552 Computer Simulation in Design. (3)

fall

Use of computer graphics as a medium to develop and present images of the environment for analysis and perception. Lecture, lab. Prerequisite: senior or graduate standing.

DSC 553 Computer Imaging and Visual Perception. (3)

spring

Issues and applications of computer simulation as a tool for describing and testing human interface with the environment. Lecture, lab. Prerequisite: senior or graduate standing.

DSC 558 Daylighting. (3)

selected semesters

Daylighting as a design determinant; concepts, techniques, methodology, experiments, and case studies. Lecture, studio. Prerequisite: senior or graduate standing.

DSC 580 Practicum: Methods of Teaching Design. (3)

fall

Background and development of design education theories. Concepts of studio teaching methods. Comprehensive student project development and evaluation methods. Prerequisite: graduate standing.

DSC 592 Research. (1–12)

selected semesters

DSC 593 Applied Project. (1–12)

selected semesters

Fee.

DSC 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Facilities Planning II
Fee.

DSC 599 Thesis. (1–12)

selected semesters

Fee.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

ENVIRONMENTAL DESIGN AND PLANNING (EPD)

See the *Graduate Catalog* for the EPD courses.

GRAPHIC DESIGN (GRA)

GRA 283 Letterform I. (3)

fall

Drawing of letterforms with focus on proportion and structure. Introduces letterform nomenclature and classifications. 6 hours a week. Fee. Prerequisites: DSC 122; acceptance into Graphic Design professional program.

GRA 284 Visual Communication I. (3)

fall

Theoretical and applied studies in shape, drawing, and color. 6 hours a week. Fee. Prerequisite: GRA 283.

GRA 286 Visual Communication II. (3)*spring*

Transition from theoretical to applied problems. Emphasizes refinement of visual skills. 6 hours a week. Fee. Prerequisites: GRA 284; acceptance into Graphic Design professional program. Corequisite: GRA 287.

GRA 287 Letterform II. (3)*spring*

Continuation of GRA 283 with emphasis on lowercase letters; basics of pen writing and font design. 6 hours per week. Fee. Prerequisites: GRA 284; acceptance into Graphic Design professional program. Corequisite: GRA 286.

GRA 318 History of Graphic Design. (3)*fall*

Surveys development in the graphic arts, innovative printing methods, aesthetic values, and social and cultural environments that shape them.

*General Studies: HU***GRA 345 Design Rhetoric. (3)***fall and spring*

Develops critical thinking and expression of ideas in concise and persuasive written and spoken form. Prerequisites: ENG 101, 102.

*General Studies: L***GRA 382 Graphic Representation. (3)***fall*

Studio practice in drawing with an application toward graphic communication. 6 hours a week. May be repeated once for credit. Fee. Prerequisite: GRA 284.

GRA 383 Typography I. (3)*fall*

Theoretical exercises in spatial and textural qualities of type. Problems in tension, activation, and balance. Exercises in simple typographical applications. 6 hours a week. Fee. Prerequisites: GRA 286, 287. Corequisite: GRA 386.

GRA 385 Typography II. (3)*spring*

Problems in composition, choice, and combinations of typefaces, formats, and their application to a variety of design projects. 6 hours a week. Fee. Prerequisite: GRA 383. Corequisite: GRA 387.

GRA 386 Visual Communication III. (3)*fall*

Problems in specific design applications such as poster, packaging, publications. Emphasizes development of concepts in visual communications. 6 hours a week. Fee. Prerequisites: GRA 286, 287. Corequisite: GRA 383.

GRA 387 Visual Communication IV. (3)*spring*

Client-oriented projects. Multifaceted problems with emphases on continuity of design in more than one medium and format. 6 hours a week. Fee. Prerequisites: GRA 383, 386. Corequisite: GRA 385.

GRA 481 Visual Communication V. (3)*fall*

Studio problems with emphasis on analysis, problem solving, and professional portfolio preparation. 6 hours a week. Fee. Prerequisites: GRA 385, 387.

GRA 482 Visual Communication VI. (3)*spring*

Individual and group projects with outside clients. All projects culminate in an exhibit. 6 hours a week. Fee. Prerequisite: GRA 481.

GRA 485 Graphic Design Workshop. (3)*selected semesters*

Preprofessional client/designer situations from concept to printed work. Studio workshop and internships for selected students. 6 hours a week. May be repeated once for credit. Fee. Prerequisite: instructor approval.

GRA 494 Special Topics. (1–4)*fall and spring*

Topics may include the following:

- Graphic Design. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

INDUSTRIAL DESIGN (IND)**IND 194 Special Topics. (1–4)***spring*

Topics may include the following:

- Drafting for Industrial Design. (3)
Applies mechanical drafting knowledge and skills. Manual drafting principles and techniques with transition to computer-aided industrial design.

IND 227 Visual Methods for Problem Solving. (3)*fall*

Introduces conceptual design activity based on the mind-eye-media feedback loop. Graphic language used to represent conjecture, analysis, synthesis of objects, and their contexts. Seminar, studio. Prerequisite: DSC 122.

IND 228 Imaging and Visualization. (3)*spring*

Design activities stressing graphic language abstraction practiced for presentation. Discusses structure of criticism, including description, interpretation, and evaluation. Seminar, studio. Prerequisite: IND 227.

IND 242 Materials and Design. (3)*fall*

Materials application in design. Introduces characteristics and properties of metals and organic materials, including plastics, and inorganic materials.

IND 243 Process and Design. (3)*spring*

Influences of industrial processing on design. Introduces basic materials processing and post-forming processes. Emphasizes appearance enhancement and design constraints of material processing. Prerequisite: IND 242.

IND 260 Industrial Design I. (3)*fall*

Introduces the method and process of the industrial designer. Determinants necessary in small product design. 1 hour lecture, 2 hours studio. Prerequisite: DSC 122.

IND 261 Industrial Design II. (3)*spring*

Issues of physical form development related to product and design; form development properties of paper, fibers, wood, metal, and plastics. 1 hour lecture, 2 hours studio. Prerequisite: IND 260 (or its equivalent).

IND 316 20th-Century Design I. (3)*fall*

Modern European and American design from 1900 to 1940. Emphasizes transportation, product, furniture, exhibition, and graphic design. *General Studies: HU, H*

IND 317 20th-Century Design II. (3)*spring*

Modern European, Asian, and American design since 1940. Emphasizes transportation, product, furniture, exhibition, and graphic design. *General Studies: HU, H*

IND 327 Presentation Graphics. (3)*fall*

Studies methods for portfolio and professional product presentation using graphic media for information transfer. Stresses aesthetic judgment, organization, and craftsmanship. Seminar, studio. Prerequisite: IND 228.

IND 328 Graphics for Industrial Design. (3)*spring*

Investigates and applies packaging applications and planning to the development of an identity for a product line structured as a system. Lab. Prerequisite: IND 327.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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IND 354 Principles of Product Design. (3)

fall

Influences of physical and mechanical concepts in product design; mechanisms, kinematics, and fastening systems. Concepts of analysis for product design. Influences of concepts on aesthetics. Prerequisite: PHY 111.

IND 360 Industrial Design III. (5)

fall

Methods of visual thinking, conceptualization, and ideation related to building skill levels in professional design presentation techniques. 10 hours studio. Fee. Prerequisite: school approval.

IND 361 Industrial Design IV. (5)

spring

Emphasizes developing ideas into a complete functional product, including survey and application of aesthetics, human factors, materials, and manufacturing. 10 hours studio. Fee. Prerequisite: IND 360.

IND 460 Design Project I. (5)

fall

Complete analysis of the product unit as an element of mass production, featuring marketing, technology, human factors, and visual design. Emphasizes professional standards. 10 hours studio. Fee. Prerequisites: DSC 484; IND 361.

IND 461 Design Project II. (5)

spring

Product design, with emphasis in systems interaction. Culmination of design process and technique. Encourages individual project direction. 10 hours studio. Fee. Prerequisite: IND 361.

IND 470 Professional Practice for Industrial Design. (3)

fall

Business procedures, management techniques, accounting systems, ethics, and legal responsibilities of the design professions. May be repeated for credit. Prerequisite: senior standing.

General Studies: L

IND 474 Design Seminar. (3)

spring

Manufacturer's liability, statutes, regulations, and common law rules; role of expert witnesses; insurance and product safety programs. Seminar. Prerequisite: senior standing.

IND 494 Special Topics. (3)

selected semesters

Applies mechanical drafting knowledge and skills. Manual drafting principles and techniques with transition to computer-aided industrial design.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

INTERIOR DESIGN (INT)

INT 194 Special Topics. (1-4)

fall

Topics may include the following:

- Drafting for Interior Design. (3)

INT 220 Media for Design Development. (3)

spring

Graphic representation methods used to describe and analyze space; emphasizes quick presentation techniques. 6 hours studio. Prerequisite: DSC 122.

INT 223 Interior Design Issues and Theories. (3)

fall

Interiors issues, theories, and philosophies. Emphasizes unique social and cultural factors that shape 20th-century design concepts.

General Studies: HU

INT 231 Concepts for Interior Design. (3)

spring

Conceptual design development, including scale and proportion, light, texture, form, volume, and spatial hierarchy; passage and repose. 1 hour lecture, 4 hours lab. Prerequisite: DSC 236.

INT 235 User Needs and Behavior in Interior Design. (3)

fall

Applies conceptual design to issues of programming and space planning, user needs, and behavior. 1 hour lecture, 4 hours lab. Prerequisite: DSC 122.

INT 310 History of Interior Design I. (3)

fall

Design of interior spaces as an expression of cultural influences to 1835.

General Studies: HU, H

INT 311 History of Interior Design II. (3)

spring

Design of interiors as an expression of cultural influences from 1835 to the present. Prerequisite: INT 310 or instructor approval.

General Studies: HU, H

INT 340 Interior Codes: Public Welfare and Safety. (3)

fall

Codes and regulations as performance criteria for interior design. Corequisite: INT 366.

INT 341 Interior Materials and Finishes. (3)

spring

General analysis of quality control measures relating to interior design materials, finishes, and performance criteria. Prerequisites: INT 340, 366.

INT 364 Interior Design Studio I. (5)

fall

Studio problems in interior design related to behavioral response in personal and small group spaces. 10 hours studio. Fee. Prerequisite: school approval.

INT 365 Interior Design Studio II. (5)

spring

Studio problems in interior design, with emphasis on issues of public and private use of interior places of assembly. 10 hours studio. Fee. Prerequisite: INT 364.

INT 366 Construction Methods in Interior Design. (3)

fall

Design theory related to analysis, materials, and building techniques of horizontal and vertical construction in interior design. Lecture, field trips. Corequisite: INT 340.

INT 412 History of Decorative Arts in Interiors. (3)

fall

Design of decorative arts as an expression of cultural influences and as an extension of interior spaces. Prerequisite: INT 311 or instructor approval.

General Studies: HU

INT 413 History of Textiles in Interior Design. (3)

spring

Cultural and historical expression of textiles as related to interiors. Possible field trips. Prerequisite: INT 412 or instructor approval.

INT 422 Facilities Planning and Management I. (3)

fall

Facility management process in large-scale organizations. Planning, long-range forecasting, and productivity. Project management methodologies using micro-based software programs. Prerequisite: senior standing.

INT 423 Facilities Planning and Management II. (3)

spring

Formation of facilities policies, procedures, and standards. Facilities database, space allocations, and management process. Evaluation of programming criteria. Prerequisites: INT 422; senior standing.

INT 442 Specifications and Documents for Interiors. (3)

fall

Contract specifications, documents, schedules, and bidding procedures for interior design. Prerequisites: INT 341, 365.

General Studies: L

INT 446 Furniture Design and Production. (3)

fall

Design, construction, cost estimating, and installation in interior furniture and millwork. 1 hour lecture, 4 hours studio.

INT 455 Environmental Control Systems. (3)

spring

Survey of environmental control systems and their application in the design of building interiors. Lecture, field trips. Prerequisites: MAT 117, 170; PHY 111, 113; junior standing.

INT 457 Acoustics for Interior Design. (3)

fall

Physical properties of sound. Studies pertaining to sound-absorbing materials, constructions, and room acoustics. Prerequisites: MAT 170; PHY 111, 113.

INT 458 Lighting for Interior Design. (3)

spring

Light as an aspect of interior design. Evaluation of light sources for distribution, color, and cost.

INT 464 Interior Design Studio III. (5)

fall

Studio problems in interior design related to commercial spaces. 10 hours studio. Fee. Prerequisites: DSC 484; INT 365.

INT 465 Interior Design Studio IV. (5)

spring

Studio problems in interior design related to health and educational facilities. 10 hours studio. Fee. Prerequisite: INT 464.

INT 466 Interior Design Studio V. (5)

fall

Advanced interior design problem solving, design theory, and criticism. Thesis project development based upon the major's concentration. 10 hours studio. Fee. Prerequisite: school approval.

INT 467 Interior Design Studio VI. (5)

spring

Advanced series of specialized projects or continuation of thesis project based upon the major's concentration. 10 hours studio. Fee. Prerequisite: school approval.

INT 472 Professional Practice for Interior Design. (3)

spring

Business procedures, project control, fee structures, and professional product liabilities.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

**School of Planning and
Landscape Architecture**

www.asu.edu/caed/planning

480/965-7167

AED 158A

Professors: Kihl, Lai, Mushkatel, Pijawka

Associate Professors: Cameron, Cook, Guhathakurta, Kim, McSherry, Yabes

Assistant Professors: Crewe, Ewan, Fish Ewan, Larsen, Musacchio

Faculty Associates: Abele, Cafarella, Dollin, Fry, Gammage, Holway

PURPOSE

The faculty in the School of Planning and Landscape Architecture offer curricula that provide an education for careers in environmental planning, housing and urban development, landscape architecture, urban and regional planning, and urban design. The goal of the faculty is to advance the professions of planning and landscape architecture through scholarship, teaching, research, and community service.

Planners and landscape architects work on projects that range in scale from site and landscape development to the design of entire communities and the formulation of policies that shape urban and regional growth. Planning and landscape architecture graduates work for private firms and government agencies. Their work typically involves fields such as land-use planning, housing, natural resource management, urban transportation, development controls, and environmental impact assessment.

ORGANIZATION

The programs are organized by the faculty of the school under the direction and administration of the program coordinators and the school director.

DEGREES

The faculty in the School of Planning and Landscape Architecture offer the Bachelor of Science in Planning degree in Urban Planning, Bachelor of Science in Landscape Architecture degree, and Bachelor of Science in Design degree in Housing and Urban Development.

Bachelor of Science in Planning (B.S.P.)

The B.S.P. degree prepares students for careers in urban planning. Students take courses that include comprehensive planning, socioeconomic and environmental analysis, computer and analytical methods, planning law, site planning, landscape architecture, urban design, and public-policy formulation and administration. An internship or an approved elective is required between the third and fourth years. Many students continue to specialize in planning at the graduate level. Students in planning are exposed to the theories, methods, and practices of the profession of planning.

Bachelor of Science in Landscape Architecture (B.S.L.A.)

The B.S.L.A. prepares students to be professional landscape architects. Students explore the reasons for and the techniques involved in the analysis, planning, and design of the environment, both natural and built. The B.S.L.A. is an accredited program.

Bachelor of Science in Design (B.S.D.)

A B.S.D. degree with a major in Housing and Urban Development (HUD) educates and trains professionals to lead in the production of high-quality affordable housing, in the development of creatively designed and soundly planned neighborhoods and communities, in the revitalization of communities, and in the exemplification of social inclusiveness and environmental sensitivity in responsible land development. HUD graduates may pursue careers in the private home development industry, in publicly sponsored housing and community redevelopment, with nonprofit housing agencies, or in postgraduate housing and urban development research and education. The B.S.D. degree with a major in Housing and Urban Development is offered in conjunction with the College of Extended Education.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

MINORS

Landscape Studies

The minor in Landscape Studies is designed for students who have an interest in landscape aesthetics, but are pursuing a major in another field. The course selection is intended to provide greater understanding of landscape issues that may be relevant in related professional disciplines and to broaden knowledge about the landscape in which we live.

Students must complete a minimum of 18 semester hours from the following list of courses. Students may petition to have other PLA special topics courses considered as part of the 18 semester hours required.

PLA 101 Landscape and Society *HU, G*3
 PLA 310 History of Landscape Architecture3
 PLA 311 Contemporary Landscape Architecture.....3
 PLA 410 Social Factors in Landscape and Urban Planning.....3
 PLA 411 Landscape Architecture Theory and Criticism *L*3
 PLA 412 Landscape Ecology and Planning3
 PLA 413 Southwest Landscape Interpretation3
 PLA 420 Theory of Urban Design *HU*.....3
 PLA 485 International Field Studies in Landscape Architecture *G*.....6

The minor is open to students of all majors. Students must however, have an overall GPA of 3.00 or higher and achieve a minimum 3.00 GPA in minor classes to be awarded the minor. Students seeking admission to the minor in Landscape Studies must submit a minor verification form to the landscape architecture coordinator in the School of Planning and Landscape Architecture.

Urban Planning

The minor in Urban Planning is designed for students who are interested in the field but who wish to pursue other majors. The course selection is designed to provide an overview of the field and offer information of broad appeal.

All students must complete a minimum of 15 semester hours from the following courses:

PUP 200 The Planned Environment *HU, H*3
 PUP 301 Introduction to Urban Planning *L**3
 PUP 412 History of the City *H*.....3
 PUP 420 Theory of Urban Design *HU*.....3
 PUP 425 Urban Housing Analysis3
 PUP 430 Transportation Planning and the Environment3
 PUP 432 Planning and Development Control Law3
 PUP 433 Zoning Ordinances, Subdivision Regulations, and Building Codes3
 PUP 442 Environmental Planning.....3
 PUP 444 Preservation Planning3
 PUP 475 Environmental Impact Assessment3
 PUP 494 Special Topics3
 PUP 510 Citizen Participation.....3

* PUP 301 Introduction to Urban Planning is required. Landscape Architecture students must choose another class with an advisor’s approval since PUP 301 is already required for the B.S.L.A.

The minor is automatically open to students from the following majors: Architectural Studies, Civil Engineering, Environmental Resources, Geography, Housing and Urban Development, Landscape Architecture, and Real Estate. Students pursuing other majors will be considered on an individual basis. To pursue a minor in Urban Planning, stu-

dents must have a minimum cumulative GPA of 3.00. These students must submit a letter of application to the School of Planning and Landscape Architecture seeking approval to enter the minor program.

GRADUATE PROGRAMS

The faculty in the School of Planning and Landscape Architecture offer concentrations in landscape ecological planning, urban and regional development, and urban design under the Master of Environmental Planning (M.E.P.) degree and a collegewide, interdisciplinary Ph.D. degree in Environmental Design and Planning with concentrations in design; history, theory, and criticism; and planning. For more information, see the *Graduate Catalog*.

ADMISSION

Lower-Division Program. New and transfer students who have been admitted to the university and who have selected a program in the School of Planning and Landscape Architecture are admitted to the lower-division program. Transfer credits for the lower-division program are reviewed by the college and evaluated for applicability to this curriculum. To be applicable, transfer courses must be equivalent in both content and level of offering. A review of samples of work is required for studio classes. See a college academic advisor for an appointment.

Completion of lower-division requirements does not ensure acceptance to the upper-division professional program. Admission to the upper division is competitive and limited to the space available. Admission requires formal application and acceptance.

Upper-Division Program. Admission to the upper-division programs of the School of Planning and Landscape Architecture is limited to applicants who have completed the lower-division program requirements and who are determined by the admissions committee to have the best potential for academic success. Spaces in the program are limited by available facilities, faculty, and qualified applicants. A minimum lower-division program GPA of 3.00 may be required. See “Application to Upper-Division Programs,” on this page.

Students not admitted to upper-division programs are not dismissed from the university and may reapply later or may transfer to other programs. Students who plan to reapply should meet with a college academic advisor.

APPLICATION TO UPPER-DIVISION PROGRAMS

Upper-Division Application Procedures. Students should write to a college academic advisor for the application form well in advance of the application deadline. For more information on portfolios, ask for a copy of the portfolio guidelines from a college academic advisor.

Landscape Architecture students in good standing who will complete all required lower-division courses by the end of the fall semester of their sophomore year may apply for admission to the upper-division in November of their sophomore year. Urban Planning and Housing, and Urban Development students in good standing who will complete all required lower-division courses by the end of the spring

semester of their sophomore year may apply for admission to the upper-division in April of their sophomore year.

Upper-Division Application Deadlines. *November 15, 2002.* Landscape Architecture portfolio and application documents are due in the school office by 5 P.M.

December 16, 2002. Acceptance notices are mailed to Landscape Architecture students no later than December 16.

January 3, 2003. Landscape Architecture students must submit transcripts of non-ASU course work if their spring semester includes course work taken at another institution. These transcripts may be unofficial copies.

April 15, 2003. Urban Planning, and Housing and Urban Development portfolio and application documents due in the school office by 5 P.M.

June 3, 2003. Urban Planning, and Housing and Urban Development students must submit transcripts of non-ASU course work if their spring semester includes course work taken at another institution. These transcripts may be unofficial copies.

Official Transcripts. A second set of official transcripts must be sent to the university's Office of the Registrar. An application is not complete until the university receives official transcripts for transfer course work.

July 1, 2003. Acceptance notices are mailed no later than July 1.

Return of Letter of Acceptance. A signed receipt of acceptance of admission must be received by the school by the date indicated on the Notice of Acceptance. Alternates may be accepted at a later date if space becomes available.

Matriculation. An accepted student is expected to begin his or her upper-division professional program at the beginning of the immediate fall term. There is no spring admission to the upper division.

Portfolio Format Requirements. Each applicant is responsible for obtaining the following documents and including them in a presentation binder (portfolio) with plastic sleeves (8.5" x 11" format only) and a label, with the student's name, affixed to the outside:

1. evidence of graphic and design work shown in 35 mm slides or 3" x 5" or other appropriately sized photographs (20 maximum);
2. a statement of intent describing the applicant's specific background and interest in the major;
3. latest college-level transcript(s) (no high school transcripts are required);
4. one example of written work (e.g., a class paper); and
5. samples of individual work; team work can be included, but the contribution of the candidate must be clarified.

Students are also strongly encouraged to submit evidence of other endeavors related to the major. The applicant's GPA based on required courses and cumulative GPA is evaluated. Housing and Urban Development students completing the Phoenix Community College (PCC) articulation program

with the B.S.D.-HUD program should submit similar material from PCC.

Students should obtain a portfolio requirements addendum for their major from the college's Academic Advising Office, ARCH 141, at the beginning of the academic year in which they intend to apply to the upper-division program. Requirements or instructions indicated in the addendum for that academic year take precedence over any other printed material.

Return of Portfolios. Application documents remain the property of the School of Planning and Landscape Architecture. However, the remainder of the portfolio is returned after the admissions review, provided the applicant encloses a self-addressed return mailer with sufficient prepaid postage. Portfolios may be claimed in person after the letter of response is submitted. If the applicant provides written permission, another person may claim the portfolio. After one year, unclaimed portfolios are discarded. While care is taken in handling the portfolios, no liability for lost or damaged materials is assumed by the college or school.

ADVISING

Advising for the lower-division curriculum is provided through a college academic advisor. Advising for the upper-division curriculum is provided by the school director and faculty advisors.

DEGREE REQUIREMENTS

Urban Planning

The Bachelor of Science in Planning degree requires a total of 120 semester hours.

Preprofessional program courses	61
Professional program courses core	56
Internship	3
Total	120

General Studies Requirement. The following curriculum includes sufficient approved course work to fulfill the General Studies requirement. See "General Studies," page 83, for requirements and a list of approved courses. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses.

Graduation Requirements. In addition to fulfilling college and major requirements, students must meet all university graduation and college degree requirements. See "University Graduation Requirements," page 79, and "[College Degree Requirements](#)," page 124.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

**Bachelor of Science in Planning,
Major in Urban Planning
Preprofessional Program Requirements¹**

First Year

Fall

ENG 101	First-Year Composition.....3 or ENG 105 Advanced First-Year Composition (3) if qualified	3
MAT 117	College Algebra <i>MA</i>.....3 or approved more advanced MA elective (3)	3
PUP 100	Introduction to Environmental Design <i>HU, G, H</i>.....3	3
PUP 161	Graphic Communication ².....3	3
	Elective.....3	3
	<hr/>	
Total	.....15	15

Spring

ENG 102	First-Year Composition.....3 HU elective if ENG 105 is taken (3)	3
	Elective.....3	3
	C elective.....3	3
	SB elective.....3	3
	SQ or SG elective.....4	4
	<hr/>	
Total	.....16	16

Second Year

Fall

PLA 101	Landscape and Society <i>HU, G</i>.....3 or any HU or SB elective	3
PUP 261	Urban Planning I ².....4	4
PUP 301	Introduction to Urban Planning <i>L</i>.....3	3
PUP 322	Computers in Planning.....3	3
	HU elective.....3	3
	<hr/>	
Total	.....16	16

Spring

PUP 262	Urban Planning II ².....4	4
PUP 363	History of Planning.....3	3
	Approved statistics or quantitative reasoning elective.....3	3
	Natural science elective with laboratory.....4	4
	<hr/>	
Total	.....14	14
	Preprofessional program total.....61	61

¹ Transfer credits are reviewed by the college and evaluated as applicable to this curriculum. To be applicable, transfer courses must be equivalent in both content and level of offering.

² Portfolio review is required for transfer studio work. See a college academic advisor for an appointment.

The first round of admission to the upper-division takes place after the fall semester of the second year. The second round, if needed, takes place after the spring semester.

**Bachelor of Science in Planning,
Major in Urban Planning
Professional Program Requirements**

Third Year

Fall

PUP 361	Urban Planning III.....4	4
PUP 424	Planning Methods.....4	4
PUP 452	Ethics and Theory in Planning <i>L</i>.....3	3
	Elective.....3	3
	<hr/>	
Minimum total	.....14	14

Spring

PUP 362	Urban Planning IV.....4	4
PUP 436	City Structure and Planning.....3	3
PUP 510	Citizen Participation.....3	3
	Approved program elective*.....3	3
	SB elective.....3	3
	<hr/>	
Total	.....16	16

Summer

PUP 484	Internship or Study Abroad (use elective credit).....3 or approved elective (3)	3
	<hr/>	
Total	.....3	3

Fourth Year

Fall

PUP 432	Planning and Development Control Law.....3	3
PUP 442	Environmental Planning.....3	3
PUP 461	Urban Planning V.....4	4
	Approved program elective*.....3	3
	<hr/>	
Total	.....13	13

Spring

PUP 420	Theory of Urban Design <i>HU</i>.....3	3
PUP 434	Urban Land Economics.....3 or approved program elective* (3)	3
PUP 462	Urban Planning VI.....4	4
	Elective.....3	3
	<hr/>	
Total	.....13	13
	Professional program total.....59	59
	B.S.P. minimum total.....120	120

* Select a minimum of nine semester hours from approved SPLA elective list.

Landscape Architecture

The Bachelor of Science in Landscape Architecture degree requires a total of 120 semester hours.

Preprofessional program courses.....47	47
Professional program courses.....73	73
	<hr/>
Total.....120	120

General Studies Requirement. The following curriculum includes sufficient approved course work to fulfill the General Studies requirement. See “General Studies,” page 83, for requirements and a list of approved courses. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses.

Graduation Requirements. In addition to fulfilling college and major requirements, students must meet all university graduation and college degree requirements. See “University Graduation Requirements,” page 79, and “[College Degree Requirements](#),” page 124.

**Bachelor of Science in Landscape Architecture
Preprofessional Requirements¹**

First Year

Fall

ENG 101	First-Year Composition.....3 or ENG 105 Advanced First-Year Composition (3)	3
PLA 101	Landscape and Society <i>HU, G</i>.....3	3
PLA 161	Graphic Communication ².....3	3
PUP 100	Introduction to Environmental Design <i>HU, G, H</i>.....3	3

SCHOOL OF PLANNING AND LANDSCAPE ARCHITECTURE

Elective.....	3
Total	15
Spring	
ADE 120 Design Fundamentals I ²	3
ARS 102 Art of the Western World II <i>HU, H</i>	3
ENG 102 First-Year Composition	3
GPH 111 Introduction to Physical Geography <i>SQ</i>	4
MAT 117 College Algebra <i>MA</i>	3
Total	16

Second Year

Fall	
PLA 240 Landscape Survey Techniques	3
PLA 261 Landscape Architecture I ²	4
PLA 310 History of Landscape Architecture <i>H</i>	3
PLA 494 ST: Plant Materials.....	3
PUP 301 Introduction to Urban Planning <i>L</i>	3
Total	16
Preprofessional program total	47

- ¹ Transfer credits are reviewed by the college and evaluated as applicable to this curriculum. To be applicable, transfer courses must be equivalent in both content and level of offering.
- ² Portfolio review is required for transfer studio work. See a college academic advisor for an appointment.

**Bachelor of Science in Landscape Architecture
Professional Program Requirements**

Second Year

Spring	
PLA 222 Computers in Landscape Architecture <i>CS</i>	3
PLA 242 Landscape Construction I	4
PLA 262 Landscape Architecture II	4
SQ or SG elective with laboratory	4
Total	15

Third Year

Fall	
PLA 311 Contemporary Landscape Architecture.....	3
PLA 344 Landscape Construction II.....	4
PLA 361 Landscape Architecture III.....	4
C elective.....	3
SB elective	3
Total	17

Spring	
PLA 345 Professional Practice Seminar.....	1
PLA 362 Landscape Architecture IV	4
PLA 363 Landscape Planting Design.....	4
PUP 420 Theory of Urban Design <i>HU</i>	3
Elective.....	3
Minimum total	15

Summer	
PLA 484 Internship (optional).....	3
or PLA 485 International Field Studies in Planning and Landscape Architecture (6) (optional)*	

Fourth Year

Fall	
PLA 410 Social Factors in Landscape and Urban Planning.....	3
PLA 461 Landscape Architecture V	4
PUP 432 Planning and Development Control Law	3

Elective.....	3
Total	13
Spring	
PLA 411 Landscape Architecture Theory and Criticism <i>L</i>	3
PLA 462 Landscape Architecture VI.....	4
Electives	6
Total	13
Professional program total	73
B.S.L.A. minimum total.....	120

* PLA 484 or 485 would be used as an elective in the fourth year.

Housing and Urban Development

The Bachelor of Science in Design degree in Housing and Urban Development requires a total of 120 semester hours.

Preprofessional program courses	61
Professional program courses core	59
Total	120

General Studies Requirements

The following curriculum includes sufficient approved course work to fulfill the General Studies requirement. See "General Studies," page 83, for requirements and a list of approved courses. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses.

Graduation Requirements. In addition to fulfilling college and major requirements, students must meet all university graduation and college degree requirements. See "University Graduation Requirements," page 79, and "[College Degree Requirements](#)," page 124.

**Bachelor of Science in Design,
Major in Housing and Urban Development
Preprofessional Program Requirements¹**

First Year

Fall	
ENG 101 First-Year Composition.....	3
HUD 161 Graphic Communication.....	3
MAT 117 College Algebra <i>MA</i>	3
or MAT 170 Precalculus <i>MA</i> (3) or MAT 210 Brief Calculus <i>MA</i> (3)	
Elective.....	3
SB elective	3
Total	15

Spring	
ENG 102 First-Year Composition.....	3
HUD 201 Introduction to Housing and Urban Development.....	3
HU, H elective.....	3
Natural science elective with laboratory <i>SQ</i>	4
SB elective	3
Total	16

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

Second Year

Fall

APH 200	Introduction to Architecture <i>HU, G</i> .....3 or any CAED history course listed below (3) ²	3
CON 252	Building Construction Methods, Materials, and Equipment .....3	3
PLA 261	Landscape Architecture I .....4 or PUP 261 Urban Planning I (4)	4
C	elective.....3	3
CS	statistics elective.....3	3
Total	.....	16

Spring

ACC 230	Uses of Accounting Information I.....3	3
CON 294	ST: Working Drawings and Specifications Analysis.....1	1
L	elective.....3	3
Natural science	elective with laboratory <i>SQ</i> or <i>SG</i> .....4	4
Upper-division	<i>HU</i> elective .....3	3
Total	.....	14
Preprofessional	program total.....61	61

¹ Transfer credits are reviewed by the college and evaluated as admissible to this curriculum. To be admissible, transfer courses must be equivalent in both content and level of offering.

² See "CAED History Courses," on this page. If the selected course does not also satisfy the *G* requirement, the student must select a course that does satisfy the *G* requirement either as an elective, or in conjunction with another General Studies course.

CAED History Courses. These CAED history courses also fulfill *HU*. See the course listings for prerequisites.

APH 300	World Architecture I/Western Cultures <i>HU, G, H</i> .....3	3
APH 305	Contemporary Architecture <i>HU</i> .....3	3
APH 313	History of Western Architecture I <i>L/HU/G</i> .....3	3
APH 446	20th-Century Architecture I <i>HU</i> .....3	3
DSC 101	Design Awareness <i>HU, G</i> .....3	3
GRA 318	History of Graphic Design <i>HU</i> .....3	3
IND 316	20th-Century Design I <i>HU, H</i> .....3	3
INT 223	Interior Design Issues and Theories <i>HU</i> .....3	3
INT 310	History of Interior Design I <i>HU, H</i> .....3	3
INT 311	History of Interior Design II <i>HU, H</i> .....3	3
INT 412	History of Decorative Arts in Interiors <i>HU</i> .....3	3
PUP 200	The Planned Environment <i>HU, H</i> .....3	3
PUP 420	Theory of Urban Design <i>HU</i> .....3	3

Bachelor of Science in Design, Major in Housing and Urban Development Professional Program Requirements

Third Year

Fall

CON 383	Construction Estimating.....3	3
HUD 301	Housing and Community Design and Development.....3	3
HUD 361	Housing and Urban Development Studio I: Residential Design and Development .....2	2
HUD 363	Housing and Urban Development Seminar I: Residential Design and Development .....3	3
Any REA	course .....3	3
Total	.....	14

Spring

CON 389	Construction Cost Accounting and Control <i>CS</i> .....3	3
HUD 302	Housing Production Process .....3	3
HUD 362	Housing and Urban Development Studio II: Community Design and Development .....2	2

HUD 364	Housing and Urban Development Seminar II: Community Design and Development .....3	3
HUD 403	Advanced Topics in Housing and Urban Development .....3	3
Elective	.....3	3
Total	.....	17

Fourth Year

Fall

CON 495	Construction Planning and Scheduling <i>CS</i> .....3	3
HUD 401	Assisted Housing .....3	3
HUD 461	Housing and Urban Development Studio III: Comprehensive Housing Development Process .....2	2
HUD 463	Housing and Urban Development Seminar III: Comprehensive Housing Development Process .....3	3
PUP 452	Ethics and Theory in Planning <i>L</i>.....3	3
Total	.....	14

Spring

HUD 402	Community Revitalization: Problems and Strategies ....3	3
HUD 462	Housing and Urban Development Studio IV: Neighborhood Revitalization Process .....2	2
HUD 464	Housing and Urban Development Seminar IV: Neighborhood Revitalization Process .....3	3
PUP 433	Zoning Ordinances, Subdivision Regulations, and Building Codes.....3 or PUP 432 Planning and Development Control Law (3)	3
Elective	.....3	3
Total	.....	14
Professional	program total .....59	59
B.S.D.-HUD	minimum total .....120	120

INQUIRIES

For more information, contact a college academic advisor:

COLLEGE OF ARCHITECTURE AND
ENVIRONMENTAL DESIGN
ARIZONA STATE UNIVERSITY
PO BOX 871605
TEMPE AZ 85287-1605

ENVIRONMENTAL DESIGN AND PLANNING (EPD)

See the *Graduate Catalog* for EPD courses.

HOUSING AND URBAN DEVELOPMENT (HUD)

HUD 161 Graphic Communication. (3)

fall

Develops drawing skills and understanding of the graphic communication systems used by planning, homebuilding, and landscape architecture professions. Studio. Cross-listed as PLA 161/PUP 161. Credit is allowed for only HUD 161 or PLA 161 or PUP 161.

HUD 201 Introduction to Housing and Urban Development. (3)

spring

Perspectives and issues concerning HUD. Guest lectures by interdisciplinary faculty and private, public, and nonprofit practitioners.

HUD 301 Housing and Community Design and Development. (3)

fall

Single- and multi-family housing, residential neighborhoods, and planned communities. Affordability in owner-occupied and rental housing. First-time, move-up, and adult markets.

HUD 302 Housing Production Process. (3)

spring

Development feasibility analysis, finance, contracts, land acquisition, community and permit presentation and negotiation, scheduling, cost control, marketing, and sales.

HUD 361 Housing and Urban Development Studio I: Residential Design and Development. (2)

fall

Affordable residential design, development, and production process. Studio. Pre- or corequisites: HUD 301, 363; upper-division HUD major.

HUD 362 Housing and Urban Development Studio II: Community Design and Development. (2)

spring

Neighborhood and new community design and development process. Studio. Pre- or corequisites: HUD 301, 361, 363, 364; upper-division HUD major.

HUD 363 Housing and Urban Development Seminar I: Residential Design and Development. (3)

fall

Affordable residential design, development, and production process. Seminar. Pre- or corequisites: HUD 301, 361; upper-division HUD major.

HUD 364 Housing and Urban Development Seminar II: Community Design and Development. (3)

spring

Neighborhood and new community design and development process. Seminar. Pre- or corequisites: HUD 301, 361, 362, 363; upper-division HUD major.

HUD 401 Assisted Housing. (3)

fall

Publicly subsidized and nonprofit housing. Policy, implementation, and administration. FHA, Section 8, FmHA, projects and scatter site, and tax considerations.

HUD 402 Community Revitalization: Problems and Strategies. (3)

spring

Public policy and strategies for neighborhood revitalization and community renewal. Preservation and adaptive reuse, gentrification, neighborhood safety, and related socioeconomic concerns.

HUD 403 Advanced Topics in Housing and Urban Development. (3)

fall and spring

Varying topics, such as manufactured housing, homelessness, mortgage and finance in housing, housing abroad, marketing housing, and sustainable community development.

HUD 461 Housing and Urban Development Studio III: Comprehensive Housing Development Process. (2)

fall

Comprehensive development process simulation. Feasibility analysis, finance, design, community and permit presentation, construction, cost management, and marketing. Studio. Pre- or corequisites: HUD 302, 463; upper-division HUD major.

HUD 462 Housing and Urban Development Studio IV: Neighborhood Revitalization Process. (2)

spring

Housing rehabilitation, neighborhood revitalization, and urban infill. CDBG, empowerment-enterprise zoning, code enforcement, citizen participation, etc. Studio. Pre- or corequisites: HUD 401, 402, 464; upper-division HUD major.

HUD 463 Housing and Urban Development Seminar III: Comprehensive Housing Development Process. (3)

fall

Comprehensive development process simulation. Feasibility analysis, finance, design, community and permit presentation, construction and cost management, and marketing. Seminar. Pre- or corequisites: HUD 302, 461; upper-division HUD major.

HUD 464 Housing and Urban Development Seminar IV: Neighborhood Revitalization Process. (3)

spring

Housing rehabilitation, neighborhood revitalization, and urban infill. CDBG, empowerment-enterprise zoning, code enforcement, citizen participation, etc. Seminar. Pre- or corequisites: HUD 401, 402, 462; upper-division HUD major.

HUD 484 Internship. (1)

summer

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

LANDSCAPE ARCHITECTURE (PLA)

PLA 101 Landscape and Society. (3)

fall

Examines interrelationship between society and the landscape with emphasis on human involvement in shaping the landscape.

General Studies: HU, G

PLA 161 Graphic Communication. (3)

fall

Develops drawing skills and understanding of the graphic communication systems used by planning, homebuilding, and landscape architecture professions. Studio. Cross-listed as HUD 161/PUP 161. Credit is allowed for only HUD 161 or PLA 161 or PUP 161.

PLA 222 Computers in Landscape Architecture. (3)

spring

Computer applications in landscape architecture including CAD, GIS, graphics, and visualization. Lab.

General Studies: CS

PLA 240 Landscape Survey Techniques. (3)

fall

Develops landscape survey skills including aerial photography, satellite images, geo-referencing, landscape surveys, and field data collection. Lecture, lab.

PLA 242 Landscape Construction I. (4)

spring

Landscape constructions focusing on landform transformations. Topics include landform analysis, grading, and earthwork. Studio. Prerequisite: admission to professional program.

PLA 261 Landscape Architecture I. (4)

fall

Landscape communication: communication techniques for urban planning and landscape architecture. Credit is allowed for only PLA 261 or PUP 261. Studio. Prerequisites: ADE 120; GPH 111.

PLA 262 Landscape Architecture II. (4)

spring

Reading the landscape: observing, experiencing, and graphically expressing the symbolic and aesthetic significance of natural landscapes. Prerequisites: ADE 120; PLA 261; admission to professional program.

PLA 310 History of Landscape Architecture. (3)

fall

Physical record of human attitudes toward the land. Ancient through contemporary landscape planning and design. Cross-listed as APH 411. Credit is allowed for only APH 411 or PLA 310.

General Studies: H

PLA 311 Contemporary Landscape Architecture. (3)

fall

Explores concerns, projects, and movements in landscape architecture of late 20th-century understanding: social, ecological, regional, and historical influences.

PLA 344 Landscape Construction II. (4)

fall

Characteristics of materials and methods used in landscape architectural construction. Studio. Prerequisite: PLA 242 or instructor approval.

PLA 345 Professional Practice Seminar. (1)

spring

Landscape architecture practice including contracts, project and office management, liability, licensing, and professional development.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

PLA 361 Landscape Architecture III. (4)

fall

Site planning: analysis of natural and cultural features; site systems and implications for plan making and design. Studio. Fee. Prerequisite: admission to professional program.

PLA 362 Landscape Architecture IV. (4)

spring

Site design: site-specific design of configured space by the creative development of form. Studio. Fee. Prerequisite: admission to professional program.

PLA 363 Landscape Planting Design. (4)

spring

Functional and aesthetic use of plants in arid-region landscape design. Explores design philosophies through planting design problems. Studio. Prerequisite: admission to professional program.

PLA 410 Social Factors in Landscape and Urban Planning. (3)

fall

Examines the influence of social factors in landscape architecture and urban planning.

PLA 411 Landscape Architecture Theory and Criticism. (3)

spring

Critically analyzes landscape architecture theories and projects to evaluate validity of design and contribution to society. Prerequisites: PLA 310, 361, 362, 420, 461.

General Studies: L

PLA 412 Landscape Ecology and Planning. (3)

selected semesters

Reviews the evolution of landscape ecology and landscape planning and examines use and value.

PLA 413 Southwest Landscape Interpretation. (3)

selected semesters

Explores methods and implications of landscape interpretation within the American Southwest.

PLA 420 Theory of Urban Design. (3)

spring

Analyzes the visual and cultural aspects of urban design. Theories and techniques applied to selected study models. Prerequisite: junior standing.

General Studies: HU

PLA 446 Landscape Construction III. (3)

spring

Landscape construction focusing on low-technology, biotechnical, regional, and experimental techniques or systems. Lecture, studio.

PLA 461 Landscape Architecture V. (4)

fall

Landscape ecological planning: collection and application of ecological data relevant to planning and design at landscape scale. Studio. Fee. Prerequisite: PLA 362.

PLA 462 Landscape Architecture VI. (4)

spring

Advanced landscape architecture: integrative capstone studio with multifaceted design problems. Fee. Prerequisite: PLA 461.

PLA 484 Internship. (3)

fall, spring, summer session 1

Full-time internship under the supervision of practitioners in the Phoenix area or other locales. Credit/no credit. Prerequisite: school major or instructor approval.

PLA 485 International Field Studies in Planning and Landscape Architecture. (1–12)

fall, spring, summer

Organized field study of planning and landscape architecture in specified international locations. May be repeated for credit with school approval. Study abroad. Cross-listed as PUP 485. Credit is allowed for only PLA 485 or PUP 485.

General Studies: G

PLA 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Plant Materials. (3)

PLA 498 Pro-Seminar. (1–7)

spring

Topics may include the following:

- Professional Senior Seminar. (1)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

URBAN AND ENVIRONMENTAL PLANNING (PUP)

PUP 100 Introduction to Environmental Design. (3)

fall and spring

Survey of environmental design: includes historic examples and the theoretical, social, technical, and environmental forces that shape them. Cross-listed as APH 100/DSC 100. Credit is allowed for only APH 100 or DSC 100 or PUP 100.

General Studies: HU, G, H

PUP 161 Graphic Communication. (3)

fall

Develops drawing skills and understanding of the graphic communication systems used by planning, home building, and landscape architecture professions. Studio. Cross-listed as HUD 161/PLA 161. Credit is allowed for only HUD 161 or PLA 161 or PUP 161.

PUP 200 The Planned Environment. (3)

fall

Environmental, aesthetic, social, economic, political, and other factors influencing urban development.

General Studies: HU, H

PUP 236 Introduction to Computer Modeling. (3)

fall and spring

Fundamentals of computer operation, geographic information systems, geometric modeling of three-dimensional forms and rendering of light, mathematical modeling of processes using spreadsheets. Lab. Prerequisite: major in the College of Architecture and Environmental Design.

General Studies: CS

PUP 261 Urban Planning I. (4)

fall

Planning communication: communication techniques for urban planning and landscape architecture communication. Credit is allowed only for PUP 261 or PLA 261. Prerequisite: PUP 161 (or its equivalent).

PUP 262 Urban Planning II. (4)

spring

Reading the landscape: observing, experiencing, and graphically expressing the symbolic and aesthetic significance of natural landscapes. Studio. Prerequisite: PUP 261.

PUP 301 Introduction to Urban Planning. (3)

fall, spring, summer

Theoretical and practical aspects of city planning. Interrelationships among physical planning, environment, government, and society.

General Studies: L

PUP 322 Computers in Planning. (3)

fall

Planning methods using Geographic Information Systems, database, spreadsheet, image manipulation, and desktop publishing computer software packages. Lecture, lab.

PUP 361 Urban Planning III. (4)

fall

Site planning: analysis of natural and cultural features; site systems and implications for plan making and design. Studio. Fee. Prerequisite: school major or instructor approval.

PUP 362 Urban Planning IV. (4)

spring

Neighborhood planning: local community plan making; urban development and neighborhood improvement. Studio. Fee. Prerequisite: PUP 361 or instructor approval.

PUP 363 History of Planning. (3)

spring

Historical overview of western urban and regional planning and planning theory, focusing on the 19th and 20th centuries.

PUP 412 History of the City. (3)

fall

The city from its ancient origins to the present day. Emphasizes European and American cities during the last five centuries. Cross-listed as APH 414. Credit is allowed for only APH 414 or PUP 412.

General Studies: H

PUP 420 Theory of Urban Design. (3)

spring

Analyzes the visual and cultural aspects of urban design. Theories and techniques applied to selected study models. Prerequisite: junior standing.

General Studies: HU

PUP 424 Planning Methods. (4)

fall

Tools useful for urban planning research; emphasizes research design and survey methods. Studio. Prerequisite: PUP 301 or instructor approval.

PUP 425 Urban Housing Analysis. (3)

fall

Nature, dimensions, and problems of urban housing, government policy environment, and underlying economics of the housing market.

PUP 430 Transportation Planning and the Environment. (3)

spring

Overview of transportation planning from the perspective of land use planning, economic development, environmental planning, and social needs. Lecture, discussion. Prerequisite: junior standing or instructor approval.

PUP 432 Planning and Development Control Law. (3)

fall

Case studies on police power, eminent domain, zoning, subdivision controls, exclusion, preservation, urban redevelopment, and aesthetic and design regulation. Prerequisite: admission to upper division or Construction major or instructor approval.

PUP 433 Zoning Ordinances, Subdivision Regulations, and Building Codes. (3)

spring

Analyzes zoning ordinances, subdivision regulations, building codes, and other planning implementation techniques relative to local development. Prerequisite: admission to upper division or instructor approval.

PUP 434 Urban Land Economics. (3)

spring

Interaction between space and economic behavior. Examines the use and value of land through economic theories. Prerequisite: admission to upper division or instructor approval.

PUP 436 City Structure and Planning. (3)

spring

Political structure and organization of government as it relates to planning. Prerequisite: PUP 301.

PUP 442 Environmental Planning. (3)

fall

Environmental planning problems, including floodplains, water quality and quantity, solid and hazardous waste, air quality, landslides, and noise. Field trips. Prerequisite: PUP 301 or instructor approval.

PUP 444 Preservation Planning. (3)

spring

History, theory, and principles of historic preservation. Emphasizes legal framework and methods practiced. Lecture, off-campus field study. Prerequisite: instructor approval.

PUP 445 Women and Environments. (3)

fall

Examines the role women play in shaping the built environment; ways built/natural forms affect women's lives. Focuses on contemporary U.S. examples. Prerequisite: admission to upper division or graduate standing.

General Studies: C

PUP 452 Ethics and Theory in Planning. (3)

fall

Ethics and theory of professional planning practice in urban and regional communities. Prerequisite: admission to upper division or instructor approval.

General Studies: L

PUP 461 Urban Planning V. (4)

fall

Comprehensive planning: collection and analysis of economic, social, and environmental data relevant to urban planning; development of land-use plans. Studio. Fee. Prerequisite: PLA 362 or PUP 362 or instructor approval.

PUP 462 Urban Planning VI. (4)

spring

Capstone studio: project focusing on synthesis aspects of plan making. Studio. Fee. Prerequisite: PUP 461 or instructor approval.

PUP 475 Environmental Impact Assessment. (3)

spring

Criteria and methods for compliance with environmental laws; development of skills and techniques needed to prepare environmental impact statements/assessments.

PUP 484 Internship. (1–12)

fall, spring, summer session 1

Full-time internship under the supervision of practitioners in the Phoenix area or other locale. Credit/no credit. Prerequisite: school major or instructor approval.

PUP 485 International Field Studies in Planning and Landscape Architecture. (1–12)

fall, spring, summer

Organized field study of planning and landscape architecture in specified international locations. May be repeated for credit with school approval. Study abroad. Cross-listed as PLA 485. Credit is allowed for only PLA 485 or PUP 485.

General Studies: G

PUP 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Environmental Planning Economics. (3)

PUP 498 Pro-Seminar. (1–7)

fall

Topics may include the following:

- Senior Pro-Seminar. (1)

PUP 501 The Idea of Planning. (3)

fall

Comprehensive review of planning profession within a political, governmental, multicultural, and gender framework.

PUP 510 Citizen Participation. (3)

spring

Theory and practice of citizen participation in planning. Examines and critiques participation techniques and roles of planners. Prerequisite: instructor approval.

PUP 520 Planning Theories and Processes. (3)

fall

Reviews past and current theoretical developments related to social change perspectives, the role and ethics of planners. Prerequisite: instructor approval.

PUP 524 Planning Methods I: Planning Research Methods. (3)

fall

Tools useful for urban planning research; emphasizes research design and survey methods. Pre- or corequisite: PUP 501 or instructor approval.

PUP 525 Urban Housing Analysis. (3)

fall

Nature, dimensions, and problems of urban housing, government policy environment, and underlying economics of the housing market.

PUP 531 Planning and Development Control Law. (3)

spring

Case studies on police power, eminent domain, zoning, subdivision controls, exclusion, preservation, urban redevelopment, and aesthetic and design regulation.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

PUP 532 Advanced Urban Planning Law. (3)

spring

Advanced study on selected issues in planning law, such as urban design controls, exclusionary practices, compensable regulation, and tax policy. Prerequisite: PUP 432 or instructor approval.

PUP 542 Environmental Administration and Planning. (3)

spring

Environmental administration of policies and their relationship to environmental planning practices. Prerequisite: PUP 442.

PUP 544 Urban Land Use Planning. (3)

spring

Theory and methods of urban land use planning, including the rational planning process, comprehensive, functional, and neighborhood plans. Pre- or corequisite: PUP 501 or instructor approval.

PUP 546 Urban Design Policy. (3)

selected semesters

Advanced study of local, state, and federal urban design policy. Prerequisite: PLA 420 or PUP 420.

PUP 561 Urban Design Studio. (4)

selected semesters

Current urban form and urban landscape design problems within the Phoenix-centered region. Studio.

PUP 572 Planning Studio I: Data Inventory and Analysis. (4)

fall

Comprehensive planning workshop dealing with real community problems. Focuses on the data gathering and analysis steps of the planning process. Fee. Prerequisite: Master of Environmental Planning major or instructor approval.

PUP 574 Planning Studio II: Options and Implementation. (4)

spring

Comprehensive planning workshop dealing with real community problems. Focuses on the development of options, plan making, and plan implementation. Studio. Fee. Prerequisite: PUP 572 or instructor approval.

PUP 575 Environmental Impact Assessment. (3)

spring

Criteria and methods for compliance with environmental laws; develops skills and techniques needed to prepare environmental impact statements/assessments.

PUP 576 GIS Studio. (3)

spring

GIS as a tool to address large, multifaceted planning problems. Prerequisites: a combination of GPH 373 (or 598) and PAF 591 and PUP 322 or only instructor approval.

PUP 584 Internship. (3)

fall, spring, summer session 1

Internship under the supervision of practitioners in the Phoenix area or other locales. Credit/no credit.

PUP 591 Seminar. (1-12)

fall and spring

Topics may include the following:

- Transportation Systems Pro-Seminar

PUP 598 Special Topics. (1-4)

selected semesters

Topics may include the following:

- Air Transportation Regulation
- Airport Systems
- Transportation Planning and the Environment

PUP 599 Thesis. (1-12)

fall, spring, summer session 1

Fee.

PUP 622 Planning Methods II: Quantitative Planning Analysis. (3)

spring

Methods and models used as the basic quantitative techniques of urban, regional, and environmental planning and policy analysis. Prerequisites: PUP 524; a course in statistics; instructor approval.

PUP 642 Land Economics. (3)

fall

Land use and locational impact of economic activity and the urban real property market. Prerequisite: instructor approval.

PUP 644 Public Sector Planning. (3)

spring

Urban fiscal problems and public goods provision in state and local governments. Prerequisites: a course in microeconomics; instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.



Sandra Mood constructs a model for an Industrial Design course.

Tim Trumble photo

College of Business

www.cob.asu.edu

Larry E. Penley, Ph.D., Dean

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PURPOSE

The mission of the College of Business is to expand the knowledge of business and to educate men and women for managerial leadership through research activities and professional educational programs. These programs address issues of importance to future managers in a world characterized by demands for continuous improvements in quality; growing sophistication of information technology; globalized markets; racial, cultural, and gender diversity in the workforce; and a demand for managers with practical, realistic skills.

Students have many opportunities to supplement their academic experiences. The college offers an honors program for academically talented students, an Academic Access Program to assist underrepresented and other targeted students, an international component to provide a variety of international opportunities, an internship program that provides related practical experience, and 18 cocurricular organizations to increase student interaction and learning.

The college is a member of AACSB International—The Association to Advance Collegiate Schools of Business, the official accrediting organization in the field of business. The undergraduate and graduate programs and the School of Accountancy and Information Management are accredited by this organization.

The college is host to a chapter of Beta Gamma Sigma, a national society that recognizes high academic achievement

in AACSB International-accredited schools. Selection to Beta Gamma Sigma is the highest scholastic honor a student in business can earn.

In addition to the regular degree curricula, other programs of study in the college are designed to meet special needs. Selected majors are available in the evening, and continuing education courses are conducted for qualified persons who are regularly employed and who otherwise would be unable to enroll in college courses. Short courses and institutes on a noncredit basis are organized in cooperation with various business groups for the furtherance of in-service training of employed personnel.

The college works in partnership with the business community, and the board of the Dean's Council of 100 serves as a primary source of advice and counsel for the college. Through the various divisions of the L. William Seidman Research Institute, the college reaches out to the business community through research and executive education. For more information, access the college's Web site at www.cob.asu.edu.

ORGANIZATION

The courses offered by the College of Business are organized into groups so that a related sequence may be established for the various subject fields. For administrative purposes, these fields are organized into the following academic units:

- School of Accountancy and Information Management
- Business Administration (East College)
- Department of Economics
- Department of Finance
- School of Health Administration and Policy
- Department of Management
- Department of Marketing
- Department of Supply Chain Management

ADMISSION

The Prebusiness Program. Each student admitted to the College of Business is designated as a prebusiness student. The student follows the freshman and sophomore sequence of courses listed in the curriculum outline. Students are required to follow the recommendations of an academic advisor in completing the prescribed background and skill courses in preparation for the subsequent professional program. The skill courses follow.

ACC 230 Uses of Accounting Information I	3
ACC 240 Uses of Accounting Information II	3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF BUSINESS

CIS 200 Computer Applications and Information Technology CS.....	3
ECN 111 Macroeconomic Principles SB.....	3
ECN 112 Microeconomic Principles SB.....	3
Choose between the course combinations below.....	6 or 3
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
— or —	
ENG 105 Advanced First-Year Composition (3)	
— or —	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
MAT 119 Finite Mathematics MA.....	3
MAT 210 Brief Calculus MA.....	3
QBA 221 Statistical Analysis CS.....	3
Total	27 or 30

Accountancy and Computer Information Systems majors should refer to their specific requirements under the [“School of Accountancy and Information Management,” page 163](#), which lists variations in the skill courses.

Completion of lower-division requirements does not ensure acceptance to the upper-division professional program. Prebusiness students are not allowed to register for 300- and 400-level business courses.

The Professional Program. The junior and senior years constitute the professional program of the undergraduate curriculum. Admission to the professional program is competitive and limited by available resources. Admission is awarded to those applicants demonstrating the highest promise for professional success.

Students who wish to apply to the College of Business professional program must submit an application during one of the three annual application periods. Candidates are strongly encouraged to visit the Undergraduate Programs Office, BA 109, at the beginning of the semester in which they wish to apply to pick up information regarding academic qualifications, admissions criteria, and application deadlines. The application can be found on the Web at www.cob.asu.edu/up/up_professional_program.cfm. All applicants must be admitted to ASU by the time they submit their professional program application. Students are also required to complete the Business Basics workshop before applying to the professional program.

Nonbusiness Students. A nonbusiness student is permitted to register for selected 300- and 400-level business courses only during online registration and only if, (1) at the time of registration, the student has junior standing (56 semester hours completed) and (2) the student has a minimum cumulative GPA of 2.50 at ASU and a minimum GPA of 2.50 for all business courses completed at ASU. Students who have 56 semester hours completed but have never attended ASU are given a one-semester period to register and to establish a GPA at ASU. Students must meet all prerequisites and course requirements as listed in the catalog.

Nonbusiness majors are limited to a maximum of 15 semester hours of selected upper-division business courses (excluding ECN courses).

Bachelor of Interdisciplinary Studies. The College of Business participates in the Bachelor of Interdisciplinary

Studies degree. For details, refer to [“Bachelor of Interdisciplinary Studies,” page 114](#).

Minors. Two minors are available to nonbusiness students: a minor in Business and a minor in Small Business. The Small Business program is in the process of transferring to the faculty of Business Administration in East College at ASU East. To complete either of the minors, students must obtain the requirements from the Undergraduate Programs Office in the College of Business and complete the specified business courses with a grade of “C” or higher. Courses used in a student’s major may not be used toward a minor. Students are advised to consult an advisor in the colleges of their majors to ensure the proper selection of courses for the minor. The upper-division courses for the minor are restricted to students with 56 hours who are in good standing (a 2.00 ASU GPA or better). For details on the minor in Small Business, see [“Small Business Programs,” page 181](#).

Nondegree Undergraduate and Graduate Students. A nondegree undergraduate or graduate student is permitted to enroll in selected 300- and 400-level business courses only during online registration and only if (1) the student has an ASU cumulative GPA of at least 2.50 and an ASU cumulative business GPA of at least 2.50 at the time of online registration or (2) the student has never attended ASU, in which case he or she is given a one-semester period to register during online registration and to establish a GPA at ASU. Students must meet all prerequisites and course requirements as listed in the catalog.

Nondegree undergraduate and graduate students are limited to a maximum of 15 semester hours of selected upper-division business courses (excluding ECN courses).

ADVISING

The student should follow the sequence of courses in the “Curriculum Outline Prebusiness Program,” on this page, and the recommendations of the academic advisor in completing the prescribed background and skill courses in preparation for the subsequent professional program.

For more advising information, access the Undergraduate Programs Web site at www.cob.asu.edu/up/indexupo.cfm.

Curriculum Outline Prebusiness Program

First Year

First Semester

ECN 111 Macroeconomic Principles SB.....	3
or ECN 112 Microeconomic Principles SB (3)	
ENG 101 First-Year Composition.....	3
or ENG 107 English for Foreign Students (3)	
MAT 210 Brief Calculus MA.....	3
General Studies	3
PGS or SOC course.....	3
Total	15

Second Semester

COM 100 Introduction to Human Communication SB.....	3
or COM 230 Small Group Communication SB (3)	
or COM 259 Communication in Business and the Professions (3)	
ECN 112 Microeconomic Principles SB.....	3
or ECN 111 Macroeconomic Principles SB (3)	

ENG 102 First-Year Composition.....3	
or ENG 108 English for Foreign Students (3)	
MAT 119 Finite Mathematics <i>MA</i>.....3	
Laboratory science <i>SQ</i>.....4	
Total .....16	

Second Year

Third Semester

ACC 230 Uses of Accounting Information I.....3	
QBA 221 Statistical Analysis <i>CS</i> .....3	
General Studies .....3	
Laboratory science <i>SQ/SG</i> .....4	
PGS or SOC course.....3	
Total .....16	

Fourth Semester

ACC 240 Uses of Accounting Information II.....3	
CIS 200 Computer Applications and Information Technology <i>CS</i>.....3	
General Studies .....9	
Total .....15	
Prebusiness program total .....62	

Accountancy and Computer Information Systems majors should refer to their specific course requirements under the [“School of Accountancy and Information Management,” page 163](#), which lists course requirement variations. Management majors should refer to their specific course requirements under the [“Department of Management,” page 176](#).

Students are encouraged to have College Algebra (MAT 117) proficiency before registering in ECN 111 and 112.

ECN 111 and 112 may be taken during the second and third semesters without any delay in the prebusiness program.

Professional Program. Students admitted to the professional program should select the necessary upper-division business courses to complete the major by consulting their departmental advising guide, with an academic advisor, or with a faculty advisor. Professional program students must complete BUS 301, COB 301, and SCM 300 during their first semester in the professional program. Accountancy and Management students substitute ENG 301 for BUS 301.

Transfer Credit. Credit from other institutions is accepted subject to the following guidelines. Students planning to take their first two years of work at a community college or another four-year college should take only those courses in business and economics that are offered as freshman- or sophomore-level courses at any of the state-supported Arizona universities. These lower-division courses are numbered 100 through 299. *A maximum of 30 hours of business and economics courses from community colleges are accepted toward a bachelor’s degree in business.*

Students may transfer a maximum of nine semester hours of approved upper-division business course work required for the business degree to ASU Main. Professional business courses taught in the junior or senior year in the state universities may not be completed at a two-year college for transfer credit in the business core or major. The introductory course in the legal, ethical, and regulatory issues in business is accepted as an exception to this policy, but only



Kay Faris (second from right), assistant dean of the College of Business, walks with (from left) Marisa Calderón, Armel Mends-Cole, and Jennifer Warren.

Tim Trumble photo

College of Business Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Accountancy	B.S.	—	School of Accountancy and Information Management
Business Administration	B.S.	—	East College
Computer Information Systems	B.S.	—	School of Accountancy and Information Management
Economics*	B.S.	—	Department of Economics
Finance	B.S.	—	Department of Finance
Management	B.S.	—	Department of Management
Marketing	B.S.	—	Department of Marketing
Real Estate	B.S.	—	Department of Supply Chain Management
Supply Chain Management	B.S.	—	Department of Supply Chain Management

* This major is offered by the College of Liberal Arts and Sciences as well.

lower-division credit is granted. Such courses may be utilized in the free elective category subject to the 30-hour limitation. Courses taught as vocational or career classes at the community colleges that are not taught in the colleges of business at any one of the state universities are not accepted for credit toward a bachelor’s degree. Courses taught in the upper-division business core at the state universities must be completed at the degree-granting institution unless transferred from an accredited four-year school. Normally, upper-division transfer credits are accepted only from AACSB International-accredited schools. To be accepted for credit as part of the professional program in business, all courses transferred from other institutions must carry prerequisites similar to those of the courses they are replacing at ASU.

An Associate in Transfer Partnership degree is available to Maricopa community college students who wish to complete their first two years of course work at a Maricopa community college and transfer to the College of Business without loss of credit. An Associate of Business degree is available to students who wish to complete their first two years of course work at an Arizona community college and transfer to the College of Business without loss of credit. Students should consult with an academic advisor in the Undergraduate Programs Office to plan curriculum requirements and/or access Business Transfer Guides for optimal course selection at www.asu.edu/provost/articulation.

DEGREES

The faculty in the College of Business offer the B.S. degree in Accountancy, Business Administration (East Campus), Computer Information Systems, Economics, Finance, Management, Marketing, Real Estate, and Supply Chain Management upon successful completion of a four-year curriculum of 120 semester hours. Students may select one of the majors shown in the [“College of Business Baccalaureate Degrees and Majors” table, on this page](#). Each major is administered by the academic unit indicated.

GRADUATE PROGRAMS

The faculty in the College of Business offer graduate degrees as shown in the [“College of Business Graduate Degrees and Majors” table, page 159](#). Students have the opportunity to obtain dual degrees in two years with several

master’s degree programs in the College of Business, including these examples:

- M.B.A./M.A.I.S.
- M.B.A./M.H.S.A.
- M.B.A./M.S. degree in Information Management
- M.B.A./M.S. degree in Economics
- M.B.A./M.Tax.

Other concurrent degrees available are as follows:

- M.B.A./J.D.
- M.B.A./M.Arch.
- M.B.A./M.I.M. with American Graduate School of International Management (Thunderbird), Glendale, AZ; Graduate School of Business Administration (Peru); Graduate School of Commerce (France); Monterrey Institute for Technical and Superior Studies, Mexico State Campus (Mexico); and Carlos III University of Madrid (Spain)

In addition to the full-time M.B.A. program, the evening M.B.A. program offers a high technology M.B.A. at ASU Research Park and an evening M.B.A. at the ASU Downtown Center.

The Executive M.B.A. program is available to those with significant work experience.

For more information about M.B.A. programs, see the *Graduate Catalog*.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges, including the College of Business, to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university’s three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning. The Extended Campus also offers a variety of professional

College of Business Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Accountancy and Information Systems	M.A.I.S.	—	School of Accountancy and Information Management
Business Administration	M.B.A. Ph.D.	— Accountancy, computer information systems, finance, health services research, ¹ management, marketing, supply chain management	College of Business College of Business
Economics	M.S., Ph.D.	—	Department of Economics
Health Services Administration	M.H.S.A.	—	School of Health Administration and Policy
Information Management	M.S.	—	School of Accountancy and Information Management
Public Health	M.P.H. ²	Health administration and policy	School of Health Administration and Policy
Statistics	M.S. ³	—	Committee on Statistics
Taxation	M.Tax.	—	School of Accountancy and Information Management

¹ Applications are not being accepted at this time.

² This collaborative program is offered by the three state universities. Another concentration is offered by the College of Nursing.

³ This program is administered by the Graduate College.

continuing education and community outreach programs.

For more information, see [“ASU Extended Campus,” page 703](#), or access the Web site at www.asu.edu/xed.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements.

For more information, see [“University Graduation Requirements,” page 79](#).

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement for a minimum of 35 hours of approved course work in General Studies, as described under [“General Studies,” page 83](#). Note that all three General Studies awareness areas are required.

General Studies courses are listed in the “General Studies Courses” table, [86](#), in the course descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*.

First-Year Composition Requirement

Completion of both ENG 101 and 102 or ENG 105 with a grade of “C” or higher is required for graduation from ASU in any baccalaureate program.

COLLEGE DEGREE REQUIREMENTS

College degree requirements supplement the General Studies requirement with additional course work from the approved university general studies list or the College of Business Policy Statement. Business courses may not be used to fulfill college degree requirements except for ECN 111 and 112 and QBA 221.

A well-planned program of study may enable students to complete many General Studies and college degree requirements concurrently. Students are encouraged to

consult with an academic advisor in planning a program to ensure that they comply with all necessary requirements.

Specific courses from the following areas must be taken to fulfill the college degree requirements.

Social and Behavioral Sciences. College of Business students must complete ECN 111 and 112, one course with the PGS prefix, and one course with the SOC prefix and may include these courses toward the General Studies requirements.

Mathematical Studies. College of Business students must complete MAT 119 and MAT 210 (or a more advanced MAT course) and QBA 221 and may include these courses toward the General Studies requirements.

Communication. All students in the College of Business except Accountancy and Management majors must complete COM 100, 230, or 259. Accountancy majors must complete COM 230 (or 100) and 259. Management majors must complete COM 225 (or 259).

Additional Courses. Additional courses, as needed to complete 60 hours (54 hours for Accountancy majors), may be selected from the General Studies areas (see [“General Studies,” page 83](#)) or from the College of Business Policy Statement. Students are encouraged to consult with an academic advisor to ensure that they comply with all necessary requirements. Business courses may not be used to fulfill this requirement except for ECN 111 and 112 and QBA 221.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

Additional Graduation Requirements

In addition to completion of courses outlined under “Major Requirements,” on this page, to be eligible for the B.S. degree in the College of Business, a student must have completed at least 30 semester hours at ASU Main;

1. have attained a cumulative GPA of 2.00 or higher for all courses taken at this university, for all business courses taken at this university, and for all courses for the major taken at this university;
2. have earned a “C” or higher in each lower-division core and skill course and each course in the major;
3. have earned a minimum of 51 semester hours in traditional courses that were designed primarily for junior or senior students and were completed in an accredited, four-year institution; and
4. have met all university degree requirements.



Business Administration C-Wing

Tim Trumble photo

Exceptions. Any exception to these requirements must be approved by the Standards Committee of the College of Business.

Declaration of Graduation. A student in a professional program must complete a Declaration of Graduation during the semester in which the student completes 87 semester hours. The Degree Audit Reporting System should be used to guide the student in accomplishing successful completion of degree requirements in a timely manner. Students who have not met this requirement are prevented from further registration. Some students may be required to complete a Program of Study in place of the Declaration of Graduation. Students should consult their advisors for the proper procedure.

Pass/Fail

Business majors may not include among the credits required for graduation any courses taken at this university on a pass/fail basis. Pass/fail credits taken at another institution may be petitioned for use, but only if the student can demonstrate proof that the pass grade was equivalent to a “C” or higher.

MAJOR REQUIREMENTS

Students seeking a B.S. degree in the College of Business must satisfactorily complete a curriculum of 120 semester hours.

A major consists of a pattern of from 18 to 24 semester hours in related courses falling primarily within a given subject field. Available majors are shown in the [“College of Business Baccalaureate Degrees and Majors” table, page 158.](#)

Major Proficiency Requirements. Students must receive grades of “C” or higher in upper-division courses for the major. If a student receives a grade below “C” in any course in the major, this course must be repeated. If a second grade below “C” is received in either an upper-division course in the major already taken or in a different upper-division course in the major, the student is no longer eligible to take additional upper-division courses in that major. University policy states a course may be repeated only one time.

Business Core Requirements

The business core is designed to provide an understanding of the fundamentals of business and to develop a broad business background. The faculty in the College of Business designed the core to incorporate the impact on business of information technology and e-business practices. By educating and training students in the use of data-driven decision-making tools and applications software, the college provides greater opportunity for its students. All students seeking a B.S. degree in the College of Business complete the core courses.

The lower-division business core courses provide the fundamental skills needed in professional program courses and introduce students to the supply chain, business processes, and enterprise solutions software in addition to technology skills such as Excel and Access.

Lower-Division Business Core

ACC 230 Uses of Accounting Information I.....3

ACC 240 Uses of Accounting Information II	3
CIS 200 Computer Applications and Information Technology CS	3
Lower-division business core total.....	9

The upper-division business core provides an enhanced understanding of the digital economy, e-business, and business processes in addition to increasing content knowledge and other skills.

Upper-Division Business Core

BUS 301 Fundamentals of Management Communication L (first semester).....	3
COB 301 Business Forum (first semester).....	1
FIN 300 Fundamentals of Finance	3
LES 305 Legal, Ethical, and Regulatory Issues in Business.....	3
MGT 300 Organizational Management and Leadership	3
MKT 300 Principles of Marketing.....	3
SCM 300 Global Supply Operations.....	3
International business course	3
Upper-division business core total.....	22
Business core total	31

Accountancy, Computer Information Systems, and Management majors should refer to their specific requirements under the [“School of Accountancy and Information Management,” page 163](#), and [“Department of Management,” page 176](#), which lists variations in the business core courses.

Elective Courses

Sufficient elective courses are to be selected by the student to complete the total of 120 semester hours required for graduation.

ACADEMIC STANDARDS

Probation. All students, freshman through senior, must maintain a minimum GPA of 2.00 for all courses completed at ASU. If these standards are not maintained, the student is placed on probation. Students on probation must see an advisor before further registration.

Disqualification. Students on probation must obtain a semester GPA of 2.50 with no grade lower than a “C.” If a student on probation meets this requirement, but the cumulative GPA remains below 2.00, the student is given an additional semester on continued probation. At the end of continued probation, the student must return to good standing (a GPA of 2.00) to avoid disqualification.

Students who have been academically disqualified are not permitted to enroll in upper-division business courses during summer sessions.

Reinstatement and Readmission. Students seeking reinstatement (after disqualification) or readmission (after an absence from the university) should contact the Undergraduate Programs Office regarding procedures and guidance for returning to good standing.

Academic Dishonesty. The faculty of the College of Business follow the guidelines in the Student Academic Integrity Policy on academic dishonesty. A copy of the policy may be obtained in the Undergraduate Programs Office.

Student Appeal Procedure on Grades. The faculty of the College of Business have adopted a policy on the student appeal procedure on grades. A copy of the policy may be obtained in the Undergraduate Programs Office.

SPECIAL PROGRAMS

Academic Access Program. The primary mission of the Academic Access Program (AAP) is to help the underrepresented and first generation college student populations of the College of Business successfully navigate the college’s rigorous academic demands. To that end, the office manages a number of programs to assist students, including these:

- Academic advising
- Advising ethnic student business organizations
- Mentoring
- Ongoing seminar and workshop series on study, work issues, and strategies
- Referring students to other campus support offices
- Teaching academic success courses COB 194 and 294
- Tutoring

For more information, visit BA 109, call 480/965-4066, or access the AAP Web site at www.cob.asu.edu/up/aap. Faxes can be sent to 480/965-8259.

Asian Studies. Students in the College of Business may pursue a program with an emphasis in Asian studies as part of the B.S. degree requirements in business. For more information, visit the Center for Asian Studies, in WHALL 105, or call 480/965-7184.

Certificate in Small Business and Entrepreneurship. A curriculum in small business and entrepreneurship is available to business majors at ASU. See [“Small Business Programs,” page 181](#).

Certificate in International Business Studies. See [“Certificate in International Business Studies,” page 174](#), for requirements.

Certificate in Quality Analysis. The program of study leading to the Certificate in Quality Analysis prepares students to perform technical analyses associated with quality measurement and improvement of manufacturing and service processes. Graduates with the ability to implement these analyses are in high demand in the marketplace. This program is not a substitute for the listed areas of business specialization; rather, the courses required for the certificate add quantitative strength and implementation skills for quality tools to the student’s chosen field of specialization.

Students are required to complete a bachelor’s degree from any of the major fields of study at ASU and to complete a minimum of 15 semester hours of approved course work, including the following nine hours:

OPM 450 Changing Business Processes L.....	3
QBA 321 Applied Quality Analysis I L	3
QBA 421 Applied Quality Analysis II	3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

COLLEGE OF BUSINESS

To complete the certificate, the student selects at least six additional hours of course work related to quality analysis approved in advance by the advisor for the certificate program. The student must also complete the 15 hours of course work with a minimum GPA of 2.50.

Honors Program. College of Business students who have been admitted to the Barrett Honors College and the professional program are eligible to participate in the Business Honors Program.

The Business Honors Program provides opportunities for academically talented undergraduate business students to interact with other leading students, faculty, and business professionals inside and outside the classroom. The result is a challenging and enriched education experience that is valuable for professional career or graduate work.

To be admitted to the Business Honors Program, students must meet the following criteria:

1. be enrolled in the Barrett Honors College,
2. have a cumulative GPA of 3.40 or higher,
3. be admitted into the college's professional program, and
4. have sufficient time to complete the honors requirements.

Upon acceptance into the program, a valuable learning experience begins. The honors course work consists of HON 171 and 172 The Human Event or HON 394 Special Topics and an additional 18 semester hours of upper-division honors courses, including the following six semester hours:

COB 492 Honors Directed Study.....	2
COB 494 ST: Honors Research	1
--- 493 Honors Thesis*	3

* See "[Honors Courses](#)," page 56, for an explanation of this course.

The ASU Honors Curriculum normally allows students to complete all requirements within the 120 semester hours of credit required for graduation. All courses taken for honors credit count toward graduation even if the student does not graduate from the Barrett Honors College.

The Business Honors Program emphasizes activities beyond the normal classroom setting in order to broaden the educational experience. Such activities include special honors scholarships, student/faculty mixers, and professional seminars and panel discussions. Students are also encouraged to participate in the Mentoring Program, which allows students the opportunity to interact with local business professionals.

An academic advisor is assigned strictly to assist honors students in course selection, to monitor progress toward the honors recognition, and to be actively involved in career and educational guidance upon completion of the degree.

While the program focuses on students in the professional program, freshman and sophomore honors students are offered break-out sections in core classes, are invited to attend selected events, and can be assigned a junior or senior honors mentor.

For more information, see "[The Barrett Honors College](#)," page 118, call 480/965-8710, or stop by the Business Hon-

ors Program Office located in BA 150. You may also send faxes to 480/727-7277. More information may be obtained by accessing the Business Honors Program Web site at www.cob.asu.edu/hon.

Internships. The college encourages students to complement their academic program with career-related work. This practical experience gives students a distinct advantage in the job market when seeking their first full-time professional positions. Additional benefits include industry contacts, a deeper understanding of career options, and monetary compensation that helps students finance their education.

Formal internships and co-ops offer professional work experience and experiential learning opportunities that enrich the student's academic preparation. Students may undertake internships in the summer or part-time during semesters. Co-op positions are full-time and require a one-semester or longer break in school attendance. The college provides guidelines to companies and encourages them to sponsor internship and co-op positions that benefit both the firm and the student. Both benefit because positions are built around projects and challenging responsibilities that enable students to apply learning acquired in advanced business classes.

ASU Career Services and the College of Business work cooperatively to help students identify and obtain career-related work. The process of obtaining internships and co-ops is a learning opportunity. Students use the same job-search skills and resources that are utilized to obtain permanent career positions. Informational materials, workshops, and required class activities help students learn job-search and career-exploration skills and locate internship and co-op opportunities.

Some academic units within the college offer internship courses. Work assignments for these courses must be approved in advance by a designated faculty member, and all internship courses include an academic component.

For more information, visit the Director of Career Planning and Corporate Relations in BA 109 (480/965-7026), faculty advisors in the departments or Career Services, or access the College of Business Web site at www.cob.asu.edu/up/internship.cfm.

Latin American Studies Center. Students in the College of Business may pursue a program with an emphasis in Latin American area studies. For more information, visit the Latin American Studies Center, in SS 213, or call 480/965-5127.

Prelaw Studies. Prelaw students may pursue a program of study in the College of Business. Courses in accounting, economics, finance, insurance, labor relations, and statistics are recommended for any student planning to enter the legal profession.

The admission requirements of colleges of law differ considerably. The student should communicate with the dean of the law school the student hopes to attend and should plan a program to meet the requirements of that school. Most law schools, including the ASU College of Law, require a baccalaureate degree for admission.

Students who plan to complete a bachelor's degree before entering law school may follow any field of specialization in

the College of Business. Within the College of Business are faculty members who are lawyers and who serve as advisors for students desiring a prelaw background.

RESEARCH CENTERS

L. William Seidman Research Institute

The College of Business has eight research centers operating under the umbrella of the L. William Seidman Research Institute. The following centers provide support for faculty research, give opportunities for advanced graduate students' involvement with faculty, and provide information and assistance to the business community on a wide variety of subjects:

- Arizona Real Estate Center
- Bank One Economic Outlook Center
- Center for Advanced Purchasing Studies
- Center for the Advancement of Small Business
- Center for Business Research
- Center for Services Leadership
- Institute for Manufacturing Enterprise Systems

The Seidman Research Institute's mission is to encourage and support applied business research by serving as a public access point to the College of Business, by supporting faculty and student research, by transferring new knowledge to the public, by encouraging the development of education programs grounded in applied business research, and by conducting high-quality, applied business research.

The institute increases the level of funded research by adding support services to facilitate grant preparation and assistance in grant administration and by facilitating the mission of research centers as liaisons between faculty and businesses. In addition, the institute provides desktop publishing services.

For more information, call 480/965-5362, access the institute's Web site at www.cob.asu.edu/seid, or write

L. WILLIAM SEIDMAN RESEARCH INSTITUTE
PO BOX 874011
TEMPE AZ 85287-4011

COLLEGE OF BUSINESS (COB)

COB 194 Special Topics. (1–4)
fall and spring

COB 294 Special Topics. (1–4)
fall and spring

COB 301 Business Forum. (1)
fall, spring, summer

Provides professional program business students with information on careers, interviewing, job hunting, and résumé skills. Must be taken in the first semester of the professional program for business students. Prerequisite: professional program business student.

COB 380 Small Business Leadership. (3)
fall, spring, summer

Develops leadership skills needed to form, lead, and operate a small business. Emphasizes creating a vision, research, and problem solving. Team teaching, collaborative learning. Prerequisites: 2.00 GPA; 47 hours; non-business major.

COB 381 Small Business Accounting and Finance. (3)
fall and spring

Accounting and finance skills needed by small business owners to acquire, allocate, and track monetary resources and evaluate performance. Team teaching, collaborative learning. Prerequisites: COB 380; 2.00 GPA; 56 hours; non-business major.

COB 382 Small Business Sales and Market Development. (3)
fall and spring

Building and maintaining customers, developing a market identity and a niche, and the importance of sales. Team teaching, collaborative learning. Prerequisites: COB 380; 2.00 GPA; 56 hours; non-business major.

COB 383 Small Business Working Relationships. (3)
fall and spring

Addresses communication and the people in a business—clients, employees, suppliers, competitors, governments, family, and self development. Team teaching, collaborative learning. Prerequisites: COB 380; 2.00 GPA; 56 hours; non-business major.

COB 384 Small Business Operations and Planning. (3)
fall and spring

Planning and executing plans—the what, when, where, how, and who from product/service/project idea to pay back or completion. Team teaching, collaborative learning. Prerequisites: COB 380; 2.00 GPA; 56 hours; non-business major.

COB 394 Special Topics. (1–4)
fall and spring

COB 492 Honors Directed Study. (2)
fall and spring

COB 494 Special Topics. (1–4)
fall and spring

Topics may include the following:

- Honors Research. (1)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

School of Accountancy and Information Management

www.cob.asu.edu/acct

480/965-3631

BA 223

Philip M.J. Reckers, Director

Professors: J.R. Boatsman, Christian, Goul, Johnson, Kaplan, Pany, Pei, Philippakis, Reckers, Roy, Schultz, Smith, St. Louis, Steinbart, Vinze, Wyndelts

Associate Professors: David, Golen, Gupta, Hwang, Iyer, Keim, Kulkarni, Moeckel, O'Dell, O'Leary, Regier, Whitecotton, Yen

Assistant Professors: Chen, Chenoweth, Comprix, Dowling, Lee, O'Donnell, Petersen, Ravindran, Robinson, Roussinov, Rowe, Santanam, Shao, Weiss

Senior Lecturers: Goldman, Maccracken, Shrednick

Lecturers: J.L. Boatsman, Geiger, Hayes, Taylor, Wigal

The School of Accountancy and Information Management houses separate undergraduate degree programs in Accountancy and Computer Information Systems. The

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF BUSINESS

school also offers a dual degree program in which students complete requirements for both degree programs (Accountancy and Computer Information Systems) simultaneously. For more information, access the school's Web site at www.cob.asu.edu/acct.

ADMISSION

The School of Accountancy and Information Management follows the College of Business policies and procedures for admission to its undergraduate professional programs in Accountancy, Computer Information Systems, and the concurrent degree program of Accountancy and Computer Information Systems.

To be considered for admission to the Accountancy major, a student must meet the College of Business admission requirements, and have a grade of "C" or higher in an introductory computer programming course as specified by the school. CIS 220 or its equivalent is taken in place of CIS 200.

To be considered for admission to the Computer Information Systems major, a student must meet the College of Business admission requirements and have a grade of "C" or higher in an introductory computer science course as specified by the school, in place of CIS 200.

Due to resource limitations, admission to all of the school's programs is very competitive. Approximately one third of all applicants who apply to the professional programs in Accountancy and Computer Information Systems may be admitted. Applicants are reviewed using a portfolio approach. Among the factors considered are cumulative GPA, skill course GPA, transfer GPA and institution (if applicable), work experience, demonstrated community involvement and leadership skills, and responses to questions located in the professional program application. Current admission statistics are available at the Undergraduate Programs Office in the College of Business.

ACCOUNTANCY—B.S.

The major in Accountancy includes the essential academic preparation for students who are

1. pursuing professional careers in public, corporate, and governmental accounting;
2. seeking positions in personal financial planning and portfolio analysis;
3. seeking positions in consulting;
4. planning to operate their own businesses; or
5. planning to pursue a graduate degree.

The major in Accountancy consists of the following courses:

ACC 330 Enterprise Process Analysis and Design <i>L</i>	4
ACC 340 External Reporting I.....	4
ACC 350 Internal Reporting	4
ACC 430 Taxes and Business Decisions <i>L</i>	4
ACC 440 External Reporting II	4
ACC 450 Principles of Auditing	4
Total	24

As part of the requirements, all Accountancy majors must complete the following courses:

ACC 250 Introductory Accounting Lab.....	1
CIS 220 Programming Concepts for Accountancy Majors ¹	3
COM 100 Introduction to Human Communication ² <i>SB</i>	3
or COM 230 Small Group Communication <i>SB</i> (3) ²	
COM 259 Communication in Business and the Professions	3
ECN 306 Survey of International Economics <i>SB</i> , <i>G</i> ³	3
ENG 301 Writing for the Professions <i>L</i> ⁴	3
Two approved CIS courses ⁵	6
Total	22

¹ CIS 220 is used in the business core in place of CIS 200.

² COM 230 is recommended over COM 100.

³ ECN 306 is counted in the business core in place of the international business course.

⁴ ENG 301 is counted in the business core in place of BUS 301.

⁵ See the school for a list of approved courses.

Accountancy majors must complete three CIS courses approved by the School of Accountancy and Information Management (one of these courses must be CIS 220 Programming Concepts for Accountancy Majors, which is included within the business core).

COMPUTER INFORMATION SYSTEMS—B.S.

The major in Computer Information Systems prepares students for professional careers involving the analysis, configuration, programming, and database aspects of the design and implementation of computerized business information systems. The course work prepares the student for a career in business information systems and for admission to graduate programs in information systems or information management.

The major in Computer Information Systems consists of the following courses:

ACC 330 Enterprise Process Analysis and Design <i>L</i>	4
CIS 410 Object-Oriented Modeling and Programming	3
CIS 420 Business Database Concepts.....	3
CIS 430 Networks and Distributed Systems	3
CIS 440 Systems Design and Electronic Commerce <i>L</i>	3
CIS course in electronic commerce strategy.....	3
Total	19

All Computer Information Systems majors must complete an introductory computer science course as specified by the school, which may be used as a college requirement, and CIS 235 Business Information Systems Development, which is used in the business core.

MAJOR PROFICIENCY REQUIREMENTS

In addition to college and university requirements, Accountancy and Computer Information Systems majors must receive grades of "C" or higher in the required upper-division major and major support courses. If a student receives a grade below "C" in any required upper-division major course, this course must be repeated before any other upper-division major course can be taken. If a second grade below "C" is received in either an upper-division major course already taken or in a different upper-division major course, the student is no longer eligible to take additional upper-division major courses.

GRADUATION REQUIREMENTS

In addition to fulfilling major requirements, students seeking a degree must meet all university and college requirements. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 159](#).

ACCOUNTANCY (ACC)

ACC 230 Uses of Accounting Information I. (3)

fall, spring, summer

Introduces the uses of accounting information focusing on the evolution of the business cycle including hands-on exposure to enterprise systems. Fee. Prerequisite: sophomore standing.

ACC 240 Uses of Accounting Information II. (3)

fall, spring, summer

Introduces the uses of accounting information focusing on the evolution of the business cycle including hands-on exposure to enterprise systems. Prerequisites: ACC 230; sophomore standing.

ACC 250 Introductory Accounting Lab. (1)

fall, spring, summer

Procedural details of accounting for the accumulation of information and generation of reports for internal and external users. Lab. Fee. Prerequisites: ACC 230; sophomore standing.

ACC 315 Financial Accounting and Reporting. (3)

fall and spring

Accounting theory and practice related to uses of financial statements by external decision makers. Prerequisite: non-Accountancy major. Prerequisites with a grade of “C” or higher: ACC 240, 250.

ACC 316 Management Uses of Accounting. (3)

fall and spring

Uses of accounting information for managerial decision making, budgeting, and control. Prerequisites: ACC 240; non-Accountancy major.

ACC 330 Enterprise Process Analysis and Design. (4)

fall, spring, summer

Analysis and design of efficient and effective business processes. Emphasizes taking advantage of new information technologies to improve managerial decision making. 3 hours lecture, 3 hours lab. Fee. Prerequisite: professional program business student majoring in Accountancy or Computer Information Systems.

General Studies: L

ACC 340 External Reporting I. (4)

fall, spring, summer

Financial accounting theory and practice related to external reporting. 3 hours lecture, 3 hours lab. Fee. Prerequisites: FIN 300; professional program business student majoring in Accountancy. Prerequisites with a grade of “C” or higher: ACC 250, 330.

ACC 350 Internal Reporting. (4)

fall, spring, summer

Internal reporting systems for planning, control, and decision making. 3 hours lecture, 3 hours lab. Prerequisites: SCM 300; professional program business student majoring in Accountancy. Prerequisites with a grade of “C” or higher: ACC 250, 330.

ACC 394 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Financial Analysis and Accounting for Small Businesses. (3)

ACC 430 Taxes and Business Decisions. (4)

fall, spring, summer

Federal income taxation of sole proprietors, partnerships, corporations, fiduciaries, and individuals with an emphasis on tax consequences of business and investment decisions. 3 hours lecture, 3 hours lab. Prerequisites: LES 305; professional program business student majoring in Accountancy. Prerequisite with a grade of “C” or higher: ACC 340.

General Studies: L

ACC 432 Problems in Managerial Accounting. (3)

selected semesters

Cases and computer applications in decision making, planning and control, and capital budgeting. Prerequisite: professional program business student majoring in Accountancy. Prerequisite with a grade of “C” or higher: ACC 350.

ACC 440 External Reporting II. (4)

fall, spring, summer

Continuation of ACC 340 with emphasis on the recognition, research, and resolution of financial reporting issues. 3 hours lecture, 3 hours lab. Prerequisite: professional program business student majoring in Accountancy. Prerequisite with a grade of “C” or higher: ACC 340.

ACC 450 Principles of Auditing. (4)

fall and spring

Standards and procedures in auditing. Planning, evidence gathering and accumulation, and reporting. Ethical and legal considerations. 3 hours lecture, 3 hours lab. Fee. Prerequisite: professional program business student majoring in Accountancy. Prerequisite with a grade of “C” or higher: ACC 440.

ACC 467 Management Advisory Services. (3)

selected semesters

Concepts and methods of providing advisory services with respect to accounting information systems and financial analysis. Administration of consulting practices. Prerequisite: professional program business student majoring in Accountancy. Prerequisite with a grade of “C” or higher: ACC 330.

ACC 494 Special Topics. (1–4)

selected semesters

ACC 502 Financial Accounting. (3)

once a year

Financial accounting concepts and procedures for external reporting. Prerequisite: M.B.A. degree program student.

ACC 503 Managerial Accounting. (3)

once a year

Managerial accounting concepts and procedures for internal reporting. Prerequisite: M.B.A. degree program student.

ACC 511 Taxes and Business Strategy. (3)

once a year

Economic implications of selected management decisions involving application of federal income tax laws. Recognition of tax hazards and tax savings. Prerequisite: ACC 502 (or its equivalent).

ACC 515 Professional Practice Seminar. (3)

selected semesters

History, structure, environment, regulation, and emerging issues of the accounting profession.

ACC 521 Tax Research. (3)

once a year

Tax research source materials and techniques. Application to business and investment decisions. Prerequisite: ACC 430.

ACC 533 Application Solutions in the Connected Economy. (3)

once a year

Analyzes software solutions and evaluation methods. Emphasizes current topics such as enterprise modeling, ERP software, and inter-organizational solutions. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

ACC 541 Strategic Innovations in Information and Cost Management. (3)

once a year

Strategic cost management emphasizing contemporary topics, including activity-based costing and strategic uses of information technology systems. Cooperative learning, lecture. Prerequisite: ACC 503 or M.S. in Information Management degree program student or M.A.I.S. degree program student.

ACC 567 Financial Models in Accounting Systems. (3)

selected semesters

Development and application of financial models by accountants. Analysis of decision support systems as financial modeling environments. Prerequisite: ACC 330.

ACC 571 Taxation of Corporations and Shareholders. (3)

once a year

Tax aspects of the formation, operation, reorganization, and liquidation of corporations and the impact on shareholders. Pre- or corequisite: ACC 521.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).



College of Business students (from left) Uchenna Mbanu, Michael Hughes, and Danielle Biele

Doug Crouch photo

ACC 573 Taxation of Pass-Through Entities. (3)

once a year

Tax aspects of the definition, formation, operation, liquidation, and termination of a partnership. Emphasizes tax planning. Pre- or corequisite: ACC 521.

ACC 575 Family Tax Planning and Wealth Transfer Taxation. (3)

once a year

Tax treatment of wealth transfers at death and during lifetime, with emphasis on tax planning. Pre- or corequisite: ACC 521.

ACC 577 Taxation of Real Estate Transactions. (3)

selected semesters

Income tax aspects of acquisition, operation, and disposal of real estate; syndications; installment sales; exchanges; dealer-investor issues; alternative financing; and planning. Prerequisite: ACC 521 or instructor approval.

ACC 582 Information Security of Interorganizational Systems. (3)

selected semesters

Function and responsibility of the information security officer. Advanced topics in security methods and technology. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

ACC 585 Performance Measurement of Emerging Business Models. (3)

once a year

Applies quantitative techniques to accounting problems. Prerequisite: ACC 503 or M.S. in Information Management degree program student or M.A.I.S. degree program student.

ACC 586 Shareholder Value Creation and Financial Statement Analysis. (3)

once a year

Develop skills necessary to exploit financial reporting information in a business environment and appreciation of reporting issues faced by management.

ACC 587 Business Process Integrity Controls. (3)

once a year

Design and evaluation of computer-based accounting information system. Development of computer-based business models for planning and control. Prerequisite: M.A.I.S. degree program student.

ACC 591 Seminar on Selected ACC Topics. (1–12)

once a year

Topics may include the following:

- Computer Security. (3)
- Data Warehouse and Data Mining. (3)

- Electronic Commerce. (3)
- Enterprise Modeling. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

COMPUTER INFORMATION SYSTEMS (CIS)

CIS 200 Computer Applications and Information Technology. (3)

fall, spring, summer

Introduces business information systems and the uses of business application software with emphasis on database and spreadsheet packages. Fee. Prerequisite: MAT 117 or higher.

General Studies: CS

CIS 220 Programming Concepts for Accountancy Majors. (3)

fall, spring, summer

Introduces business computer programming. Uses programming languages such as Visual BASIC to teach proper programming style and practice. Fee. Prerequisite: prebusiness student.

CIS 235 Business Information Systems Development. (3)

fall, spring, summer

Developing information systems and electronic commerce applications using object-oriented languages (e.g., Java). Introduces business technology and systems analysis. Fee. Prerequisites: CSE 181; MAT 119 (or 210).

CIS 300 Computers in Business. (3)

selected semesters

Introduces information systems in business. Use of computers for business problem solving. Prerequisites: CIS 200; professional program business student.

CIS 335 Visual Paradigms for Information Systems Development. (3)

selected semesters

Uses visual programming languages such as Visual BASIC to implement data structures, file structures, and interfaces in business information systems. Fee. Prerequisites: both CSE 100 and professional program business student majoring in Computer Information Systems or both CIS 220 and professional program business student majoring in Accountancy.

CIS 394 Special Topics. (1–4)

selected semesters

See current *Schedule of Classes* for offerings of courses at ASU East.

CIS 410 Object-Oriented Modeling and Programming. (3)

fall and spring

Object-oriented modeling of business information systems. Abstract data types and object-oriented programming using a language such as Java. Fee. Prerequisite: professional program business student majoring in Computer Information Systems. Prerequisite with a grade of “C” or higher: CIS 235.

CIS 420 Business Database Concepts. (3)

fall and spring

Database theory, design, and application, including the entity-relationship model; the relational, hierarchical, and network database models; and query languages. Fee. Prerequisite: professional program business student majoring in Computer Information Systems or Accountancy. Prerequisite with a grade of “C” or higher: ACC 330.

CIS 425 Electronic Commerce Strategy. (3)

fall and spring

Key business strategies and technology elements of contemporary electronic commerce. Covers Web design and interactions between Web pages and databases. Prerequisite: professional program business student majoring in Computer Information Systems or Accountancy. Prerequisite with a grade of “C” or higher: CIS 420.

CIS 430 Networks and Distributed Systems. (3)

fall and spring

Advanced topics such as communications protocols, distributed systems, and client-server systems; applications based on platforms such as networked UNIX. Fee. Prerequisites with a grade of “C” or higher: ACC 330; CIS 410; professional program business student majoring in Computer Information Systems. Pre- or corequisite with a grade of “C” or higher: CIS 420.

CIS 440 Systems Design and Electronic Commerce. (3)

fall and spring

Systems design for organizational and electronic commerce systems; use of project management and systems analysis and design tools. Fee. Prerequisites: professional program business student majoring in Computer Information Systems. Prerequisites with a grade of "C" or higher: CIS 420, 430; professional program business student majoring in Computer Information Systems.

General Studies: L

CIS 494 Special Topics. (1–4)

selected semesters

CIS 502 Management Information and Decision Support Systems. (3)

once a year

Fundamentals of computer-based management information and decision support systems. Prerequisite: M.B.A. degree program student.

CIS 505 Object-Oriented Modeling and Programming. (3)

once a year

Object-oriented modeling of business information systems, abstract data types and object-oriented programming using a visual language. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

CIS 506 Business Database Systems. (3)

once a year

Hierarchical, network, relational, and other recent data models for database systems. Processing issues such as concurrency control, query optimization, and distributed processing. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

CIS 512 Intelligent Decision Systems and Knowledge Management. (3)

once a year

Definition, description, construction, and evaluation of computer-based decision systems. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

CIS 515 Management Information Systems. (3)

selected semesters

Systems theory concepts applied to the collection, retention, and dissemination of information for management decision making. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

CIS 520 Systems Design and Evaluation. (3)

selected semesters

Methodologies of systems analysis and design. Issues include project management, interface, organizational requirements, constraints, documentation, implementation, control, and performance evaluation. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

CIS 530 Information Systems Development. (3)

once a year

Object-oriented and interprocess communication and control concepts for information systems; applications based on languages such as C++ and platforms such as networked UNIX. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

CIS 535 Distributed Information Systems. (3)

once a year

Distributed systems and their impact on information systems in business. Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

CIS 591 Seminar on Selected CIS Topics. (1–12)

once a year

Topics may include the following:

- Computer Security
- Computing Architectures
- Data Warehouse and Data Mining
- Electronic Commerce
- Enterprise Modeling

Prerequisite: M.S. in Information Management degree program student or M.A.I.S. degree program student.

CIS 593 Applied Project. (1–12)

once a year

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Business Administration

www.east.asu.edu/ecollege/businessadmin

480/727-1055

CNTR 76

Roger W. Hutt, Faculty Head

The primary focus of the Business Administration degree program is the fundamental functions and activities performed in for-profit as well as not-for-profit organizations. The curriculum enables students to gain essential business competencies, knowledge of business disciplines and methods, and appreciation for contemporary business environments and cultures. Students are provided opportunities for additional depth in areas of their choosing. Students are prepared for careers in which a broad background and general knowledge in the field of business are requirements. Graduates may choose to enter one of the areas of business or industry for which their emphasis on business fundamentals has prepared them, to start their own businesses, or to pursue careers with local, state, or federal government. Some graduates choose to continue their education by enrolling in graduate programs or law school.

BUSINESS ADMINISTRATION—B.S.

Requirements for the Business Administration major consist of 30 hours of lower-division core and skill courses, 34 hours of upper-division core courses, and nine hours of advanced business electives. All of the upper-division business courses (with the exception of nine hours) must be taken at ASU East.

Business Administration Core

E ACC	316	Management Uses of Accounting.....	3
E BUS	394	Professional Development.....	1
E CIS	394	ST: Information Management	3
E ECN	394	ST: Current Issues in Economics.....	3
E FIN	300	Fundamentals of Finance.....	3
E IBS	300	Principles of International Business <i>G</i>	3
E LES	305	Legal, Ethical, and Regulatory Issues	3
E MGT	300	Organizational Management and Leadership.....	3
E MGT	494	ST: Strategic Management	3
E MKT	300	Principles of Marketing	3
E SCM	300	Global Supply Operations	3
E TWC	447	Business Reports <i>L</i>	3
Total		.....	34

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

Students who complete the major requirements may also choose to take additional business courses, related courses in ASU East industry-specific business programs (Agribusiness, Information and Management Technology, and Aeronautical Management Technology), or special optional nine-semester-hour extensions of the basic major in our industry-specific programs.

Department of Economics

www.cob.asu.edu/ecn

480/965-3531

BAC 659

Arthur E. Blakemore, Chair

Professors: Blakemore, Boyes, Brada, Burdick, Burgess, DeSerpa, Faith, Gooding, Happel, Hoffman, Hogan, Kingston, Low, Manelli, Mayer, McDowell, McPheters, Melvin, Méndez, Ormiston, Rogerson, Santos, Schlee, Zhou

Associate Professors: Ahn, Cogley, Datta, Reffett, Reiser, Wilson, Winkelman

Assistant Professors: Chade, Hendricks

Senior Lecturer: Roberts

The study of economics can give students a general knowledge of the ways goods and services are allocated and incomes generated; economics can help students understand why prices, employment, money, and financial markets behave as they do. Some knowledge of economics is crucial not only for students of business but for students pursuing graduate education in law or careers in journalism and communications.

Economists obtain positions at universities and in government, financial institutions, brokerage houses, private nonfinancial corporations, international organizations such as the International Monetary Fund and the World Bank, as financial journalists, and as marketing and management specialists in domestic and international firms.

ECONOMICS—B.S.

Economics majors are required to earn a minimum grade of “C” in MAT 210 Brief Calculus before taking upper-division courses in economics. While MAT 210 meets the minimum mathematics requirement to major in Economics, all Economics majors who anticipate going on to graduate school in economics or in business or to law school are encouraged to take MAT 270 Calculus with Analytic Geometry I. Majors are encouraged to pursue further course work in mathematics. MAT 270 may be taken in lieu of MAT 210.

The major in Economics consists of 18 semester hours of upper-division courses in economics. The following six hours must be included:

ECN 313 Intermediate Macroeconomic Theory *SB*3
 ECN 314 Intermediate Microeconomic Theory *SB*3

ECN 313 and 314 should be taken before other upper-division courses in economics. Students must earn a minimum grade of “C” in ECN 313 and 314. Concurrent enrollment in ECN 313 and 314 is permitted. Concurrent enrollment in ECN 313 or 314 and other upper-division courses in economics is subject to the approval of the faculty advisor.

MAJOR PROFICIENCY REQUIREMENTS

Students must receive grades of “C” or higher in upper-division courses for the major. If a student receives a grade below “C” in any course in the major, this course must be repeated. If a second grade below “C” is received in either an upper-division course in the major already taken or in a different upper-division course in the major, the student is no longer eligible to take additional upper-division courses in the major.

Other Economics Programs. For information on majoring in Economics in the College of Liberal Arts and Sciences, see “Economics,” [“Economics—B.A. or B.S.,” page 369.](#)

For information on the minor in General Economics and on the minor in Economics for Students Planning a Career in Law, see [“Minor in Economics for Students Planning a Career in Law,” page 370.](#)

GRADUATION REQUIREMENTS

In addition to fulfilling major requirements, students seeking a degree must meet all university and college requirements. See [“University Graduation Requirements,” page 79,](#) and [“College Degree Requirements,” page 159.](#)

ECONOMICS (ECN)

ECN 111 Macroeconomic Principles. (3)

fall, spring, summer

Basic macroeconomic analysis. Economic institutions and factors determining income levels, price levels, and employment levels.

General Studies: SB

ECN 112 Microeconomic Principles. (3)

fall, spring, summer

Basic microeconomic analysis. Theory of exchange and production, including the theory of the firm.

General Studies: SB

ECN 306 Survey of International Economics. (3)

fall, spring, summer

Survey of international trade issues, commercial policy, trade theory, customs unions, and international monetary topics. Not for Economics majors. Lecture, discussion. Cross-listed as IBS 306. Credit is allowed for only ECN 306 or IBS 306. Prerequisites: ECN 111 (or 112); 2.00 ASU GPA; junior standing.

General Studies: SB, G

ECN 313 Intermediate Macroeconomic Theory. (3)

fall, spring, summer

Determinants of aggregate levels of employment, output, and income of an economy. Prerequisites: ECN 111, 112. Prerequisite with a grade of “C” or higher: MAT 210.

General Studies: SB

ECN 314 Intermediate Microeconomic Theory. (3)

fall, spring, summer

Role of the price system in organizing economic activity under varying degrees of competition. Prerequisites with a grade of “C” or higher: ECN 111, 112; MAT 210 (or 270).

General Studies: SB

ECN 315 Money and Banking. (3)*summer*

Functions of money. Monetary systems, credit functions, banking practices, and central banking policy. Cannot be applied to the Economics major. Prerequisite: ECN 111.

ECN 331 Comparative Economic Systems. (3)*selected semesters*

Alternative institutions, past and present, for organizing the social division of labor. Property rights, information, and incentives in industrial societies. Prerequisite: ECN 111 or 112.

*General Studies: SB, G***ECN 360 Economic Development. (3)***selected semesters*

Theories of economic growth and development. Role of capital formation, technological innovation, population, and resource development in economic growth. Prerequisites with a grade of "C" or higher: ECN 111, 112.

*General Studies: SB, G***ECN 365 Economics of Russia and Eastern Europe. (3)***selected semesters*

Origins and analysis of contemporary institutions. Comparative development and differentiation in the 20th century. Prerequisite: ECN 111 or 112.

*General Studies: SB, G***ECN 382 Managerial Economics. (3)***selected semesters*

Applies economic analysis to managerial decision making. Market analysis in the context of the socio-legal environment. Not for Economics majors. Lecture, discussion. Prerequisites: ECN 111, 112; 2.00 ASU GPA; junior standing.

ECN 384 Economics of Social Behavior. (3)*once a year*

Applies economic analysis to contemporary behavior: discrimination, work versus leisure, crime, medical care, macroeconomic policies. Not for Economics majors. Lecture, student participation. Prerequisites: 2.00 ASU GPA; junior standing.

*General Studies: SB***ECN 394 Special Topics. (3)***selected semesters*

Current topics of domestic or international interest. Analytical emphasis may be macro, micro, or both. See current *Schedule of Classes* for offerings. Not for Economics majors. Prerequisite: ECN 111 or 112.

ECN 404 History of Economic Thought. (3)*once a year*

Development of economic doctrines, theories of mercantilism, physiocracy, classicism, neoclassicism, Marxism, and contemporary economics. Prerequisite: ECN 314 or instructor approval.

*General Studies: L/SB***ECN 421 Earnings and Employment. (3)***once a year*

Analyzes earnings, employment, unemployment, training, education, and related topics. Emphasizes policy issues. Prerequisite: ECN 314 or instructor approval.

*General Studies: L/SB***ECN 436 International Trade Theory. (3)***fall and spring*

Comparative-advantage doctrine, including practices under varying commercial policy approaches. Economic impact of international disequilibrium. Prerequisite: ECN 314 or instructor approval.

*General Studies: SB, G***ECN 438 International Monetary Economics. (3)***fall and spring*

History, theory, and policy of international monetary economics. Balance of payments and exchange rates. International financial markets including Eurocurrency markets. Prerequisite: ECN 313 or instructor approval.

*General Studies: SB, G***ECN 441 Public Finance. (3)***once a year*

Public goods, externalities, voting models, public expenditures, taxation, and budget formation with emphasis on the federal government. Prerequisite: ECN 314 or instructor approval.

*General Studies: L/SB***ECN 450 Law and Economics. (3)***once a year*

Economics of the legal system including analysis of property, contracts, torts, commercial law, and other topics. Discussion, analysis. Prerequisite: ECN 314.

*General Studies: L***ECN 453 Government and Business. (3)***once a year*

Development of public policies toward business. Antitrust activity. Economic effects of government policies. Prerequisite: ECN 314 or instructor approval.

ECN 480 Introduction to Econometrics. (3)*once a year*

Elements of regression analysis: estimation, hypothesis tests, prediction. Emphasizes use of econometric results in assessment of economic theories. Prerequisite: instructor approval.

*General Studies: CS***ECN 484 Economics Internship. (3)***fall, spring, summer*

Academic credit for professional work organized through the Internship Program. Prerequisites: ECN 313, 314; minimum cumulative ASU GPA of 3.00.

ECN 485 Mathematical Economics. (3)*once a year*

Integrates economic analysis and mathematical methods into a comprehensive body of knowledge within contemporary economic theory. Prerequisite: instructor approval.

ECN 493 Honors Thesis. (3)*fall and spring**General Studies: L***ECN 494 Special Topics. (1–4)***selected semesters*

Current economic topics of domestic or international interest. Analytical emphasis may be macro, micro, or both. See current *Schedule of Classes* for offerings. Topics may include the following:

- Public Choice

Prerequisites: both ECN 313 and 314 or only instructor approval.

ECN 498 Pro-Seminar. (3)*selected semesters*

Topics chosen from current area of interest. Prerequisites: both ECN 313 and 314 or only instructor approval.

ECN 502 Managerial Economics. (3)*fall and spring*

Applies microeconomic analysis to managerial decision making in areas of demand, production, cost, and pricing. Evaluates competitive strategies. Prerequisite: M.B.A. degree program student.

ECN 503 Global Economics for Managers. (3)*fall and spring*

Macroeconomic analysis of issues related to economic growth, inflation, interest rates behavior, unemployment, exchange rate determination, and global competitiveness. Prerequisite: M.B.A. degree program student.

ECN 504 History of Economic Thought. (3)*once a year*

Historical development of economic theory. Emphasizes the development of economic analysis from preclassical economics through Keynes. Prerequisite: ECN 510 or instructor approval.

ECN 509 Macroeconomic Theory and Applications. (3)*fall*

Theory of income, output, employment, and price level. Influence on business and economic environment. Prerequisites: both ECN 111 and calculus or only instructor approval.

ECN 510 Microeconomic Theory and Applications. (3)*fall*

Applies economic theory to production, consumer demand, exchange, and pricing in a market economy. Prerequisites: both ECN 112 and calculus or only instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF BUSINESS

ECN 511 Macroeconomic Analysis I. (3)

fall

Current theories of output, employment, inflation, and asset prices as well as major aggregates. Introduces dynamic optimization techniques. Prerequisites: both ECN 313 and calculus or only instructor approval.

ECN 512 Microeconomic Analysis I. (3)

fall

Theory of production, consumer demand, resource use, and pricing in a market economy. Prerequisites: both ECN 314 and calculus or only instructor approval.

ECN 513 Macroeconomic Analysis II. (3)

spring

Focuses on growth theory, dynamic general equilibrium models, monetary theory, open-economy issues. Prerequisite: ECN 511 or instructor approval.

ECN 514 Microeconomic Analysis II. (3)

spring

General equilibrium, welfare economics, production, and capital theory. Prerequisite: ECN 512 or instructor approval.

ECN 515 Advanced Macroeconomic Analysis. (3)

fall

Focuses on current research areas in macroeconomics and monetary theory with emphasis on methods in economic dynamics and numerical techniques. Prerequisite: ECN 511 or instructor approval.

ECN 516 Economics of Uncertainty, Information, and Strategic Behavior. (3)

fall

Economic behavior under uncertainty; markets and contracts under asymmetric information; the theory of games with incomplete information and applications. Prerequisite: ECN 512 or instructor approval.

ECN 517 Monetary Theory. (3)

fall

Traditional and post-Keynesian monetary theory, interest rate determination, the demand and supply of money. Prerequisite: ECN 511 or instructor approval.

ECN 521 Labor Economics I. (3)

spring

Development of basic theoretical models for analyzing labor market issues. Prerequisite: ECN 510 or instructor approval.

ECN 522 Labor Economics II. (3)

selected semesters

Extensions/criticisms of labor market theories. Applications to a variety of policy issues. Prerequisite: ECN 521.

ECN 525 Econometrics I. (3)

spring

Problems in the formulation of econometric models. Emphasizes estimation, hypothesis testing, and forecast of general linear models. Prerequisite: 6 hours in statistics or instructor approval.

ECN 526 Econometrics II. (3)

fall

Estimation and inference of qualitative and limited dependent variable models as well as general multiple equation models. Prerequisite: ECN 525 or instructor approval.

ECN 527 Econometrics III. (3)

spring

Generalized method of moment estimation, estimation with censored and truncated samples, nonlinear models, panel-data models, econometrics of nonstationarities. Prerequisite: ECN 526 or instructor approval.

ECN 536 International Trade Theory. (3)

spring

Theories of comparative advantage and their empirical verification. Theory and political economy of commercial policy. Resource transfers and the role of the multinational corporation. Prerequisites: both ECN 509 and 510 or only instructor approval.

ECN 538 International Monetary Theory and Policy. (3)

fall

Foreign exchange market, balance of payments, and international financial institutions and arrangements; theory and applications. Prerequisites: both ECN 509 and 510 or only instructor approval.

ECN 541 Public Economics. (3)

fall

Economics of collective action, public spending, taxation, and politics. Impact of central governmental activity on resource allocation and income distribution. Prerequisite: ECN 510 or instructor approval.

ECN 553 Industrial Organization. (3)

spring

Analyzes structure, conduct, and performance in industrial markets; the economics of organizations. Prerequisite: ECN 510 or instructor approval.

ECN 560 Economics of Growth and Development. (3)

fall

Economic problems, issues, and policy decisions facing the developing nations of the world. Prerequisites: both ECN 509 and 510 or only instructor approval.

ECN 584 Economics Internship. (1–3)

summer

Academic credit for professional work organized through the Internship Program. Prerequisites: both ECN 510 and 511 or only instructor approval.

ECN 585 Mathematics for Economists. (3)

fall

Survey of mathematical ideas encountered in economics and econometrics: nonlinear programming, the Kuhn-Tucker theorem, concave programming, optimization over time. Prerequisite: calculus or instructor approval.

ECN 591 Economics Seminar. (1–3)

fall, spring, summer

Presentations by outside speakers, department faculty, and graduate students of work in progress. Prerequisite: instructor approval.

ECN 593 Applied Projects. (3)

fall

Preparation of a supervised applied project typically in conjunction with an internship. Prerequisites: ECN 510, 511.

ECN 594 Conference and Workshop in Economics. (1–12)

fall

Workshops offered include: economic analysis, microeconomic analysis, macroeconomics.

ECN 598 Special Topics. (3)

selected semesters

Advanced topics in economics. Consult the *Schedule of Classes* for offerings. Prerequisite: instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses,](#)" page 56.

QUANTITATIVE BUSINESS ANALYSIS (QBA)

For more QBA courses, see "Department of Supply Chain Management."

QBA 221 Statistical Analysis. (3)

fall and spring

Methods of statistical description. Applies probability theory and statistical inference in business. Fee. Prerequisite: MAT 119.
General Studies: CS

QBA 321 Applied Quality Analysis I. (3)

fall

Applies statistical tools employed in quality analysis. Primary emphasis on regression analysis using a variety of statistical software packages. Prerequisite: QBA 221.
General Studies: L

QBA 410 Applied Business Forecasting. (3)

spring

Applies forecasting techniques in business and institutional environments. Prerequisite: QBA 221.

QBA 421 Applied Quality Analysis II. (3)

fall, spring, summer

Applies statistical tools employed in quality analysis. Topics include experimental design, customer surveys, and process control and capability. Prerequisite: QBA 221.

QBA 502 Managerial Decision Analysis. (3)

fall and spring

Fundamentals of quantitative analysis to aid management decision making under uncertainty. Prerequisites: MAT 210; computer literacy; graduate degree program student.

QBA 525 Applied Regression Models. (3)

once a year

Simple linear regression, multiple regression, indicator variables, and logistic regression. Emphasizes business and economic applications. Prerequisite: MAT 210.

QBA 527 Categorical Data Analysis. (3)

once a year

Discrete data analysis in business research. Multidimensional contingency tables and other discrete models. Prerequisite: QBA 525.

QBA 530 Experimental Design. (3)

once a year

Experimental designs used in business research. Balanced and unbalanced factorial designs, repeated measures designs, and multivariate analysis of variance. Prerequisite: QBA 525 (or its equivalent).

QBA 535 Multivariate Methods. (3)

once a year

Advanced statistical methods used in business research. Multivariate analysis of association and interdependence. Prerequisite: QBA 525.

QBA 540 Forecasting. (3)

selected semesters

Foundation of statistical forecasts and forecast intervals; applies classical and computer-assisted forecasting methods to business forecasting problems. Prerequisites: MAT 210; QBA 502.

QBA 593 Applied Project. (1–12)

selected semesters

QBA 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

ACC 315 Financial Accounting and Reporting	3
FIN 331 Financial Markets and Institutions	3
FIN 361 Managerial Finance.....	3
FIN 421 Security Analysis and Portfolio Management.....	3
FIN 461 Financial Cases and Modeling L.....	3
One additional 400-level FIN course	3
Total	18

As part of the requirements, all Finance majors must complete ACC 250 Introductory Accounting Lab. Finance majors are strongly advised to take ACC 316 Management Uses of Accounting. FIN 484 Finance Internship is available for nonmajor elective credit.

ACC 250 must be completed before taking ACC 315. FIN 300 must be completed before taking FIN 331 and 361. FIN 331 and 361 and ACC 315 must be completed before taking 400-level FIN courses.

MAJOR PROFICIENCY REQUIREMENTS

Students must receive grades of “C” or higher in upper-division courses for the major. If a student receives a grade below “C” in any course in the major, this course must be repeated before taking any further courses for which this course is a prerequisite. If a second grade below “C” is received in either an upper-division course in the major already taken or in a different upper-division course in the major, the student is no longer eligible to take additional upper-division courses in that major.

GRADUATION REQUIREMENTS

In addition to fulfilling major requirements, students seeking a degree must meet all university and college requirements. See [“University Graduation Requirements,” page 79,](#) and [“College Degree Requirements,” page 159.](#)

Department of Finance

www.cob.asu.edu/fin

480/965-3131

BAC 519

Herbert M. Kaufman, Chair

Professors: Booth, Coles, Kaufman, Poe, Sushka

Associate Professors: Cesta, Gallinger, Hertzell, Hoffmeister, Wilt

Assistant Professors: Deli, Griffin, Juergens, Martin, Nardari, Perry

FINANCE—B.S.

The study of finance prepares students to understand the financial implications inherent in virtually all business decisions. Students majoring in Finance are prepared for entry-level careers in corporate management, depository institutions, investment management, and financial services. The finance curriculum emphasizes financial markets, evaluation of investments, and efficient allocation of resources. The major in Finance consists of the following courses:

FINANCE (FIN)

FIN 300 Fundamentals of Finance. (3)

fall, spring, summer

Theory and problems in financial management of business enterprises. Prerequisites: ACC 240; ECN 112; QBA 221. Pre- or corequisite: SCM 300.

FIN 331 Financial Markets and Institutions. (3)

fall, spring, summer

Analyzes financial markets and intermediaries. Theory of financial intermediation, interest rate theory, money and capital market instruments, and government regulation. Prerequisite: professional program business student majoring in Finance. Prerequisite with a grade of “C” or higher: FIN 300.

FIN 361 Managerial Finance. (3)

fall, spring, summer

Theories and problems in resource allocation, cost of capital, CAPM and capital budgeting, asset valuation, capital structure, and financing policy. Prerequisite: professional program business student majoring in Finance. Prerequisite with a grade of “C” or higher: FIN 300.

FIN 380 Personal Financial Management. (3)

fall, spring, summer

Dynamic analysis of personal financial planning, including time value of money, stock and bond investment, and retirement and estate planning. Prerequisites: minimum cumulative GPA of 2.00; junior standing; non-Finance major.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

COLLEGE OF BUSINESS

FIN 394 Special Topics. (1–4)

selected semesters

FIN 421 Security Analysis and Portfolio Management. (3)

fall, spring, summer

Security analysis theory and practice. Selection and management of financial asset portfolios. Securities markets and portfolio risk-return analysis. Lecture, discussion. Prerequisite: professional program business student majoring in Finance. Prerequisites with a grade of "C" or higher: ACC 315; FIN 331, 361.

FIN 427 Derivative Financial Securities. (3)

fall, spring, summer

Study of stock options, index options, convertible securities, financial futures, warrants, subscription rights, and arbitrage pricing theory. Lecture, discussion. Prerequisite: professional program business student majoring in Finance. Prerequisite with a grade of "C" or higher: FIN 421.

FIN 431 Management of Financial Institutions. (3)

fall, spring, summer

Asset/liability and capital management in financial institutions. Influence of market factors and regulatory agencies. Emphasizes commercial banks. Lecture, discussion. Prerequisite: professional program business student majoring in Finance. Prerequisites with a grade of "C" or higher: ACC 315; FIN 331, 361.

FIN 456 International Financial Management. (3)

fall, spring, summer

Exchange rate determination, financial markets, managing multinational corporations, capital budgeting, and hedging currency risk exposure from an international perspective. Prerequisite: professional program business student majoring in Finance. Prerequisites with a grade of "C" or higher: ACC 315; FIN 331, 361.

General Studies: G

FIN 461 Financial Cases and Modeling. (3)

fall and spring

Case-oriented capstone course in managerial finance. Contemporary issues of liquidity management, capital budgeting, capital structure, and financial strategy. Lecture, discussion, group work. Prerequisite: professional program business student majoring in Finance. Prerequisites with a grade of "C" or higher: ACC 315; FIN 331, 361.

General Studies: L

FIN 481 Honors Seminar in Finance. (3)

once a year

Honors course covering topics that include theory and applications concerning managerial finance, investments, and financial institutions. Lecture, discussion. Prerequisite: Finance College of Business honors program student. Prerequisites with a grade of "C" or higher: ACC 315; FIN 331, 361.

FIN 484 Finance Internship. (3)

fall, spring, summer

Academic credit for field work in finance organized through the internship program. Prerequisites: FIN 331, 361; instructor approval.

FIN 494 Special Topics. (1–4)

selected semesters

FIN 502 Managerial Finance. (3)

once a year

Financial decision making, including net present value, interest rates, risk and return, efficient capital markets, capital budgeting, and financial forecasting. Lecture, cases, discussion. Prerequisites: ACC 502; ECN 502; QBA 502.

FIN 521 Investment Management. (3)

once a year

Valuation of equities and fixed income securities. Trading strategies and portfolio management. Performance evaluation. Trading mechanisms and market organization. Lecture, cases, discussion. Prerequisites: FIN 502, 551.



Lee McPheters, associate dean for Executive and Professional Programs, addresses a business class.

Tim Trumble photo

FIN 527 Derivatives and Risk Management. (3)

once a year

Characteristics and pricing of forwards, futures, swaps, options. Applications of instruments for hedging strategies, corporate risk management, and capital budgeting. Lecture, cases, discussion. Prerequisites: FIN 502, 551.

FIN 531 Financial Markets and Intermediaries. (3)

once a year

How the financial system affects the firm. Intermediation and capital markets. Risk management strategies, value at risk and financial instruments. Lecture, cases, discussion. Prerequisites: FIN 521, 527.

FIN 551 Applied Fundamental Analysis. (3)

once a year

Analyzes financial documents to determine quality of earnings. Forensic financial analysis to diagnose financial health and sustainable growth. Lecture, cases, discussion. Prerequisite: FIN 502.

FIN 556 International Financial Management. (3)

once a year

Behavior of exchange rates, interest rates, inflation rates. Analyzes corporate exposure to exchange rate risk and hedging strategies. Multicurrency capital budgeting. Lecture, cases, discussion. Prerequisites: FIN 521, 527.

FIN 561 Strategic Financial Management. (3)

once a year

Capstone case-oriented course in strategic applications of corporate finance. Acquisition, allocation, and management of funds within the business enterprise. Cases, discussion. Prerequisites: FIN 531, 556.

FIN 581 Advanced Valuation Methods. (3)

once a year

Analyzes practical aspects of valuing the enterprise using economic value added, free cash flow, and other financial techniques. Lecture, cases, discussion. Prerequisite: FIN 502.

FIN 591 Entrepreneurial Finance. (1–12)

once a year

Applies financial economic principles to solve problems associated with incubating and new ventures. Planning, understanding financial needs, structuring contracts. Lecture, cases, discussion. Prerequisite: FIN 502.

FIN 594 Entrepreneurial Finance. (3)

once a year

Applies financial economic principles to solve problems associated with incubating and new ventures. Planning, understanding financial needs, structuring contracts. Lecture, cases, discussion. Prerequisite: FIN 502.

FIN 781 Theory of Finance. (3)

once a year

Fundamental tools of financial economics; asset pricing, arbitrage, option pricing, capital structure, dividend policy, asymmetric information, and transaction-cost economics. Prerequisites: FIN 502, 521, 531.

FIN 791 Doctoral Seminar in Finance. (1–12)

once a year

Topics may include the following:

- Financial Institutions and Markets. (3)
Economic and monetary theory applied to financial markets and institutions; implications of financial structure for market performance and efficiency.
- Financial Management. (3)
Financial theory pertaining to capital structure, dividend policy, valuation, cost of capital, and capital budgeting.
- Investments. (3)
Investments and market theory; efficient markets hypothesis; option and commodity markets.

Prerequisite: FIN 781.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

**School of Health Administration
and Policy**

www.cob.asu.edu/hap

480/965-7778

BA 318

Eugene S. Schneller, Director

Professors: Forsyth, Johnson, Kirkman-Liff, Schneller

Assistant Professor: Rivers

While the school does not offer an undergraduate major, a number of courses at the 200 and 400 levels are available to students who have a strong interest in health care, public health, and health policy. Students may enroll in these courses regardless of their undergraduate major. Registration for courses at the 400 level is with permission of the instructor and due to seat availability.

HEALTH SERVICES ADMINISTRATION (HSA)

HSA 220 Health Care Organizations. (3)

fall and spring

Overview of United States health care delivery systems; financing, health policy, basic principles of budgeting, cost-benefit analysis, and resource management. Cross-listed as HCR 220. Credit is allowed for only HCR 220 or HSA 220. Prerequisites: both ENG 101 and 102 or only ENG 105.

General Studies: L

HSA 498 Pro-Seminar. (1–7)

selected semesters

Topics may include the following:

- Health Care Finance. (3)
- Health Economics. (3)
- Health Service Administration and Policy. (3)
- Policy Issues in Health Care. (3)

HSA 502 Health Care Organization. (3)

once a year

Concepts, structures, functions, and values which characterize contemporary health care systems in the United States.

HSA 505 Managerial and Population Epidemiology. (3)

once a year

Quantitative tools to make health care management decisions including biostatistics, epidemiology, and cost-effectiveness analysis. Prerequisite: HSA 561 or a course in basic statistics.

HSA 512 Health Care Economics. (3)

once a year

Economics of production and distribution of health care services, with special emphasis on the impact of regulation, competition, and economic incentives. Prerequisite: HSA 502.

HSA 520 Health Care Organizational Structure and Policy. (3)

once a year

Functional relationships among managerial elements of health care institutions with major focus on hospital governance and policy dynamics. Prerequisite: HSA 502.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

COLLEGE OF BUSINESS

HSA 522 Health Care Management Systems. (3)

once a year

Systems concepts, quantitative methods, and information systems applied to management problems in health institutions and community health planning. Prerequisites: HSA 505; QBA 502.

HSA 532 Financial Management of Health Services. (3)

once a year

Acquisition, allocation, and management of financial resources within the health care enterprise. Budgeting, cost analysis, financial planning, and internal controls. Prerequisites: ACC 503; FIN 502; HSA 502.

HSA 540 Health Care Outcomes. (3)

once a year

Project-oriented course on application of efficiency-based methods for the evaluation of the outcomes of health care. Seminar, individual student research. Prerequisite: HSA 512 or enrollment in Ph.D. program.

HSA 542 Health Care Jurisprudence. (3)

once a year

Legal aspects of health care delivery for hospital and health services administration. Legal responsibilities of the hospital administrator and staff. Prerequisites: HSA 505, 520.

HSA 560 Health Services Administration and Policy. (3)

fall and spring

Introduces organizational theory and management of complex organizations within the historical and contemporary contexts of the U.S. public health.

HSA 561 Biostatistics. (3)

fall

Aspects of descriptive statistics and statistical inference most relevant to health issues, including data, rates, and confidence intervals.

HSA 562 Health Care Organization and Systems. (3)

once a year

Functional relationships among managerial elements of health care institutions with major focus on hospital governance and policy dynamics.

HSA 563 Economics for Public Health Management. (3)

fall

Introduces concepts and methods used to direct and understand production and distribution of health care services.

HSA 564 Health Care Finance. (3)

once a year

Overview of the acquisition, allocation, and management of financial resources by health care providers. Focuses on economic, financial, and accounting principles.

HSA 565 Policy Issues in Health Care. (3)

once a year

Current policy issues in health through concepts of access, cost, and quality; issues relating to disease trends and policy formulation.

HSA 566 Basic Principles of Epidemiology. (3)

spring

Basic principles of epidemiology, evaluation of etiology, natural history, intervention therapy, and disease prevention. Lecture, lab. Prerequisite: Master of Public Health major or instructor approval.

HSA 571 Managed Care. (3)

selected semesters

Trends in managed care/integrated systems, complexities of balancing objectives (e.g., financial and quality). A two-semester-long marketplace simulation. Prerequisite: HSA 502.

HSA 573 Comparative Health Systems. (3)

once a year

Comparison of health care financing and delivery in industrialized countries; covers insurance, hospital management, and physician payment. Lecture, discussion.

HSA 575 Chronic Care Administration. (3)

selected semesters

Management of long-term care services and facilities, including behavioral health and rehabilitation programs.

HSA 589 Integrative Seminar. (3)

fall, spring, summer

Capstone assessment of current policies, problems, and controversies across the broad spectrum of health services administration. Prerequisites: HSA 505, 520, 522, 532.

HSA 591 Seminar. (1–12)

once a year

Topics may include the following:

- Behavioral Health. (3)
- Cost Containment and Quality Assurance. (3)
- Health Care Economic Outcomes. (3)
- Health Care Policy. (3)
- Managing Physicians. (3)
- Topics in Health Services Research. (3)

HSA 593 Applied Project. (3)

fall, spring, summer

Optional on-site experience in advanced development of managerial skills in health services administration and policy. Minimum of 10 weeks. Prerequisites: 18 hours of credit toward program of study; director approval.

HSA 598 Special Topics. (1–4)

once a year

Topics may include the following:

- Epidemiology. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

International Business Studies

www.cob.asu.edu/up/ipo.cfm

480/965-0596

BA 109

Josef C. Brada, Director

Adela Gasca, Coordinator

Certificate in International Business Studies

The program of study leading to the Certificate in International Business Studies is designed to prepare students for positions with multinational firms, banks, government agencies, and international organizations. This program is not a substitute for the listed areas of business specialization; rather, the courses required for the certificate add an international dimension to the student's chosen major.

Requirements for the certificate are designed to provide an understanding of international business environments, principles and operations; to provide an awareness of global social processes and a sensitivity to foreign cultures; and to develop competence in a foreign language. These objectives are met in the following ways: international business principles and operations, global and area studies, foreign language, and GPA proficiency.

International Business Principles and Operations. At least 15 semester hours of approved courses in international business are required. Students must take either IBS 300 Principles of International Business or ECN/IBS 306 Survey of International Economics and the international course in their major. Other international business courses from which the remaining hours are selected include

ECN 306	Survey of International Economics <i>SB, G*</i>	3
	or IBS 306 Survey of International Economics <i>SB, G*</i> (3)	
ECN 331	Comparative Economic Systems <i>SB, G*</i>	3
ECN 360	Economic Development <i>SB, G*</i>	3
ECN 365	Economics of Russia and Eastern Europe <i>SB, G*</i>	3
ECN 436	International Trade Theory <i>SB, G*</i>	3
ECN 438	International Monetary Economics <i>SB, G*</i>	3
FIN 456	International Financial Management <i>G*</i>	3
IBS 300	Principles of International Business <i>G*</i>	3
IBS 394	ST: Economics of Latin America	3
IBS 394	ST: Regional Business Environment of Southeast Asia	3
	or IBS 494 ST: Regional Business Environment of Southeast Asia (3)	
IBS 400	Cultural Factors in International Business <i>C, G*</i>	3
	or MGT 494 ST: Cultural Factors in International Business (3)	
IBS 484	International Business Internship	3
IBS 493	International Honors Thesis <i>L*</i>	3
IBS 499	Individualized Instruction of International Business	3
MGT 459	International Management	3
	or IBS 494 ST: International Management (3)	
MGT 494	ST: Applied International Management	3
MKT 394	ST: Global Markets	3
MKT 435	International Marketing	3
MKT 494	ST: Applied International Marketing	1-4
SCM 463	Global Supply Chain Management	3

* College of Business students may not use this course to fulfill the 60 semester hours in college degree requirements.

Honors students who select an international topic for their thesis may use that as part of the 15 hours of international course work for the certificate.

Global and Area Studies. This requirement can be satisfied either by means of course work or through participation in approved College of Business exchange programs with foreign schools of business, or by some combination of the two. The course work option requires at least 12 semester hours of approved electives in international and area studies. A minimum of six semester hours must be in courses that provide a cross-cultural perspective from the global point of view of one or more disciplines. A minimum of six semester hours must be in courses that provide an understanding of one region of the world.

The College of Business has exchange agreements with universities in Chile, France, Germany, Italy, Mexico, Spain, and the United Kingdom. Students who participate in an approved College of Business exchange program with a foreign business school for two semesters are deemed to have fulfilled the global and area studies requirements of the Certificate in International Business upon the successful completion of this exchange program. Students who participate in such an exchange program for one semester are deemed to have satisfied the required six hours of area studies courses. Students who participate in a business seminar need to complete only three hours of area studies courses to meet the requirements of the certificate.

Foreign Language. Evidence of competence in a foreign language equivalent to one year of college study is required.

Additional Requirements. Applicants for the Certificate in

International Business must earn a “C” or higher in each of the courses selected for the certificate, have at least a 2.50 GPA for all course work applied to the certificate, and complete at least 50 percent of the course work at ASU Main.

Advising. When planning and selecting courses to meet the requirements for the certificate and to take advantage of opportunities for participation in exchanges with foreign schools of business, students should consult with an international business faculty advisor or the coordinator of international programs, in BA 109. For more information, call 480/965-0596, or access the Web site at www.cob.asu.edu/up/ipo.cfm.

INTERNATIONAL BUSINESS STUDIES (IBS)

IBS 300 Principles of International Business. (3)

fall, spring, summer

Multidisciplinary analysis of international economic and financial environment. Operations of multinational firms and their interaction with home and host societies. Prerequisite: ECN 112.

General Studies: G

IBS 306 Survey of International Economics. (3)

fall and spring

Survey of international trade issues, commercial policy, trade theory, customs unions, and international monetary topics. Not for Economics majors. Lecture, discussion. Cross-listed as ECN 306. Credit is allowed for only ECN 306 or IBS 306. Prerequisites: ECN 111 (or 112); 2.00 ASU GPA; junior standing.

General Studies: SB, G

IBS 394 Special Topics. (1-4)

fall and spring

Topics may include the following:

- Economics of Latin America. (3)
- Regional Business Environment of Southeast Asia. (3)

Prerequisites: 2.00 ASU GPA; junior standing.

IBS 400 Cultural Factors in International Business. (3)

fall, spring, summer

Cultural role in international business relations; applied principles of cross-cultural communications, negotiations, and management; regional approaches to business relations. Prerequisites: IBS 300, 306 (or ECN 306).

General Studies: C, G

IBS 484 International Business Internship. (3)

selected semesters

Academic credit for professional work organized through the internship/international program. Prerequisites: IBS 300 or 306 (or ECN 306); professional program business student; senior; minimum cumulative ASU GPA of 3.40; minimum ASU business GPA of 3.40.

IBS 493 International Honors Thesis. (3)

fall and spring

General Studies: L

IBS 494 Special Topics. (1-4)

fall and spring

Topics may include the following:

- International Management. (3)
Prerequisite: IBS 300 or MGT 300.
- Multinational Management. (3)
- Regional Business Environment of Southeast Asia. (3)

Credit is allowed for only IBS 494 ST: International Management or ST: Multinational Management or MGT 459.

IBS 499 Individualized Instruction of International Business. (3)

fall and spring

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “[Omnibus Courses](#),” page 56.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “[General Studies](#),” page 83.

Department of Management

www.cob.asu.edu/mgt

480/965-3431

BA 323

William H. Glick, Chair

Professors: Ashforth, Bohlander, Cardy, Dooley, Glick, Gomez-Mejia, Hershauer, Hitt, Hom, Kinicki, Kulik, Penley, V. Smith-Daniels

Associate Professors: Boyd, Brenenstuhl, Callarman, Choi, Cook, Hillman, Keats, Keller, Moorhead, Olivas, Roberson, Rungtusanatham, D. Smith-Daniels, Van Hook

Assistant Professors: Blancero, Koka, Lane

Clinical Professor: Keim

Lecturer: Davila

The faculty in the ASU Department of Management is widely recognized for their work in the areas of operations management, organizational behavior, human resource management, and strategic management. Faculty members emphasize high-tech management, knowledge management, quality, process and project management, strategic alliances, value chain analysis, global supply operations, globalization, diversity, small business and entrepreneurship, change management, organizational identity, corporate governance, and human resource management practices in their research, consulting, and teaching.

Department of Management faculty take great pride in their teaching excellence and have been very active in continuing to improve collaborative teaching techniques. Eleven management faculty members and teaching assistants have won recent college, university, and international awards for their excellence in teaching effectiveness.

MANAGEMENT—B.S.

Business in the 21st century calls for managers who are dynamic leaders and effective team builders. The leaders of companies that are succeeding in the new marketplace possess excellent written and oral communications skills and experience in guiding collaborative teams. After analyzing surveys of students, graduates, and their employers and after many insightful discussions with executives and recruiters, the department concluded that the Management major should have a strong emphasis on collaboration, leadership, communication, team building, and major group projects with the community in both not-for-profit and business settings. The newly revised curriculum begins with the global supply operations course—an immersion in the fundamentals of the global economy, the world of e-business and collaborative teams. Students are encouraged to concurrently enroll in the introductory courses on collaborative team skills and managing people in organizations during their

first semester. Throughout the program, understanding of theory and concepts of management are enhanced by experiencing and testing these concepts in skill-based exercises, case discussions, and team-based project work in the classroom and in the community.

The Management major prepares men and women for managerial leadership in a world characterized by the fast pace of e-business; demands for continuous process improvements to enhance the value chain; growing technological sophistication; racial, cultural, and gender diversity in the workforce; and the need for skills in communicating and working with people, managing projects, and managing change. Graduates with these skills are likely to be recruited by management consulting firms, high-tech firms, service and manufacturing firms, for-profit and not-for-profit organizations, and large and small organizations. These employers will recruit Management graduates for challenging trainee positions or entry-level management positions and immediately benefit from their preparation.

Program Requirements

The major in Management consists of the following courses:

MGT 320	Managing People in Organizations	.....3
MGT 410	Responsible Leadership	.....3
MGT 420	Performance Management	.....3
MGT 460	Strategic Leadership	.....3
OPM 450	Changing Business Processes	.....3
	Management electives*	.....6
Total		.....21

* Management electives must be selected from the approved list of Management electives.

All Management majors must complete the following specific courses that fulfill other pre-business or professional program requirements:

ENG 301	Writing for the Professions ¹ <i>L</i>	.....3
COM 225	Public Speaking <i>L</i>	.....3
	or COM 259 Communication in Business and the Professions ² (3)	
IBS 300	Principles of International Business ³ <i>G</i>	.....3
MGT 310	Collaborative Team Skills ⁴	.....3
Total		.....12

¹ ENG 301 is counted in the business core in place of BUS 301.

² COM 225 is recommended over COM 259. Either is counted in the college communication requirement.

³ IBS 300 is counted in the business core in place of the international business course.

⁴ MGT 310 is counted in place of MGT 300 in the business core.

Approved Electives for Management. The following electives have been approved for the management major.

ACC 316 Management Uses of Accounting3
 IBS 400 Cultural Factors in International Business.....3
 MGT 413 Compensation Management.....3
 MGT 423 Employee-Management Relations3
 MGT 433 Management Decision Analysis.....3
 MGT 440 Small Business and Entrepreneurship.....3
 MGT 445 Business Plan Development.....3
 MGT 459 International Management3
 MGT 484 Management Internship3
 MGT 494 Special Topics3
 MKT 302 Fundamentals of Marketing Management3
 OPM 484 Operations Management Internship.....3
 OPM 494 Special Topics3

Undergraduate Internships in Management. The Department of Management strongly supports the concept of student internships, believing all students can benefit from the experience. Undergraduate internships in management provide an opportunity for students to gain on-the-job work experience related to their academic preparation and to increase their employment potential at graduation. For more information about the management internship program and the application process, access the department internship Web site at www.cob.asu.edu/mgt/internships.cfm. Management majors may use a maximum of three semester hours of MGT 484 or OPM 484 for the major. Any additional internship credits may be used for nonmanagement electives.

Certificates. The Department of Management also strongly supports certification in key areas that strengthen the Management degree and help to differentiate individual students for recruiters. The certificates allow students to gain particular analytical skills related to their education and to increase their employment prospects. Certificates that are particularly relevant to Management majors include the Certificate in Quality Analysis (see www.cob.asu.edu/up/qa_certificate.cfm); the International Business Certificate (see www.cob.asu.edu/up/ipo/ibc.cfm); and the Certificate in Small Business and Entrepreneurship (see www.cob.asu.edu/up/smallbusiness.cfm).

Hot Links to Major in Management. More information, hot links to courses and faculty, and any updates on the undergraduate major in Management can be found on the Web at www.cob.asu.edu/mgt.

Major Proficiency Requirements

Students must receive grades of “C” or better in upper-division courses for the major. If a student receives a grade below “C” in any course in the major, the course must be repeated. If a second grade below “C” is received in either an upper-division course in the major already taken or in a different upper-division course in the major, the student is no longer eligible to take additional upper-division courses in that major.

Graduation Requirements

In addition to fulfilling major requirements, students seeking a degree must meet all university and college requirements. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 159](#).

GRADUATE PROGRAMS

The Department of Management participates actively in several master’s and Ph.D. programs, particularly the technology M.B.A., executive M.B.A., evening M.B.A., and day M.B.A. programs. For a detailed description of these programs, see the *Graduate Catalog*. Areas of specialization offered by the Department of Management for technology and evening M.B.A. students include process management in high technology organizations; globalization and diversity management; entrepreneurship and small business development; and management consulting.

The Department of Management has adopted a modular approach to Ph.D. education to improve our ability to deliver focused, high-quality seminars, give students more flexibility in defining their areas of expertise, increase their rate of quality publications, and enhance the quality of Ph.D. placements.

Hot Links to Graduate Programs. More information, hot links to courses and faculty, and any updates on the Department of Management areas of specialization for the M.B.A. programs can be found on the Web at www.cob.asu.edu/mba.

General information on the M.B.A. programs can be found on the Web at www.cob.asu.edu/mba.

More information, application procedures, hot links to faculty, and any updates on the Ph.D. program in Management can be found on the Web at www.cob.asu.edu/mgt/degree/phd.

MANAGEMENT (MGT)

MGT 300 Organizational Management and Leadership. (3)

fall, spring, summer
 Analysis of strategic, behavioral, and human resource management perspectives, including principles of strategic management and leadership of human resources. Prerequisites: a course in psychology (social and behavioral) and a course in sociology. Pre- or corequisite: SCM 300.

MGT 310 Collaborative Team Skills. (3)

fall, spring, summer
 Development of skills in managing and working in collaborative environments. Theories and applications in small group dynamics and team facilitation. Interactive, learner-centered. Prerequisite: professional program business student majoring in Management. Prerequisite for nonmajors: instructor approval. Corequisites: MGT 320, SCM 300.

MGT 320 Managing People in Organizations. (3)

fall, spring, summer
 Management processes, fundamentals of business-level strategy, individual difference issues, motivation and leadership of people in organizations. Lecture, discussion, interactive, learner-centered. Prerequisite: professional program business student majoring in Management. Prerequisite for nonmajors: instructor approval. Corequisites: MGT 310, SCM 300.

MGT 380 Management and Strategy for Nonmajors. (3)

fall, spring, summer
 Introduces the functions and applications of management in organizations, including controlling, decision making, leadership, motivation, planning, and social responsibility.

MGT 394 Special Topics. (3)

selected semesters

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

COLLEGE OF BUSINESS

MGT 410 Responsible Leadership. (3)

fall, spring, summer

Values, core beliefs, legal and ethical mandates and cultural norms as they apply to the conduct of organizations; application through a Service Learning project. Interactive, learner-centered. Prerequisites: MGT 310, 320.

MGT 413 Compensation Management. (3)

fall and spring

Establishing base and incentive pay with job analysis, job evaluation, and wage surveys; performance appraisal; conformance to compensation laws. Prerequisite: MGT 420.

MGT 420 Performance Management. (3)

fall, spring, summer

Development of skills and knowledge to lead associates effectively: hiring, developing, evaluating, retaining, and rewarding employees. Preparation for leadership roles. Lecture, discussion, interactive, learner-centered. Prerequisites: MGT 310, 320.

MGT 423 Employee-Management Relations. (3)

fall and spring

Employment relationship in union/nonunion setting. Employee-management rights/responsibilities, complaint administration, negotiations, union structure, and mock negotiations. Prerequisites: MGT 310, 320.

MGT 433 Management Decision Analysis. (3)

fall and spring

Decision-making concepts and methods in the private and public sectors and their application to organizational problems. Understanding of individual and group decision making. Prerequisites: only MGT 300 or both MGT 310 and 320.

MGT 440 Small Business and Entrepreneurship. (3)

fall and spring

Opportunities, risks, and problems associated with small business development and operation.

MGT 445 Business Plan Development. (3)

fall and spring

Develops a complete strategic business plan emphasizing the planning process undertaken by successful small business owners and entrepreneurs. Lecture, discussion, experiential exercise. Prerequisite: MGT 440.

MGT 459 International Management. (3)

fall, spring

Concepts and practices of multinational and foreign firms. Objectives, strategies, policies, and organizational structures for operating in various environments. Credit is allowed for only MGT 459 or IBS 494 ST: International Management or ST: Multinational Management. Prerequisite: IBS 300.

MGT 460 Strategic Leadership. (3)

fall, spring, summer

Systems theory of organizations, strategy formulation and administration in organizations, creating organizational cohesiveness, and leading change within organizations. Lecture, cases, exercises. Prerequisites: MGT 410, 420; completion of 100 hours including all business administration core requirements. Corequisite: OPM 450.

MGT 484 Management Internship. (3)

fall, spring, summer

Internships are strongly recommended to improve employment potential. The Department of Management internship coordinator must approve all internships to receive credit.

MGT 494 Special Topics. (1–4)

selected semesters

Current topics in management, primarily designed for business majors. See the *Schedule of Classes* for current offerings of courses at ASU Main and East. Topics may include the following:

- Applied International Management. (3)
- Cultural Factors in International Business. (3)
Prerequisite: IBS 300 (or 494) or MGT 300 (or 459).

MGT 499 Individualized Instruction. (1–3)

selected semesters

MGT 502 Organization Theory and Behavior. (3)

once a year

Important concepts and applications in management, including communication, decision making, group dynamics, leadership, motivation,

organization change, and organization design. Prerequisites: computer literacy; graduate degree program student.

MGT 522 Human Resource Activity and the Management of Diversity. (3)

once a year

Applies general and human resource management principles to work effectively with a diverse spectrum of people. Discussion, exercises. Prerequisite: M.B.A. degree program student.

MGT 523 Managing People for Service Advantage. (3)

once a year

Covers HRM practices that are conducive to building and maintaining internal customer equity and maximizing external customer service. Discussion, lecture, class exercises, cases. Prerequisite: M.B.A. degree program student.

MGT 559 International Management. (2–3)

once a year

Studies international and cross-cultural influences on management processes and development of global leadership capabilities for experienced management professionals. Discussion, company analyses, case analyses, lecture, guest speakers. Prerequisite: M.B.A. degree program student.

MGT 561 Advanced Integrated Project. (2–3)

once a year

Capstone project of the high-technology ASU M.B.A. Student teams develop business plans for new technology-based products. Online project. Prerequisite: M.B.A. degree program student.

MGT 570 Management Consulting. (3)

once a year

Develops understanding of how internal and external consultants add value. Prerequisites: ability to use common business software, including Microsoft Office; familiarity with spreadsheets.

MGT 589 Strategic Management. (3–4)

spring

Formulation of strategy and policy in the organization, emphasizing the integration of decisions in the functional areas. Prerequisite: M.B.A. degree program student.

MGT 591 Seminar. (1–12)

selected semesters

Topics may include the following:

- Business Plan Competition. (3)
- Entrepreneurship. (3)
- Human Resource Management and Service Delivery. (3)
- Human Resources and High-Technology Management. (3)
- Organizational Change and Business Process Consulting. (3)

MGT 593 Applied Projects. (3)

once a year

Cross-functional teams initiate (possibly implement) organizational change within a local firm. Lecture, discussion, experiential learning. Pre- or corequisite: all core courses in the M.B.A. program.

MGT 598 Special Topics. (3)

selected semesters

Graduate special topics chosen from human resources, strategic management, and international management, including special topics in international management in Asia or Europe. Prerequisite: instructor approval.

MGT 791 Seminar: Doctoral Seminar in Management. (1–12)

selected semesters

Short module seminars. Topics may include the following:

- Causal Modeling. (1)
- Change and Coping. (1)
- Cognition: Micro and Macro Perspectives. (1)
- Dysfunction in Workplace. (1)
- Economic Theories of the Firm. (1)
- Levels of Analysis. (1)
- Motivation and Attitudes. (1)
- Organizational Identity and Identification. (1)
- Organizational Learning and Organizational Identity. (1)
- Organizational Performance and Reward Systems. (1)
- Organizational Strategy and Culture. (1)
- Organizational Structure, Technology, and Information Systems. (1)
- Organizational Withdrawal. (1)
- Performance Appraisal. (1)
- Power and Organizational Change. (1)
- Selection. (1)

- Strategy Overview. (1)
- Teams, Groups, and Leadership. (1)
- The Craft of Research. (1)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

OPERATIONS MANAGEMENT (OPM)

OPM 450 Changing Business Processes. (3)

fall, spring, summer

Describes and analyzes business processes. Generates and evaluates alternatives. Creates improvement and implementation plans. Prerequisite: completion of 100 hours including all business administration core requirements. Pre- or corequisite: FIN 461 or MGT 460 or MKT 460 or SCM 479 or any other recommended business integrative course.

General Studies: L

OPM 484 Operations Management Internship. (3)

fall, spring, summer

Internships are strongly recommended to improve employment potential. The Department of Management internship coordinator must approve all internships to receive credit.

OPM 494 Special Topics. (1–4)

selected semesters

Current topics in operations management, primarily designed for business majors. See the *Schedule of Classes* for current offerings. Topics may include the following:

- Management of Technology. (3)
- Project Management. (3)

OPM 540 Quality and Productivity Management. (3)

once a year

Organizational factors influencing quality and productivity in the production of goods and services. Quality and productivity strategies, improvement programs, and measurement systems. Prerequisite: SCM 502 or instructor approval.

OPM 581 Management of Technology and Innovation. (3)

once a year

Technology life cycles, technology forecasting, new product development process, innovation teams, innovation best practices. Prerequisite: M.B.A. degree program student.

OPM 583 Project Management in Service Organizations. (2–3)

once a year

Project management planning, leadership, and control in service organizations. Discussion, lecture, class exercises, cases. Prerequisite: M.B.A. degree program student.

OPM 585 Facilities Design and Management of Technology. (3)

once a year

Decisions regarding management of facilities and technology for manufacturing and service firms. Facilities location, layout, process design, and selection.

OPM 586 High-Technology Project Management. (2–3)

fall

Project management processes for high-technology organizations, including planning, scheduling, team development, and control. Prerequisite: M.B.A. degree program student.

OPM 587 Project Management. (3)

once a year

Planning, scheduling, and controlling of projects in R & D, manufacturing, construction, and services. Project selection, financial considerations, and resource management. Prerequisite: QBA 502.

OPM 588 Strategic Project Management. (2–3)

fall

Overview of strategic project management processes, project planning and control, project portfolio management, resource allocation, management of strategic project partners. Discussion, lecture, class exercises, cases. Prerequisite: M.B.A. degree program student.

OPM 591 Seminar. (1–12)

once a year

Topics may include the following:

- High-Performance Management Processes. (3)
- Management of Technology. (3)
- Manufacturing Management in High Technology. (3)
- Manufacturing Strategy. (3)

- New Product and Process Development. (3)
- Technology/Project Management. (3)

OPM 593 Applied Projects. (3)

once a year

Cross-functional teams initiate (possibly implement) organizational change within a local firm. Lecture, discussion, experiential learning. Pre- or corequisite: all core courses in the M.B.A. program.

OPM 791 Doctoral Seminars in Operations and Production Management. (1–12)

selected semesters

Short module seminars. Topics may include the following:

- Management of Technology. (1)
- Manufacturing Strategy. (1)
- Operations Management. (1)
- Project Management. (1)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Marketing

www.cob.asu.edu/mkt

480/965-3621

BAC 460

Michael P. Mokwa, Chair

Professors: Bitner, Brown, Hutt, Jackson, Kumar, Lastovicka, Mokwa, L. Ostrom, Reingen, Schlacter, Ward

Associate Professors: Blasko, Nowlis, Sinha, Stephens, Walker

Assistant Professors: Hunter, Jarvis, Mandel, A. Ostrom

Senior Lecturer: Spiers

Study in the field of marketing involves analysis of how organizations plan, organize, deploy, and control their resources to achieve market objectives. Focus is placed on market forces, growth, and the deployment of firms in competitive markets and on the marketing strategy and tactics of the firm. Through the proper selection of courses, a student may prepare for a career in

1. selling and sales management;
2. services and retail marketing;
3. promotion and advertising management;
4. business to business marketing;
5. international marketing;
6. market research and planning;
7. general marketing management; or
8. retail management.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF BUSINESS

MARKETING—B.S.

The major in Marketing consists of 18 semester hours. The following courses must be included:

MKT 302 Fundamentals of Marketing Management	3
MKT 304 Consumer Behavior	3
MKT 451 Marketing Research	3
MKT 460 Strategic Marketing L	3
Total	12

To complete the major, students, in consultation with their faculty advisors, select six additional hours from among the following list of courses:

MKT 301 Principles of Advertising.....	3
MKT 310 Principles of Selling.....	3
MKT 311 Creative Strategy in Marketing	3
MKT 411 Sales Management	3
MKT 412 Promotion Management.....	3
MKT 424 Retail Management	3
MKT 430 Marketing for Service Industries	3
MKT 434 Business-to-Business Marketing.....	3
MKT 435 International Marketing	3
MKT 484 Internship	3
MKT 499 Individualized Instruction	1-3

Major Proficiency Requirements

Students must receive grades of “C” or higher in upper-division courses for the major. If a student receives a grade below “C” in any course in the major, this course must be repeated. If a second grade below “C” is received in either an upper-division course in the major already taken or in a different upper-division course in the major, the student is no longer eligible to take additional upper-division courses in the major.

GRADUATION REQUIREMENTS

In addition to fulfilling major requirements, students seeking a degree must meet all university and college requirements. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 159](#).

GRADUATE PROGRAMS

The department offers a distinctive M.B.A. curriculum in services marketing and management. For more information, see the *Graduate Catalog*.

MARKETING (MKT)

MKT 300 Principles of Marketing. (3)

fall, spring, summer

Role and process of marketing within the society, economy, and business organization. Prerequisite: ECN 112. Pre- or corequisite: SCM 300.

MKT 301 Principles of Advertising. (3)

fall, spring, summer

Advertising as a communications tool in marketing and business management. Survey of market segmentation, creative strategy, media, and effectiveness measures. Prerequisite: MKT 300.

MKT 302 Fundamentals of Marketing Management. (3)

fall, spring, summer

Marketing planning, implementation, and control by organizations, with special emphasis on identifying market opportunities and developing marketing programs. Prerequisite: MKT 300.

MKT 304 Consumer Behavior. (3)

fall, spring, summer

Applies behavioral concepts in the analysis of consumer behavior and the use of behavioral analysis in marketing strategy formulation. Prerequisite: MKT 300.

MKT 310 Principles of Selling. (3)

once a year

Basic principles underlying the selling process and their practical application in the sale of industrial goods, consumer goods, and intangibles. Prerequisite: MKT 300.

MKT 311 Creative Strategy in Marketing. (3)

selected semesters

Discussion, application and evaluation of creative concepts and strategies. Creation of a portfolio addressing distinctive advertising/marketing problems and opportunities. Prerequisites: MKT 301; nonbusiness majors must obtain department approval.

MKT 382 Advertising and Marketing Communication. (3)

fall and spring

Introduction for nonbusiness majors to the communication process within marketing and advertising. Creation and presentation of an ad campaign. Not open to business majors. Prerequisites: junior or senior standing; 2.00 ASU GPA.

MKT 394 Special Topics. (1-4)

fall

Topics may include the following:

- Applied International Marketing
- Global Markets. (3)
- Marketing and Selling. (3)

MKT 411 Sales Management. (3)

once a year

Applies management concepts to the administration of the sales operation. Prerequisite: MKT 302.

MKT 412 Promotion Management. (3)

once a year

Integrates the promotional activities of the firm including advertising, personal selling, public relations, and sales promotion. Prerequisite: MKT 302.

MKT 424 Retail Management. (3)

selected semesters

Role of retailing in marketing. Problems and functions of retail managers within various retail institutions. Prerequisite: MKT 300.

MKT 430 Marketing for Service Industries. (3)

once a year

Concepts and strategies for addressing distinctive marketing problems and opportunities in service industries. Current issues and trends in the service sector. Prerequisites: MKT 300, professional program business student.

MKT 434 Business-to-Business Marketing. (3)

once a year

Strategies for marketing products and services to commercial, institutional, and governmental markets. Changing industry and market structures. Prerequisite: MKT 302 or instructor approval.

MKT 435 International Marketing. (3)

once a year

Analyzes marketing strategies developed by international firms to enter foreign markets and to adapt to changing international environments. Prerequisites: MKT 302 (or instructor approval); professional program business student.

MKT 451 Marketing Research. (3)

fall and spring

Integrated treatment of methods of market research and analysis of market factors affecting decisions in the organization. Prerequisites with a grade of “C” or higher: MKT 302; QBA 221.

MKT 460 Strategic Marketing. (3)

fall and spring

Policy formulation and decision making by the marketing executive. Integrates marketing programs and considers contemporary marketing issues. Prerequisite: professional program business student. Prerequisites with a grade of “C” or higher: MKT 302, 304, 451.

General Studies: L

MKT 484 Internship. (3)

fall, spring, summer

Prerequisite with a grade of “B” or higher: MKT 302.

MKT 494 Special Topics. (1–4)

fall, spring, summer

Chosen from topics in the marketing and international marketing arenas to include seminars in international marketing in Europe and Asia.

Topics may include the following:

- Applied International Marketing

MKT 499 Individualized Instruction. (1–3)

fall, spring, summer

Topics of special interest chosen by students and agreed to by the departments to do independent studies with a professor acting as a guide.

MKT 502 Marketing Management. (3)

fall, spring, summer

Managing the marketing function; market and environmental analysis; marketing planning, strategy, and control concepts. Development and management of marketing programs. Prerequisite: ECN 502.

MKT 524 Services Marketing. (3)

once a year

Strategies for marketing services emphasizing the distinctive challenges and approaches that make marketing of services different from marketing manufactured goods. Prerequisite: MKT 502 (or its equivalent).

MKT 563 Marketing Strategy. (3)

selected semesters

Planning and control concepts and methods for developing and evaluating strategic policy from a marketing perspective. Prerequisite: MKT 502.

MKT 584 Internship. (3)

fall, spring, summer

MKT 591 Seminar. (1–12)

once a year

Offered in conjunction with the M.B.A. program (see M.B.A. program section). Topics may include the following:

- Business-to-Business Marketing. (3)
- Competitive Strategy for Services. (3)
- Consumer Behavior and Market Strategy. (3)
- Customer Satisfaction/Service Quality Measurement. (3)
- International Marketing. (3)
- Marketing in the Information Age. (3)
- New Product and Service Development. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)



Academic Advisor Joseph Behrens works with a marketing student.

Tim Trumble photo

Note: The minor in small business is in the process of transferring to the faculty of Business Administration in East College at ASU East.

Requirements

COB 380 Small Business Leadership	3
COB 381 Small Business Accounting and Finance	3
COB 382 Small Business Sales and Market Development	3
COB 383 Small Business Working Relationships	3
COB 384 Small Business Operations and Planning	3
Approved elective	3
Total	18

B.I.S. Concentration in Small Business (B.I.S. Majors Only)

The requirements for the small business concentration are identical to those for the minor in Small Business listed above. For B.I.S. degree requirements, see [“Bachelor of Interdisciplinary Studies,” page 114.](#)

Note: The B.I.S. concentration in small business is in the process of transferring to the faculty of Business Administration in East College at ASU East.

Certificate in Small Business and Entrepreneurship

A certificate in Small Business and Entrepreneurship is available to only business majors at ASU. The certificate requires 15 semester hours of classes, of which the following six semester hours must be included:

MGT 440 Small Business and Entrepreneurship.....	3
MGT 445 Business Plan Development.....	3

The remaining nine semester hours consist of three additional upper-division courses relevant to small business. A copy of the approved electives for business majors pursuing the Certificate in Small Business and Entrepreneurship is available in the Undergraduate Programs Office. To receive

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

Small Business Programs

www.cob.asu.edu/up/smallbusiness.cfm

480/965-3962

BAC 111

Emma J. Watson, Academic Director

Minor in Small Business

The minor in Small Business is available to nonbusiness majors and consists of 18 semester hours, with five required courses and one approved elective. Three *Ca\$hing In™* seminars are required to graduate. National and local experts present *Ca\$hing In™* seminars on-campus late in the afternoons three times per semester. COB 380 Small Business Leadership is a prerequisite or corequisite for the other courses. All GPA and semester hour requirements apply as listed.

the certificate, students must complete the specified business courses with a grade of “C” or higher.

Department of Supply Chain Management

www.cob.asu.edu/scm

480/965-6044

BA 446

Joseph R. Carter, Chair

Professors: J. Carter, P. Carter, Ellram, Guntermann, Hendrick, Jennings, Kirkwood, Pearson, Smeltzer

Associate Professors: Aranda, Brooks, Butler, Choi, Davis, Dundas, Keefer, Leonard, Lock, Lynch, Maltz, Siferd, Verdini

Assistant Professors: Clinton, Krause, Petersen, Rabinovich

Research Professor: Monczka

Adjunct Professor: Cavinato

Senior Lecturer: Langdon

The faculty in the Department of Supply Chain Management offer courses in four separate areas: legal and ethical studies, management communication, real estate, and supply chain management.

Legal and Ethical Studies

The legal and ethical studies faculty offer the undergraduate and the Master of Business Administration core requirements in legal and ethical studies. In addition, the faculty offer specialized courses in law and ethics relating to health care, insurance, real estate, and professional sports.

Management Communication

The management communication faculty serve the College of Business by teaching the B.S. core requirement BUS 301 Fundamentals of Management Communication.

SUPPLY CHAIN MANAGEMENT—B.S.

A “supply chain” consists of all of the entities necessary to transform ideas into delivered products and services. Supply chain management directs and transforms a firm’s resources in order to design, purchase, produce, and deliver high-quality goods and services. As goods and services flow from supplier to producer to customer to final user, supply chain management is particularly concerned with the interfaces between organizations. One way to view supply chain management is as the management of linkages between organizations.

The competitive and global nature of today’s business environment dictates that this direction and transformation take place in a way that is as efficient and effective as possi-

ble. Continuing emphases on time, cost, and quality improvements have sharpened the need to coordinate and cooperate with trading partners around the world to achieve results that allow customers to be successful. Thus, supply chain management focuses on the integration of activities across several companies to manage the flow of products, services, people, equipment, facilities, and other resources. Supply chain management is also concerned with recycling, reuse, and final disposal of products.

The major in Supply Chain Management consists of the following courses:

SCM 345 Logistics Management	3
SCM 355 Supply Management	3
SCM 432 Planning and Control Systems for Supply Chain Management.....	3
SCM 440 Quality Management and Measurement	3
SCM 455 Research and Negotiation L.....	3
SCM 479 Supply Chain Strategy	3
Total	18

REAL ESTATE—B.S.

The Real Estate faculty offer a unique, integrated, one-year program designed for the student’s last year of college. This innovative and award-winning program emphasizes student involvement with real estate executives on projects in the Phoenix metropolitan area. Students work in teams to develop their analytical, communication, technology, and team skills.

The program is organized around five aspects of real estate: brokerage/management, development, financing, investments, and market analysis. With broad interdisciplinary perspective, emphasis on team work, and involvement in projects, students may pursue careers in land development, investment analysis, appraisal, property management, brokerage, and mortgage finance.

Successful completion of the program satisfies the requirements of the major based on the following courses:

LES 411 Real Estate Law	3
REA 300 Real Estate Analysis.....	3
REA 331 Real Estate Finance.....	3
REA 401 Real Estate Appraisal	3
REA 441 Real Estate Land Development.....	3
REA 456 Real Estate Investments	3
Total	18

In addition to the courses listed for the major, students in the program also satisfy the requirement for BUS 301 Fundamentals of Management Communication (listed in the business core) and BUS 451 Business Research Methods (listed as a major support course). These courses are integrated into the major, not taken separately. Because of the emphasis on teamwork, interaction with business professionals, and completion of all requirements within a year, students may enter the program in only the fall semester. Classes meet from 9 to 11:45 A.M. Monday through Thursday in a classroom assigned to the Real Estate program.

MAJOR PROFICIENCY REQUIREMENTS

Students must receive grades of “C” or higher in upper-division courses for the major. If a student receives a grade

below “C” in any course in the major, this course must be repeated. If a second grade below “C” is received in either an upper-division course in the major already taken or in a different upper-division course in the major, the student is no longer eligible to take additional upper-division courses in that major.

GRADUATION REQUIREMENTS

In addition to fulfilling major requirements, students seeking a degree must meet all university and college requirements. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 159](#).

BUSINESS (BUS)

BUS 301 Fundamentals of Management Communication. (3)

fall, spring, summer

Written and oral communication in a management context. Prerequisite: CIS 200. Prerequisite with a grade of “C” or higher: ENG 102.

General Studies: L

BUS 394 Special Topics. (1–4)

selected semesters

See current *Schedule of Classes* for offerings of courses at ASU East.

BUS 451 Business Research Methods. (3)

selected semesters

Methods of collecting information pertinent to business problem solving, including design, collection, analysis, interpretation, and presentation of primary and secondary data.

General Studies: L

BUS 494 Special Topics. (1–4)

selected semesters

BUS 502 Managerial Communication. (1–3)

fall and spring

Analyzes various business problems, situations, and development of appropriate communication strategies. Prerequisite: MGT 502.

BUS 591 Seminar. (3)

selected semesters

Selected managerial communication topics.

BUS 594 Study Conference or Workshop. (3)

selected semesters

BUS 700 Research Methods. (3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56](#).

LEGAL AND ETHICAL STUDIES (LES)

LES 305 Legal, Ethical, and Regulatory Issues in Business. (3)

fall, spring, summer

Legal theories, ethical issues, and regulatory climate affecting business policies and decisions. Lecture, Web-based delivery.

LES 308 Business and Legal Issues in Professional Sports. (3)

selected semesters

Economic structure of professional sports and application of contract, antitrust, arbitration, and labor laws in the industry. Prerequisites: 2.00 GPA; junior standing.

LES 380 Consumer Perspective of Business Law. (3)

fall and spring

Role of law as it affects society. Uses case studies to present principles that govern business and consumers. Lecture, television. Prerequisites: 2.00 GPA; junior standing.

LES 411 Real Estate Law. (3)

once a year

Legal and ethical aspects of land ownerships, interests, transfer, finance development, and regulations of the real estate industry.

LES 532 Negotiation Agreements. (3)

fall and spring

Develops negotiation competencies to build partnerships and create lasting agreements with internal/external customers, suppliers, work

teams, and external constituencies. Lecture and substantial student interaction through team exercises.

LES 579 Legal and Ethical Issues for Business. (3)

fall and spring

Studies legal and ethical components of business decisions; self-regulation and social responsibility as strategies. Prerequisites: ACC 503; FIN 502; MGT 502; MKT 502.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56](#).

QUANTITATIVE BUSINESS ANALYSIS (QBA)

For more QBA courses, see “Department of Economics.”

QBA 505 Management Science. (3)

selected semesters

Quantitative approaches to decision making, including linear programming and simulation, with emphasis on business applications. Prerequisites: MAT 210; QBA 502.

QBA 508 Product and Service Innovation. (3)

fall and spring

Develops strategies for innovation in products and services. Prerequisites: basic algebra; basic probability concepts; elementary knowledge of Windows.

QBA 550 Intermediate Decision Analysis. (3)

selected semesters

Quantitative decision analysis methods for business decision making under uncertainty, including decision diagrams, subjective probabilities, and preference assessment. Prerequisites: MAT 210; QBA 502.

QBA 591 Seminar. (1–12)

fall and spring

Current topics in quantitative business analysis primarily designed for technology, evening, and executive M.B.A. students. Elective courses for these programs may include the following possible topics:

- Decision Models. (3)
- Decision Models for Consulting. (3)
- Management Problem Solving. (3)
- Strategic Decision Analysis. (3)

QBA 593 Applied Project. (1–12)

selected semesters

QBA 599 Thesis. (1–12)

selected semesters

QBA 791 Doctoral Seminars in Quantitative Business Analysis. (1–12)

selected semesters

The Department of Supply Chain Management has adopted a modular approach to Ph.D. education. Topics may include the following:

- Chaos Theory. (1)
- Risk Analysis. (1)
- Strategic Decision Making. (1)
- Systems Dynamics. (1)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56](#).

REAL ESTATE (REA)

REA 300 Real Estate Analysis. (3)

once a year

Applies economic theory and analytical techniques to real estate markets. Topics include law, finance, appraisal, market analysis, investments, development. Prerequisite: professional program business student.

REA 331 Real Estate Finance. (3)

once a year

Legal, market, and institutional factors related to financing proposed and existing properties. Emphasizes current financing techniques and quantitative methods. Prerequisites: FIN 300; professional program business student.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

COLLEGE OF BUSINESS

REA 380 Real Estate Fundamentals. (3)

fall and spring

Real estate for the student/consumer with an emphasis on the applied aspects of each area of real estate specialization. Not open to Real Estate majors. Prerequisites: 2.00 ASU GPA; junior standing.

REA 401 Real Estate Appraisal. (3)

once a year

Factors affecting the value of real estate. Theory and practice of appraising and preparation of the appraisal report. Appraisal techniques. Prerequisites: REA 300; professional program business student.

REA 441 Real Estate Land Development. (3)

once a year

Neighborhood and city growth. Municipal planning and zoning. Development of residential, commercial, industrial, and special purpose properties. Prerequisites: REA 300; professional program business student.

REA 456 Real Estate Investments. (3)

once a year

Analyzes investment decisions for various property types. Cash flow and rate of return analysis. Prerequisites: FIN 300; professional program business student.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

SUPPLY CHAIN MANAGEMENT (SCM)

SCM 300 Global Supply Operations. (3)

fall, spring, summer

Resources and information to create and deliver products globally. Interfirm systems and industry supply chains. Customer, producer, and employee perspectives. Lecture, discussion. Fee. Prerequisites: ACC 240; CIS 200; QBA 221.

SCM 301 Supply Chain Management. (3)

selected semesters

Examines the purchasing, materials, and logistics management areas. Presents techniques for acquiring, storing, processing, and moving material inventory. Prerequisite: professional program business student.

SCM 345 Logistics Management. (3)

fall and spring

Logistics and supply chain activities emphasizing integration of transportation, inventory, warehousing, facility location, customer service, packaging, and materials handling. Prerequisite: professional program business student majoring in Supply Chain Management. Pre- or corequisite: SCM 300.

SCM 355 Supply Management. (3)

fall and spring

Management of the supply function, including organization, procedures, supplier selection, quality, inventory decisions, and price determination. Prerequisite: professional program business student majoring in Supply Chain Management. Pre- or corequisite: SCM 300.

SCM 405 Urban Transportation. (3)

selected semesters

Economic, social, political, and business aspects of passenger transportation. Public policy and government aid to urban transportation development. Prerequisite: upper-division standing or instructor approval.

SCM 432 Planning and Control Systems for Supply Chain Management. (3)

fall and spring

Planning and control systems for product and service flows in supply chain: production planning, master scheduling, MRP, ERP, inventory management. Lab. Fee. Prerequisites: SCM 300; professional program business student. Pre- or corequisites: SCM 345, 355.

SCM 440 Quality Management and Measurement. (3)

fall and spring

Quality management and measurement, relationships with suppliers and customers, quality awards, certifications, programs, tools for process improvement and cost analyses. Prerequisites: SCM 300; professional program business student majoring in Supply Chain Management.

SCM 455 Research and Negotiation. (3)

fall and spring

Current philosophy, methods, techniques for conducting strategic and tactical supply chain research and negotiations. Includes supplier price and cost analysis. Prerequisite: professional program business student majoring in Supply Chain Management. Prerequisite with a grade of "C" or higher: SCM 355.

General Studies: L

SCM 460 Carrier Management. (3)

selected semesters

Analyzes carrier economics, regulation, management, and rate-making practice; evaluates public policy issues related to carrier transportation. Prerequisite: both SCM 345 and upper-division standing or only instructor approval.

SCM 463 Global Supply Chain Management. (3)

once a year

Supply chain activities in international business with special emphasis on management of transportation, global sourcing, customs issues, and facility location in a global environment.

SCM 479 Supply Chain Strategy. (3)

fall and spring

Integrated supply chain strategies synthesizing supply management, production, logistics, and enterprise systems. Provides a comprehensive perspective of supply chain management. Prerequisite: professional program business student majoring in Supply Chain Management. Prerequisites with a grade of "C" or higher: SCM 345, 355. Pre- or corequisites: SCM 432, 440, 455 (one of these courses must be taken as a prerequisite with a grade of "C" or higher).

SCM 502 Operations and Supply Management. (3)

fall and spring

Contemporary management issues, including environmental, project, and supply chain management; new product development; quality control; TQM. Prerequisite: M.B.A. degree program student.

SCM 532 Supply Chain Cost and Design Issues. (3)

once a year

Strategic design and development of supply chains. Focus on cost-management tools applied to supply chain design and supplier management.

SCM 541 Logistics in the Supply Chain. (3)

once a year

Critical issues for customer perception of supply chain performance, including inventory planning, transportation, warehousing, information technology, and integrated logistics service.

SCM 545 Supply Chain Continuous Improvement Strategies. (3)

spring

Leading-edge strategies such as reengineering high-performance teams and expert systems for continuous improvement of the supply chain. Seminar.

SCM 591 Seminar. (1–12)

fall and spring

Topics may include the following:

- Buyer/Supplier Relations. (3)
- Decision Models for Supply Chain Management. (3)
- E-commerce. (3)
- Global Supply Chain Management. (3)
- Operations Planning and Control. (3)
- Supply Chain Management Fundamentals. (3)

SCM 791 Doctoral Seminar. (1–12)

once a year

Topics may include the following:

- Complexity and Chaos Theory for Supply Chain Management. (3)
- Logistics Management. (3)
- Purchasing and Materials Management. (3)
- Supply Chain Management and Organizational Theories. (3)
- Uncertainty in Supply Chain Management. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

College of Education

coe.asu.edu/coe

Eugene E. Garcia, Ph.D., Dean

Division of Curriculum and Instruction	194
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PURPOSE

For students, choosing a professional college is an important step because it establishes the foundation on which a career will be built. The College of Education provides a stimulating, challenging forum wherein scholars and practitioners interact in the discovery and mastery of the science and art of educational endeavors. This balanced approach, in which research and practice are viewed as essential and complementary, enables the college to produce superior educators.

The purposes of the faculty of the College of Education are as follows:

1. to engage in the scholarly, scientific, and professional study of education;
2. to prepare competent professionals who will serve in a variety of critical educational roles;
3. to develop productive scholars who will make significant contributions to the educational literature and to the quality of educational practice; and
4. to serve the education profession at the local, national, and international levels.

In accord with these purposes, the College of Education is committed to producing quality scholarship and research and to excellence in teaching.

Information about the college can be found on the Web at coe.asu.edu/coe.

ORGANIZATION

The College of Education is organized into three divisions. These divisions and their academic program areas are listed below:

Division of Curriculum and Instruction. The Initial Teacher Certification (ITC) program is the largest program in the college, designed to prepare students for teaching positions in early childhood education, elementary education, secondary education, and special education. Support experiences also come from the Division of Psychology in Education and the Division of Educational Leadership and Policy Studies. The program is a blend of on-campus and school-based methods courses. All programs involve professional school-based internships with experienced teachers.

For specific program descriptions, see "[Bachelor of Arts in Education](#)," page 187.

The faculty in Curriculum and Instruction are grouped according to their interests into one or more of 10 research clusters. These clusters include curriculum studies; early childhood; equity, diversity, and citizenship; gender; language and literacy; mathematics education; middle level interest; science education; special education and teacher preparation; and professional development. For more information on research clusters and graduate programs, refer to the *Graduate Catalog*.

Division of Educational Leadership and Policy Studies

Educational Administration and Supervision
Educational Policy Studies
Higher and Postsecondary Education
Social and Philosophical Foundations

Division of Psychology in Education

Counseling Psychology
Counselor Education
Educational Psychology
Learning
Lifespan Developmental Psychology
Measurement, Statistics, and Methodological Studies
School Psychology
Educational Technology

Services to students and the community are provided through various centers and offices.

Southwest Center for Education Equity and Language Diversity. This center conducts, supports, and promotes research, scholarship, and innovative practice in the linguistic education of minority students in public schools. The center's primary focus is on equity aspects of education in Arizona, especially as they relate to non-native English-speaking children and youth. Research, scholarly discourse, and program development activities, aimed at improving language education for minority students in public schools, serve the purpose of informing public policy in Arizona and the larger U.S. Southwest region. For more information, call 480/965-7134.

Education Policy Studies Laboratory. Located within the College of Education, the Education Policy Studies Laboratory (EPSL) conducts and coordinates original research in areas such as student performance standards, assessment, curriculum, and commercialism in schools.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF EDUCATION

College of Education Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Early Childhood Education	B.A.E.	—	Division of Curriculum and Instruction
Elementary Education	B.A.E.	Multilingual/multicultural education	Division of Curriculum and Instruction
Secondary Education	B.A.E.	Academic specializations: biological sciences, business, chemistry, Chicana and Chicano studies, economics, English, family and human development,* French, geography, German, history, mathematics, physical education, physics, political science, social studies, Spanish	Division of Curriculum and Instruction
Selected Studies in Education*	B.A.E.	—	College of Education
Special Education	B.A.E.	—	Division of Curriculum and Instruction

* Applications are not being accepted at this time.

EPSL disseminates its analyses and reports to policy makers and educators and also concentrates on providing the public with readable accounts of research.

EPSL houses two research units – the Commercialism in Education Research Unit (CERU), which is the only national academic research center dedicated to schoolhouse commercialism; and the Education Policy Research Unit (EPRU), which conducts original research and facilitates implementation of educational innovations.

For more information, contact Alex Molnar, director and professor of Educational Leadership and Policy Studies, EDB L1-01, call 480/965-1886, or access the laboratory's Web site at asu.edu/educ/epsl.

Center for Indian Education. The Center for Indian Education serves as a service agency to Native American communities, school districts, and students attending ASU. The center also conducts research on Indian education in Arizona and other states with American Indian populations. For more information, call 480/965-6292.

Office of Student Services. The Office of Student Services assists undergraduate and postbaccalaureate students who are interested in teacher preparation programs. Areas of service include: new student recruitment, academic advising, Initial Teacher Certification admission, academic support, scholarships, retention, teacher placement, and certification assistance. Advice regarding program of study validation, declaration of graduation, petitions to standards, student communication, and high school and community college articulation/relations is also available. For more information, call 480/965-5555.

Office of Professional Field Experiences. Part of the Office of Student Services, the Office of Professional Field Experiences places all teacher preparation students in public schools and similar institutions for internships and student teaching. This office monitors students' progress in their field experiences, provides assistance for pre-service teachers who need intervention to improve performance, sponsors courses for mentor teachers, and conducts research on

student teacher performance in the field. For more information, call 480/965-6255.

Counselor Training Center. The Counselor Training Center provides counseling for ASU students, staff, and the community at large regarding personal, relationship, and career development issues. Counseling is conducted by graduate students in counseling and counseling psychology under the supervision of licensed psychologists. For more information, call 480/965-5067.

Other Units. Other units within the college offering specialized research and educational services include the College of Education Preschool and Technology-Based Learning and Research.

TEACHER EDUCATION

Programs that prepare students for teacher certification by the state are available to both the undergraduate pursuing a first degree and the individual with a college degree in a noneducation field.

Undergraduate students interested in teacher certification in art, music, or dance enroll through programs offered by the Herberger College of Fine Arts. These students must also meet the same eligibility requirements for admission to the Initial Teacher Certification (ITC) for certification, and a formal application must be submitted to the ITC program. For more information, see [“Initial Teacher Certification Professional Program Admission,” page 187](#).

Undergraduate programs leading to the Bachelor of Arts in Education degree are described in the text that follows. For descriptions of graduate degree programs, see the Graduate Catalog. For more information, see the [“College of Education Graduate Degrees and Majors” table, page 189](#).

ADMISSION

Preprofessional Admission

Students admitted to ASU during their freshman and sophomore years may also be admitted to the College of Education with preprofessional status. Preprofessional stu-

dents should seek advising within the College of Education through its Office of Student Services, EDB L1-13.

Admission to ASU with preprofessional status in the College of Education does not guarantee admission to the ITC program. Admission to the ITC is a separate process.

Initial Teacher Certification Professional Program Admission

Students are eligible for consideration for admission to the ITC program, if they meet the following criteria:

1. admission to ASU Main as a degree seeking student;
2. a minimum 2.50 cumulative GPA (ASU GPA and transfer GPA combined);
3. completion of a minimum of 56 credit hours by starting date of the program;
4. completion of ENG 101 and 102, general studies MA and L or SQ/SG requirements with a grade of “C” or higher (courses in progress do not satisfy this requirement);
5. a special application with additional supporting materials (an emphasis on prior experience working with the age group of the certification area sought, paid or volunteer, is vital).

Admission is competitive and not guaranteed to all who satisfy the minimum admission criteria.

Some academic units have additional requirements. Students seeking admission to K–8 or secondary education programs (7–12) should consult the Office of Student Services (480/965-5555) to determine if there are additional admission requirements for these teaching fields.

Application deadlines for most ITC programs are February 1 for fall admission; September 1 for spring admission. The Apprentice Teacher Program (ATP) and Integrated Certification in Teacher Education (INCITE) offer additional admission deadlines. For more information, see [“Apprentice Teacher Program \(ATP\),” page 188](#), and [“Integrated Certification in Teacher Education \(INCITE\),” page 188](#). Access the Office of Student Services Web site at coe.asu.edu/osa to download an application.

Transfer Students

To be considered for admission to the ITC program, transfer students must first be formally admitted to ASU (see “Transfer Applicants,” page 60). Transfer students must attend a Transfer Advising Session (TAS). These sessions are provided in groups according to specialization area and conducted by academic advisors. During the TAS, information is provided regarding the university General Studies requirement, course selection and registration in the College of Education, and admission requirements for the Initial Teacher Certification Program. To sign up for a Transfer Advising Session, call the Office of Student Services, 480/965-5555. ASU Undergraduate Admissions should receive the application for admission to ASU, transcripts, and other required information at least five months before the ITC application deadline date for the desired ITC admission semester.

Students should access the ASU Education Transfer Guides for optimal course selection on the Web at www.asu.edu/provost/articulation.

ADVISING

All students pursuing teaching certificates are strongly encouraged to seek early advising from the Office of Student Services in the College of Education, 480/965-5555. Careful planning and early advising in developing an approved program of study are essential if teacher candidates are to complete certification and graduation requirements within the typical 120-semester-hour undergraduate program.

Mandatory Advising. Transfer students are required to meet with an academic advisor before registering for their first semester classes. Freshmen must meet with an advisor before registering for each of their first two semesters.

DEGREES

Bachelor of Arts in Education

The faculty in the College of Education offer the Bachelor of Arts in Education (B.A.E.) degree. See the [“College of Education Baccalaureate Degrees and Majors” table, page 186](#), for more information. Candidates for the Bachelor of Arts in Education degree must complete an Initial Teacher Certification (ITC) program offered by the College of Education. Graduates of this program are able to demonstrate proficiency in specified knowledge areas or skills, including the following:

1. principles and application of effective instruction;
2. classroom organization and management;
3. content or subject matter;
4. specific curriculum and teaching strategies;
5. interrelationship of culture and schooling in a multicultural society;
6. human development;
7. communication skills;
8. theories of learning and motivation;
9. assessment and evaluation; and
10. computer literacy.

Each student in the ITC program selects one of 10 programs that provide specialized education and preparation. The program areas are as follows:

1. Apprentice Teacher Program (ATP)
2. Multilingual/Multicultural Education Program
3. Diné Teacher Education Program
4. Early Childhood Interprofessional Program (birth–third grade)
5. Elementary Education Partnership Program
6. Secondary Education (SED) (7–12)
7. Special Education (SPE)
8. Teaching for a Diverse Future (TDF)
9. Integrated Certification in Teacher Education (INCITE) (postbaccalaureate program only)

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF EDUCATION

10. Teacher Education for Arizona Mathematics and Science (TEAMS) (postbaccalaureate program only).

Apprentice Teacher Program (ATP). ATP is a fast-track certification option that is completed in one calendar year, January through December, with all course work based in the participating schools. The program conforms to the public school calendar, thus extending the academic year for ASU students by eight weeks. Students are engaged in K–5 classroom experiences and ASU classes from 8 a.m. to 4 p.m., Monday through Friday for 46 weeks. The theoretical premises that undergird the ATP program might be called “practice informed by theory” as students are immersed in both “school” and “teacher” cultures throughout their program. Admission for spring semester only. For more information, call 480/965-5555.

Multilingual/Multicultural (ML/MC) Program. The ML/MC program is a four-semester sequence offered in “blocks” with focused field requirements in a professional development school and other bilingual or ESL settings. The bilingual education option prepares teachers to teach elementary students whose primary language is Spanish or a Native American language spoken in Arizona. The ESL option prepares teachers to teach elementary school students from any language background who are still acquiring English as an additional language. Methods courses are divided into BLE or ESL sections, although some course work is planned together to promote collaboration. The program meets Arizona requirements for an elementary education teaching certificate with an endorsement in bilingual education or English as a second language. For more information, call 480/965-5555.

Diné Teacher Education Program. The Diné Teacher Education Program is a collaborative effort between Diné College and the ASU College of Education. All course work is done at the Diné College campus (Tsaile, Arizona) and all field placements are in Navajo bilingual classrooms in Navajo schools. The program is designed to prepare Navajo Teachers to teach in Navajo communities of the Navajo Nation. Graduates qualify for an initial teaching certificate for elementary education and an Arizona endorsement in bilingual education. For more information, call 928/724-6819.

Early Childhood Interprofessional Program (ECD) (Birth–Third Grade). The early childhood program has a core focus on interprofessional education that includes cross-training. Students work with members of other disciplines and collaborate between and across community programs and university departmental structures to promote a broad-based professional preparation. Students participate in schools and community agencies that also operate cross-professionally. The early childhood faculty and its community partners work from a child-sensitive, or constructivist approach that emphasizes constructivist theory, multiple points of view, emergent learning, and a developmental, integrative approach to classroom practice. For more information, call 480/965-5555.

Elementary Education Partnership Program (EED). Students in the Elementary Education Partnership Program work in three different elementary schools, one each semester, prior to their student teaching. Each semester, or block, includes methods courses that are taught on an elementary school campus through an internship of six hours each week. Students become an integral part of the life of the elementary school, and assignments link the classroom observations and experiences to the content of the methods courses. Faculty from each of the school sites coordinate assignments and activities to ensure a wide range of learning experiences; some assignments are continued across semesters. Optional course content is in place to qualify all students in this program for a provisional ESL certificate. For more information, call 480/965-5555.

Secondary Education (SED) (7–12). In order to integrate teacher education preparation with the secondary education requirement for an academic specialization, the College of Education maintains connections with academic departments across the university. Each program semester requires an internship in the schools, and some courses are taught in the field. Graduates are eligible for secondary certification in grades 7–12 in one of 25 subject specializations. Fine arts and physical education majors receive a K–12 endorsement. For more information, call 480/965-5555.

Special Education (SPE). The SPE leads to certification in K–12 special education for children with learning disabilities, mild mental retardation, or emotional/behavioral disorders. This program provides preparation in each disability area; however, the student only qualifies for a certificate in one area, which is determined by the area of student teaching placement. A school internship is required for each semester. For more information, call 480/965-4602.

Teaching for a Diverse Future (TDF). TDF enrolls one group of students every other year in the fall semester. The program is based on premises derived from work in anthropology, language acquisition, and cognatist and social interactionist views of the development of mathematical and scientific concepts and curriculum theory. Students work in two elementary schools that honor this perspective throughout the program. Methods courses are distributed across three semesters, and each semester’s field experience includes a full-time, two-week immersion. Certification options include a certificate in elementary education, an elementary certificate with an endorsement in bilingual education, or an elementary certificate with an endorsement in ESL. The program is available only in specific fall semesters. For more information, call 480/965-0999

Integrated Certification in Teacher Education (INCITE). Integrated Certification in Teacher Education is a flexible program that prepares working adults for teaching. This school-based program offers both secondary education and elementary education options, including a middle school endorsement. All course work is offered during the evening and on weekends. INCITE is designed for postbaccalaureate students only. For more information, call 480/965-5555.

College of Education Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Counseling	M.C.	—	Division of Psychology in Education
Counseling Psychology	Ph.D.	—	Division of Psychology in Education
Counselor Education	M.Ed.	—	Division of Psychology in Education
Curriculum and Instruction	M.A.	Bilingual education, early childhood education, elementary education, English as a second language, Indian education, language and literacy, mathematics education, science education, secondary education, social studies education	Division of Curriculum and Instruction
	M.Ed.	Bilingual education, early childhood education, elementary education, English as a second language, Indian education, language and literacy, mathematics education, professional studies, science education, secondary education, social studies education	Division of Curriculum and Instruction
	Ed.D.	Bilingual education, curriculum studies, early childhood education, elementary education, ³ English as a second language, Indian education, language and literacy, mathematics education, science education, secondary education, ³ social studies education	Division of Curriculum and Instruction
	Ph.D. ¹	Art education, ² curriculum studies, early childhood education, elementary education, English education, exercise and wellness education, ⁴ language and literacy, mathematics education, music education, physical education, science education, special education	Interdisciplinary Committee on Curriculum and Instruction
Educational Administration and Supervision	M.Ed., Ed.D.	—	Division of Educational Leadership and Policy Studies
Educational Leadership and Policy Studies	Ph.D.	—	Division of Educational Leadership and Policy Studies
Educational Psychology	M.A., M.Ed.	—	Division of Psychology in Education
	Ph.D.	Learning; lifespan developmental psychology; measurement, statistics, and methodological studies; school psychology	Division of Psychology in Education
Educational Technology	M.Ed., Ph.D.	—	Division of Psychology in Education
Higher and Postsecondary Education	M.Ed., Ed.D.	Higher education	Division of Educational Leadership and Policy Studies
Social and Philosophical Foundations of Education	M.A.	—	Division of Educational Leadership and Policy Studies
Special Education	M.A.	—	Division of Curriculum and Instruction
	M.Ed.	Gifted, mildly disabled, multicultural exceptional, severely/multiply disabled	Division of Curriculum and Instruction

¹ Program is administered in collaboration with the Graduate College.

² This concentration is administered in collaboration with the Herberger College of Fine Arts.

³ Applications are not being accepted at this time.

⁴ Doctoral courses for this interdisciplinary program administered by ASU Main are offered by ASU East.

COLLEGE OF EDUCATION

Teacher Education for Arizona Mathematics and Science (TEAMS). TEAMS is a year-long, middle grades program leading to secondary certification, middle school endorsement, and a master's degree specializing in mathematics, science, and technology. It is based around technology, field-based experiences, internships, and course work.

For more information, call 480/965-5555.

Initial Teacher Certification Endorsements

Elementary Education

bilingual education

English as a second language

Secondary Education

certification in specific academic specializations

K–12 endorsements in fine arts and physical education

Special Education

emotionally disabled

learning disabilities

mental retardation

ITC students in areas other than Special Education complete a common core of courses as well as courses specific to the area or option selected. Early Childhood Education and Elementary Education prepare students for certification by the state in grades K–8. Students who select these majors develop the knowledge and skills needed to teach children from a variety of language, cultural, and developmental backgrounds. The Early Childhood Education concentration prepares students to work in infant programs, preschools, and grades K–3. The Elementary Education Multilingual/Multicultural (ML/MC) program prepares students to work in bilingual/ESL settings in grades K–8. The Special Education major prepares students to teach mildly handicapped students in diverse settings and for certification in grades K–12 in MR, ED, or LD.

Secondary Education offers programs that prepare students for certification by the state in specific academic subjects in grades 7–12. Students with teaching majors in the Herberger College of Fine Arts earn the appropriate bachelor's degree from that college.

Courses for the academic specialization are determined by the faculty in the academic discipline. Therefore, students with majors in Secondary Education have two academic advisors: one in the college and department of the academic specialization and one in the Office of Student Services in the College of Education. For more information, refer to [“Academic Specializations,” page 191](#).

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements. For more information, see “University Graduation Requirements,” page 79.

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35 hours of approved course work as described in “General Studies,” page 83. Note that all three General Studies awareness areas are required. General Studies courses are listed in the “General Studies Courses” table, page 86, in the course

descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*.

Preprofessional students should complete as many of the General Studies courses as possible before admission to the ITC program. Students are encouraged to consult with an academic advisor to ensure they comply with all necessary requirements.

COLLEGE DEGREE REQUIREMENTS

A minimum of 120 semester hours are required for the B.A.E. degree in these categories:

1. academic specialization (secondary education);
2. college core requirements (Early Childhood Education, Elementary Education, and Special Education majors only); and
3. ITC.

The College of Education expects its degree candidates to meet individual course assessment standards, field-experience observation criteria, courses required for teacher certification, and other proficiency standards and performance criteria required to demonstrate knowledge and skill in the areas listed under [“Bachelor of Arts in Education,” page 187](#).

Program Requirements

Progress toward the B.A.E. degree involves meeting university, college, and division requirements. The degree program also includes courses and academic content required for teacher certification by the State of Arizona. Students seeking certification in one of the fine arts must complete degree requirements in the Herberger College of Fine Arts and specified courses through the ITC program.

Declaration of Graduation

A declaration of graduation must be filed during the first semester of enrollment in the ITC program. Preprofessional students completing 87 hours (the university limit for registering without a program of study) who have not been admitted to the program are provided a registration waiver by the College of Education. See “University Graduation Requirements,” page 79.

MAJOR REQUIREMENTS

Academic Specialization

Courses in the academic specialization give students a greater depth of knowledge in one academic area. A Secondary Education major completes 36 to 60 hours, depending upon the area, in the subject in which the student wishes to be certified; fine arts may require more. Refer to the pages shown in the [“Academic Specializations” table, page 191](#).

College of Education Core Requirements

The programs that prepare students for teacher certification by the state in elementary education, early childhood education, and special education require students to complete semester hours selected from specific core courses pertinent to the teaching area. Teacher candidates should confer with an academic advisor in the Office of Student Services regarding course selection.

Initial Teacher Certification program

The Initial Teacher Certification (ITC) program is a four-semester sequential program consisting of 36 to 58 semester hours. Ranging from nine to 16 hours per semester, the courses for one semester must be completed before enrolling in the next semester. In other words, courses for one semester usually may not be taken at the same time as those scheduled for another semester. In addition to ITC courses, students continue completing the General Studies requirement and core requirements or academic specialization requirements through the third semester of the program.

Selected Studies in Education—B.A.E.

Applications are not being accepted for the major in Selected Studies in Education at this time.

Field Experience Requirements

In addition to course work, students admitted to the ITC program are required to participate in directed field experiences during each of the four semesters of the program. The field experiences progress from short-term observation and participation to long-term supervised practice teaching.

Students should expect these field experiences to be above and beyond the class times listed in the *Schedule of Classes* for each semester. Such field experiences typically take place in public schools throughout the greater Phoenix area. Regular attendance is required during all field experiences. Students should plan extra travel time and expect to confer with placement teachers and field facilitators before or after scheduled field experiences. To meet field experience requirements, students must plan to have their own transportation and *be available during regular school hours*.

Teaching is a highly demanding and extraordinarily complex profession. Students desiring to become teachers must maintain academic standards and demonstrate requisite qualifications for successful teaching, including effective interpersonal skills, basic communication skills, appropriate professional conduct, and satisfactory performance during field experience assignments.

Observation and participation assignments in the schools during first, second, and third semester field experience placements are designed to prepare students for the highly demanding performance-based student teaching during semester four.

Student Teaching. The culminating field experience, called *student teaching*, occurs in the fourth semester of the ITC program and is a full-day, full-semester obligation. Student teaching is usually possible only during fall and spring semesters.

Admission to Student Teaching (Semester IV). To be admitted to student teaching, a student must have attained a high level of professional standards in previous field experience assignments and meet the following requirements:

1. be in good standing as defined in this policy;
2. completion of any provisional admissions requirement;
3. have no incompletes in ITC courses;
4. complete all ITC courses with a grade of “C” or better; and

5. have an approved declaration of graduation on file.

There are additional requirements for certain programs. Secondary Education majors may have no more than two required courses remaining in the academic specialization and have no more than two courses to complete in General Studies. Students must also receive approval from their specialization advisor.

Elementary and Special Education majors must have completed all core courses, all methods courses, and may only have two additional courses to complete.

Academic Specializations

Academic Specialization	Page
Art education ¹	282
Biological sciences	354
Business	—
Chemistry	361
Chicana and Chicano Studies	364
Dance education ¹	297
Economics ²	—
English	369
Family and human development ³	379
French	403
Geography	383
German	403
History	391
Journalism ³	495
Mathematics	420
Music education ⁴	302
Physical education	375
Physics	438
Political science	450
Social studies	464
Spanish	403

¹ Art education and dance education concentrations are under corresponding B.F.A. majors.

² See an advisor for details.

³ Applications are not being accepted at this time.

⁴ Students focus on either the choral-general music or instrumental music concentration under the B.M. degree.

Students must complete the application to student teach and receive approval from the Office of Professional Field Experiences (EDB L1-14, 480/965-6255) at least 12 weeks before the beginning of the student teaching term. Student teachers must adhere to the calendar, regulations, and philosophy of the schools in which they are placed. Beginning and ending dates for student teaching are determined by the Office of Professional Field Experiences in cooperation with the placement schools. Because student teaching is on a full-day schedule, 8 a.m. to 4 p.m. Monday through Friday for 15 consecutive weeks, student teachers are strongly encouraged to avoid extra activities and course work that

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF EDUCATION

would interfere with the heavy demands placed upon them while student teaching.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges, including the College of Education, to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning. The Extended Campus also offers a variety of professional continuing education and community outreach programs.

For more information, see "ASU Extended Campus," page 703, or access the Web site at www.asu.edu/xed.



The ASU Downtown Center plays a key role in the ASU Extended Campus concept.

Tim Trumble photo

ACADEMIC STANDARDS

Preprofessional Status

Students admitted to the College of Education on *preprofessional status* are subject to the general standards of academic good standing of the university. However, students who maintain standards of academic good standing during their freshman and sophomore years do not necessarily qualify for admission to any teacher preparation program offered by the College of Education.

Professional Program Status

Students admitted to the ITC program within the College of Education must maintain academic standards and demonstrate requisite qualifications for successful teaching, including sound physical and mental health, interpersonal skills, basic communication skills, a positive attitude, appropriate professional conduct, and satisfactory performance in field experiences. Because ITC standards are higher than those for the university, a student who is suspended from the ITC program may still be eligible to enroll in other non-ITC courses.

A copy of the Retention and Disqualification Policy for the ITC program may be obtained from the Office of Student Services, EDB L1-13.

College of Education faculty and placement teachers will routinely review preservice teachers' professional attributes and characteristics to determine if the student is making satisfactory progress at both midterm and final. To maintain good standing, students will need to demonstrate appropriate professional demeanor in field placements and college classes.

Students demonstrating behaviors or characteristics that make it questionable whether they can succeed in the teaching profession are reviewed by the director of the Office of Professional Field Experiences and the assistant dean of the Office of Student Services. If necessary, a review panel composed of faculty members who have had direct involvement with the student is convened. Following this review, the student may be referred to the Division of Curriculum and Instruction Standards and Appeals Committee. The committee's review may result in a decision to disqualify the student or the specification of conditions under which continued participation is permitted, i.e., probation.

Students who wish to appeal decisions of the Division of Curriculum and Instruction Standards and Appeals Committee may do so in writing to the dean of the college or the Main Campus Standards Committee. Any exceptions to the retention and disqualification policies and procedures must be approved by the Division of Curriculum and Instruction Standards and Appeals Committee and the dean of the College of Education.

Postbaccalaureate Initial Teacher Certification (ITC) Programs

Postbaccalaureate programs prepare students for certification by the state and are designed for those who hold a bachelor's degree in an area other than education. The college offers postbaccalaureate programs in early childhood education, elementary education, secondary education, and special education. (Special education students must qualify for and be concurrently admitted to a master's degree pro-

gram in special education. For more information, call 480/965-4602). Information on postbaccalaureate programs is available through the Office of Student Services, EDB L1-13 (480/965-5555). The office provides academic advising and information regarding requirements, procedures, and deadline dates.

A student who wishes to be considered for entry must meet the College of Education admission requirements for postbaccalaureate programs:

1. an earned bachelor's degree from an accredited institution;
2. a cumulative GPA of 2.50 or higher for the last 60 semester hours of credit earned;
3. submission of a completed application form and supporting materials by the appropriate deadline dates during the semester before admission; and
4. completion of an academic specialization for secondary education (consult the Office of Student Services, EDB L1-13).

Admission is competitive and not guaranteed to all who satisfy the minimum admission criteria.

Some academic units have additional requirements. Students seeking admission to K–8 or secondary education programs (7–12) should consult the Office of Student Services in the College of Education (480/965-5555) to determine if there are additional admission requirements for their teaching fields.

Application deadlines vary. Information and applications can be downloaded via the Web at coe.asu.edu/osa.

Student Teaching

Students in a postbaccalaureate program for initial teacher certification must file student teaching applications early in the semester before the student teaching term. To be accepted for student teaching, students must:

1. attain a cumulative ASU GPA of 2.50 or higher in required professional education course work;
2. complete all required professional education course work other than one preapproved course that can be taken concurrently with student teaching (Secondary Education students must also receive approval from their academic specialization advisors);
3. remove all academic deficiencies such as grades of “D,” “E,” or “I” before placement; and
4. obtain a final approval from the Office of Professional Field Experiences (this review considers appropriate professional conduct and satisfactory performance in field settings and academic achievement).

Certification for Teaching

The curricula for both the undergraduate and postbaccalaureate ITC programs meet the requirements for teacher certification in the State of Arizona.

In addition to the course requirements specified in this catalog, there are other requirements for teacher certification mandated by the State of Arizona including the U.S. Constitution and Arizona Constitution requirement. Some teaching areas have specific math, science, and fine arts requirements. Each student must pass the Arizona Educator Proficiency Assessment, which consists of professional knowledge and subject knowledge tests.

Because these requirements vary over program areas and may be changed at any time, students are encouraged to maintain close contact with the Office of Student Services regarding the most current state certification requirements.

The College of Education is approved by the Arizona Department of Education for the preparation of elementary, secondary, and special education teachers. Students who complete an approved program of study and meet all graduation requirements of the university and the college are recommended for certification to the Arizona Department of Education. The Office of Student Services maintains information about current certification requirements in Arizona and other states. (This information includes fingerprint clearance and passing the Arizona Educator Proficiency Assessment.)

The College of Education also offers courses for certified teachers leading to special endorsements by the Arizona Department of Education. Of special interest are endorsements in the areas of bilingual education, English as a second language (ESL), middle school education, reading, and school library science. The bilingual education endorsement is required of all teachers specifically responsible for providing bilingual instruction. The ESL endorsement is required of all teachers specifically responsible for providing ESL instruction. Students should contact the Office of Student Services for information and advising regarding teaching concentrations or special teaching endorsements.

Independent Learning Course Work for Credit

It is the general policy of the College of Education not to accept course credit for *courses in education* taken through Independent Learning. Exceptions to this policy may be approved if the Independent Learning course work has been approved in advance of enrollment in the course by the student's advisor, respective program coordinator, and division director. In all such cases, an appropriate rationale must be submitted with the request to enroll.

COLLEGE OF EDUCATION (COE)

See the *Graduate Catalog* for the COE courses.

Division of Curriculum and Instruction

www.ed.asu.edu/coe/candi

480/965-1644

ED 426

Carlos Julio Ovando, Director

Professors: Appleton, Baker, Barone, Bitter, Christie, Edelsky, Faltis, Flores, Gryder, Guzzetti, Hudelson, McGowan, Ovando, Piburn, Rutherford, Searfoss, Stahl, Staley, Surbeck, Swadener, Tobin, Zucker

Associate Professors: Anijar, Arias, Benavides, Blumenfeld-Jones, Cohen, Cohn, Di Gangi, Gomez, McCoy, Middleton, Rader, Smith, Vallejo

Assistant Professors: Baek, Fischman, Lamorey, MacSwan, Rolstad, Trujillo, Young

Clinical Associate Professor: Garcia

Clinical Assistant Professor: Christine

Lecturers: Bardsley, Burstein, Cocchiarella, Glass, Hansen, Kortman, Poynor, Spanias, Vogel

Initial Teacher Preparation Programs

- Apprentice Teacher Program (ATP)
- Diné Teacher Education Program
- Early Childhood Interprofessional Program (birth–third grade)
- Elementary Education Partnership Program
- Integrated Certification in Teacher Education (INCITE) (for postbaccalaureate students only)
- Multilingual/Multicultural (ML/MC) Program
- Secondary Education (SED) (7–12)
- Special Education (SPE)
- Teacher Education for Arizona Mathematics and Science (TEAMS) (for postbaccalaureate students only)
- Teaching for a Diverse Future (TDF)

Degrees: B.A.E., M.A., M.Ed., Ed.D., Ph.D.

DEGREES

Bachelor of Arts in Education—B.A.E.

The faculty in the Division of Curriculum and Instruction offer several undergraduate academic programs designed to prepare persons to teach effectively in early childhood, elementary, secondary, and special education settings. Concentrations available at the undergraduate level include bilingual education, English as a second language (ESL), and Indian education. Programs in special education lead to Arizona teacher certification in the mentally disabled, emotionally disabled, learning disabilities, and early childhood

education for the disabled. Programs of study leading to special endorsements by the Arizona Department of Education are bilingual education, ESL, middle school education, reading, and school library science.

GRADUATE PROGRAMS

The faculty in the Division of Curriculum and Instruction offer several graduate degrees in a number of majors.

See the [“College of Education Graduate Degrees and Majors” table, page 189](#), and the *Graduate Catalog*.

BILINGUAL EDUCATION (BLE)

BLE 335 Language Diversity in Classrooms. (3)

fall and spring

Issues in sociolinguistics and language variation in schools with a focus on classroom interaction, instruction, curriculum, assessment, and language policy. Lecture, discussion, lab. Corequisites: RDG 414, 481.

BLE 400 Principles of Language Minority Education. (3)

fall and spring

Overview of philosophical and theoretical foundations of bilingual education and ESL models of instruction. Other topics include significant legislative and judicial measures. Lecture, small group discussion. Prerequisite: ITC admission.

BLE 409 Language-Sensitive Content Teaching. (3)

fall and spring

For preservice students seeking K–8 certification and the endorsement in bilingual education or ESL. Lecture, discussion. Prerequisite: ITC admission.

BLE 414 Reading Methods, Management, and Assessment in BLE/ESL Settings. (3)

fall and spring

Teaching and assessing reading with emphasis on integrated curriculum and literature-based instruction for BLE/ESL learners. Strategies for decoding (phonics), vocabulary, comprehension, and content area reading. Lecture, lab, discussion. Prerequisite: ITC admission.

BLE 420 Science Methods, Management, and Assessment in BLE/ESL Settings. (3)

fall and spring

Methods, management strategies, and assessment procedures for teaching science to BLE/ESL students in elementary schools. Lecture, lab, discussion. Prerequisite: ITC admission.

BLE 433 Language Arts Methods, Management, and Assessment in Elementary BLE/ESL Settings. (3)

fall and spring

Social nature of oral and written, first- and second-language acquisition and congruent teaching, management, assessment practices in BLE/ESL settings. Lecture, lab, discussion. Prerequisite: ITC admission.

BLE 455 Social Studies Methods, Management, and Assessment in Elementary BLE/ESL Settings. (3)

fall and spring

Examines methods, classroom management strategies, and assessment techniques for social studies instruction in elementary BLE/ESL classes. Lecture, lab, discussion. Prerequisite: ITC admission.

BLE 478 Student Teaching in the Elementary School. (3–15)

fall and spring

Supervised teaching in the area of specialization. Synthesized experience in curriculum instruction and classroom management in a BLE/ESL setting. Fee. Prerequisite: ITC admission.

BLE 480 Mathematics Methods, Management, and Assessment in Elementary BLE/ESL Settings. (3)

fall and spring

Teaching, management, and assessment of mathematics in K–8 BLE/ESL settings. Lecture, lab, discussion. Prerequisite: ITC admission.

BLE 481 Reading Practicum. (3)

fall and spring

Applies concepts from BLE 414. Supervised school-based experiences in teaching reading to BLE/ESL students. Prerequisite: ITC admission.

BLE 496 Field Experience. (0)

fall and spring

Applies course content in a bilingual/ESL school setting. Emphasizes observation, pupil management, planning and delivering instruction, and assessment. Fee. Prerequisite: ITC admission.

BLE 498 Pro-Seminar. (1–7)

fall and spring

Small-group study and research for advanced students within their majors. Prerequisites: ITC admission; major status in the department (or instructor approval).

BLE 511 Introduction to Language Minority Education. (3)

once a year

Historical, philosophical, theoretical, and pedagogical foundations of language minority education in the United States.

BLE 514 Bilingual/Multicultural Aspects of Special Education. (3)

spring

Theories and issues related to the education of bilingual and culturally diverse exceptional children.

BLE 515 Instructional Methods for Bilingual Students. (3)

fall

Introduces general dual language teaching approaches and assessment strategies. Focuses on the effective teaching of limited-English-proficient populations. Prerequisite: BLE 511.

BLE 520 ESL for Children. (3)

spring

Examines approaches to second language development and assessment for children congruent with recent research in second language acquisition in children. Prerequisite: BLE 511.

BLE 521 Primary/Elementary Communication Arts in Bilingual Education. (3)

spring

Examines bilingual/biliterate development of elementary school children, bringing together native and second language, oral language, and literacy development findings with educational practices. Prerequisite: BLE 511.

BLE 522 Literacy/Biliteracy Development. (3)

fall

Acquaints teachers with first- and second-language literacy research, practice, and assessment in elementary school settings (Spanish-English emphasis). Lecture, discussion. Cross-listed as RDG 522. Credit is allowed for only BLE 522 or RDG 522. Prerequisite: BLE 511.

BLE 524 Secondary Sheltered ESL Content Teaching. (3)

fall

Teaching and assessing ESL adolescents in the content areas with an emphasis on integrating language acquisition principles with content learning. Lecture, small group work. Corequisite: BLE 541.

BLE 528 Social Studies for Bilingual/ESL Teachers. (3)

spring

Provides language and instructional methodologies and assessment strategies relevant to bilingual/multicultural students in social studies content delivered in Spanish and English. Prerequisite: BLE 511.

BLE 533 Literacy in Secondary BLE/ESL Settings. (3)

spring

Examines first- and second-language literacy research, practice, and assessment across content areas in secondary school settings. Lecture, discussion. Cross-listed as RDG 533. Credit is allowed for only BLE 533 or RDG 533. Prerequisite: BLE 511.

BLE 535 Sociolinguistic Issues in Bilingual Education. (3)

fall

Survey of major theoretical issues (e.g., language situations, communicative competence, language attitudes) interrelating language, social processes, and bilingual education. Prerequisite: BLE 511.

BLE 541 Nature of Bilingualism/Second Language Acquisition. (3)

once a year

Bilingual and second language acquisition, with emphasis on children and adolescents. Stresses cognitive, social, and cultural aspects. Prerequisite: BLE 511.

BLE 543 Bilingual Education Models. (3)

once a year

Bilingual education programs in other countries; analysis of political, social, economic, and educational implications; practice in planning bilingual education curricula. See also offerings under MCE, SED, SPE, and SPF. Prerequisite: BLE 511.

BLE 561 Parent Involvement in Language Minority Education Programs. (3)

fall and spring

Examines issues, approaches, and strategies for improving parental and community involvement in the schooling of language minority children and youth. Prerequisite: BLE 511.

BLE 565 Literature for Hispanic Youth/Literatura para Jóvenes Hispanoparlantes. (3)

spring

Selects, analyzes, and utilizes literature for Hispanic and Spanish-speaking children and adolescents. Cross-listed as LIS 565. Credit is allowed for only BLE 565 or LIS 565.

BLE 580 Practicum. (1–6)

fall and spring

Provides for practical application in school settings of principles of BLE/ESL. Prerequisite: instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

BUSINESS EDUCATION (BUE)

BUE 480 Teaching Business Subjects. (3)

spring

Organization and presentation of appropriate content for business subjects in the secondary school.

BUE 481 Technology in Business and Vocational Education. (3)

spring in even years

Emerging curricula and instructional technology in business and vocational education. Lecture, hands-on computer instruction.

BUE 501 Principles of Business Education. (3)

fall

History, philosophy, principles, and objectives of business and distributive education.

BUE 502 Organization and Management of Cooperative Programs. (3)

fall

Work-study programs for business occupations in high schools and community colleges.

BUE 503 Competency-Based Business and Vocational Education. (3)

spring

Development and administration of competency-based individualized programs in business and vocational education.

BUE 505 Current Literature in Business and Vocational Education. (3)

spring

Critical analyses, generalizations, and trends in business and vocational education.

BUE 506 Information Processing for Business and Vocational Teachers. (3)

summer

Development of curriculum and strategies for teaching information processing; hardware/software evaluation and equipment acquisition techniques in business and vocational education.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

COLLEGE OF EDUCATION

CURRICULUM AND INSTRUCTION (DCI)

DCI 302 Principles and Applications of Effective Instruction. (3) *fall and spring*

Principles of teaching identified by research on teaching effectiveness. Application of principles to classroom practice. Prerequisites: EDP 303; education major.

DCI 396 Field Experience I. (0) *fall and spring*

First-semester ITC. Observation and limited participation in a school setting. Focus on observation of development, learning, management, instruction, assessment, and motivation. Requires 4 hours per week. Fee. Corequisite: semester I of the ITC.

DCI 397 Field Experience II. (0) *fall*

Second-semester ITC. Observation and limited participation in a school setting. Focus on observation of development, learning, management, instruction, assessment, and motivation. Requires 6 hours per week. Fee. Corequisite: semester II of the ITC.

DCI 510 Teacher as Researcher. (3) *fall, spring, summer*

Introduces teacher research as a new research genre; offers teachers guidance on planning and conducting research on their practice. Lecture, workshop.

DCI 591 Seminar. (1–12) *selected semesters*

DCI 701 Curriculum Theory and Practice. (3) *fall and spring*

Curriculum theory and practice as a field of study. Its current orientations and applications, modes of inquiry, and community of scholars and practitioners. Seminar. Corequisite: master's-level curriculum course.

DCI 791 Interdisciplinary Research Seminar. (1–12) *selected semesters*

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

EARLY CHILDHOOD EDUCATION (ECD)

ECD 300 Principles of Interprofessional Collaboration. (3) *fall and spring*

Focuses on the dispositions, experiences, knowledge, and skills necessary for interprofessional collaboration designed for young children and their families. Prerequisite: ITC admission.

ECD 310 Educational Environments: Infants/Toddlers. (3) *fall, spring, summer*

Organizing, planning, and implementing developmentally appropriate educational practices to provide optimal learning environments for infants and toddlers in group settings.

ECD 314 The Developing Child. (3) *fall, spring, summer*

Examines all aspects of development of children, birth through age 8, with implications for teachers and parents. Requires classroom observation and participation.

ECD 315 Classroom Organization and Guidance in the Early Years. (2) *fall and spring*

Develops understanding and application of classroom organization and management principles, strategies, and procedures. Prerequisite: ITC admission.

ECD 322 Communication Arts in Early Childhood Education. (3) *fall*

Factors affecting language development. Setting conditions for learning in listening, speaking, reading, and writing. Prerequisites: ENG 213 (or its equivalent); postbaccalaureate certification program admission.

ECD 378 Practicum in Early Childhood Development. (3) *fall and spring*

Provides a field-based experience in selected early childhood settings (outside the public schools before student teaching). Prerequisite: ECD 314.

ECD 400 Inquiry Into Teaching and Learning. (3) *fall and spring*

Foundational basis of the early childhood field, including historical roots, current practices, ethics, models of teaching, and application in early childhood settings. Prerequisite: ITC admission.

ECD 401 Integrated Curriculum and Assessment: Social Studies and Creative Arts. (3) *fall and spring*

Presents materials, techniques, and resources for a balanced program of social studies and aesthetic expression appropriate for children in preschool through 3rd grade, with emphasis on the integrated curriculum. Prerequisite: ITC admission.

ECD 402 Integrated Curriculum and Assessment: Math and Science. (3) *fall and spring*

Emphasizes developmentally appropriate educational strategies and instructional techniques in teaching mathematics and science to children in preschool through 3rd grade, within an integrated curriculum approach. Prerequisite: ITC admission.

ECD 403 Educational Environments: Preschool/Kindergarten/Primary Grades. (3) *fall and spring*

Focuses on interactions between young learners and the physical and social environments encountered in preschool, kindergarten, and primary settings. Prerequisite: ITC admission.

ECD 404 Teaching Reading and Language Arts in Early Childhood. (3) *fall and spring*

Development of oral and written language from birth to age 8. Describes developmentally appropriate educational strategies for promoting growth in speaking, listening, reading, and writing. Prerequisite: ITC admission.

ECD 405 Practicum in Teaching Reading and Language Arts in Early Childhood. (2) *fall and spring*

Supervised experience teaching reading and language arts at the preschool, kindergarten, and primary-grade (1–3) levels. Developmentally appropriate strategies to promote young children's speaking, listening, reading, and writing abilities. Prerequisite: ITC admission.

ECD 414 Interprofessional Practicum. (3) *fall and spring*

Investigates services and agencies available in the local community to parents of children with special needs. Practical experiences with an intermittent seminar format. Dispositions, knowledge, experiences, and skills necessary for interprofessional collaboration across multiple agencies and programs. Prerequisite: ITC admission.

ECD 496 Field Experience. (0) *fall and spring*

Applies course content in a preschool through 3rd grade setting. Emphasizes observation, focus on child-centered curriculum, planning and delivering instruction, and assessment. Fee. Corequisite: ECD 404.

ECD 501 Interprofessional Collaboration. (3) *fall*

Dispositions, knowledge, experiences, and skills necessary for interprofessional collaboration required of professionals who work with multineed families with young children. Preparation to implement effective strategies and workable plans to support interprofessional collaboration for providing integrative services to young children and their families.

ECD 521 Primary/Elementary Communication Arts in Bilingual Education. (3) *spring*

Examines bilingual/biliterate development of elementary school children, bringing together native and second language, oral language, and literacy development findings with educational practices. Prerequisite: BLE 511.

ECD 522 Developmental Social Experiences in Early Childhood Education. (3) *fall*

Materials, techniques, aesthetic expression, creative activities, and values in the integrated curriculum.

ECD 525 Emergent Literacy. (3)

spring

Examines recent research on oral language and literacy development and effective strategies for teaching language and literacy in prekindergarten to grade 3. Lecture, discussion. Cross-listed as RDG 525. Credit is allowed for only ECD 525 or RDG 525.

ECD 527 Mathematics in Early Childhood Education. (3)

fall

Theory and practice in the use of manipulative materials for teaching mathematics to preschool and primary grade children. Prerequisite: ECD 402 (or its equivalent).

ECD 544 Play Education. (3)

spring and summer

Theories of play and the educational implications of each. Practical applications at the early childhood level.

ECD 555 Modern Practices in Early Childhood Education. (3)

fall and summer

Trends and practices, instructional and resource materials, and methods and techniques in early childhood education.

ECD 601 Theories and Issues in Early Childhood Education. (3)

fall and summer

Current theories and issues in early childhood education. Presents issues of early childhood best practices, policy, theory, research, and evaluation that are of significance to the early childhood professional. Highlights building on the child development conceptual framework as related to theory and practice.

ECD 733 Social and Emotional Development. (3)

once a year

Inquiry into the social and emotional development dynamics in children, such as peer relationships, self-concept, and parenting processes, with implications for teachers.

ECD 744 Evaluative Procedures: Young Children. (3)

spring

Critical examination and use of developmentally appropriate evaluative procedures for children from birth through age 8.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

ELEMENTARY EDUCATION (EED)

EED 334 Children's Literature and Elementary School Curriculum. (3)

fall and spring

Selecting and using children's literature in various curriculum areas in elementary school classrooms with diverse student populations. Lecture, discussion, lab. Cross-listed as RDG 334. Credit is allowed for only EED 334 or RDG 334. Prerequisite: professional program admission. Corequisite: DCI 396 or EED 496.

EED 420 Science Methods, Management, and Assessment in the Elementary School. (3)

fall and spring

Examines philosophies of science and how these relate to the implementation, management, and assessment of science teaching. Lecture, discussion, lab. Fee. Prerequisite: ITC admission.

EED 433 Language Arts Methods, Management, and Assessment in the Elementary School. (3)

fall and spring

Theory on the social nature of oral and written language and congruent teaching, management, and assessment practices. Lecture, discussion, lab. Corequisite: EED 455.

EED 444 Organizing the Classroom Culture. (1)

fall and spring

Examines how teachers can create and maintain a classroom learning community within the context of an elementary school program. Discussion, workshop, lab. Prerequisite: ITC admission.

EED 455 Social Studies Methods, Management, and Assessment in the Elementary School. (3)

fall and spring

Teaching methods, classroom management strategies, and assessment techniques for social studies instruction in the elementary grades. Lecture, discussion, lab. Prerequisite: ITC admission.

EED 478 Student Teaching in the Elementary School. (3–15)

fall and spring

Supervised teaching in the area of specialization. Synthesized experience in curriculum, instruction, and classroom management. Fee. Prerequisite: ITC admission.

EED 480 Mathematics Methods, Management, and Assessment in the Elementary School. (3)

fall and spring

Beginning course in the teaching, management, and assessment of mathematics in grades K–8. Lecture, discussion, lab. Prerequisite: ITC admission.

EED 496 Field Experience. (0)

fall and spring

Applies course content in a K–8 school classroom. Emphasizes observation, pupil management, planning and delivery of instruction, and assessment. Fee.

EED 498 Pro-Seminar. (1–7)

selected semesters

Topics may include the following:

- Language and Learning. (3)

General Studies: L

EED 511 Principles of Curriculum Development. (3)

fall, spring, summer

Contemporary curriculum theories. Curriculum as an interrelated entity. Principles of conceiving and effecting change.

EED 526 Communication Arts in the Elementary School. (3)

spring and summer

Critical examination of school language arts teaching, focusing on theoretical assumptions regarding oral- and written-language development.

EED 528 Social Studies in the Elementary School. (3)

fall and summer

Problems and trends of current programs. Development of a balanced and articulated program of social studies.

EED 529 Science in the Elementary School. (3)

spring

Problems and trends of current programs. Development of a balanced and articulated science program.

EED 530 Outdoor/Environmental Education. (3)

summer

Use of various outdoor settings as laboratories for classroom-related experience, study, observation, inquiry, research, and recreation. Includes strategies and materials for developing environmental literacy.

EED 537 Mathematics in the Elementary School. (3)

fall and summer

Contemporary mathematics teaching. Content, materials, and approaches to instruction.

EED 538 Teaching Social Studies with Literature. (3)

fall and summer

Develops the rationale, resources, and strategies for adopting a literature-based approach to social studies teaching in grades K–8. Lecture, discussion, cooperative learning. Prerequisite: EED 455 (or its equivalent).

EED 578 Student Teaching in the Elementary School. (3–15)

fall and spring

Supervised teaching for postbaccalaureate students, synthesized experience in curriculum, instruction, and classroom management. Fee. Prerequisites: completion of 21 hours of identified course work from an approved program of study; GPA of 2.50 (postbaccalaureate nondegree) or 3.00 (postbaccalaureate degree); approval of the Office of Professional Field Experiences.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF EDUCATION

EED 581 Diagnostic Practices in Mathematics. (3)

fall and spring

Specific skills in diagnosing and treating children's learning difficulties in mathematics. Includes practicum experiences, both on and off campus, in identifying strengths and weaknesses and initial remediation. Prerequisite: instructor approval.

EED 584 Internship. (1–12)

selected semesters

EED 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Using Math Manipulatives/Elementary Schools
Fee.
- Using Math Manipulatives/Middle Schools
Fee.

EED 720 Language in Education. (3)

once a year

Sociolinguistic seminar on language issues in education, including language acquisition, classroom interaction, language attitudes, relation language, and class-gender ethnicity.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

INDIAN EDUCATION (IED)

IED 401 Navajo Language and Culture I. (3)

fall

History and culture are added components to the introduction of language reading, writing, and speaking. Emphasizes basic communication and appreciation of history and culture. Lecture, discussion.

IED 403 Navajo Language and Culture II. (3)

spring

Emphasizes communication, grammar, and sentence structures. Translations, reading, writing, and discussions of proper and slang language. Includes cultural activities. Lecture, discussion. Prerequisite: IED 401.

IED 410 History of American Indian Education. (3)

fall and spring

Philosophical and historical review of the development of American Indian education policies in both traditional and contemporary society. *General Studies: SB, C, H*

IED 422 Methods of Teaching Indian Students. (3)

spring

Philosophies, methodologies, and materials used in Indian education. Examines local and tribal classroom materials. Experimentation with new teaching concepts. Prerequisite: IED 410.

IED 430 Issues in Language and Literacy of Indigenous Peoples. (3)

spring

Examines issues, policies, theoretical foundations, and practices of indigenous peoples and other language minority communities from a sociolinguistics and language reclamation perspective.

General Studies: HU/SB, C

IED 433 Counseling the Indian Student. (3)

fall

Techniques and methods used in counseling, with emphasis on understanding Indian cultures and values. Experimentation with new counseling concepts. Prerequisite: IED 410.

IED 444 The Role of Governments in Native Education Policy and Administration. (3)

fall

Examines the interrelationship of federal Indian policy, federal/state/tribal law, and tribal sovereignty as they have shaped American Indian education. Analyzes administrative practices and personnel, program and fiscal management, and resources as they reflect the historic and present influence of this triad of factors. Credit is allowed for only IED 444 or 544. Lecture, seminar.

General Studies: SB

IED 460 Yaqui History and Culture. (3)

fall

Yaqui history and culture ranging from precontact to the present. Larger themes of Yaqui identity, belief systems, family, traditions, community, resistance, dispersion, and survival.

General Studies: HU/SB, C, H

IED 498 Pro-Seminar. (1–7)

fall and spring

Topics may include the following:

- Navajo Language. (3)
Designed for Navajo and non-Navajo-speaking students who have little or no knowledge of the Navajo language in its written form. Emphasizes development of reading, writing, and speaking skills.

IED 500 Administration and Management of Indian Education Programs. (3)

fall

Emphasizes educational leadership research and practice in the schooling of American Indian students. Examines effective practices.

IED 510 History of American Indian Education. (3)

fall and spring

Philosophical and historical review of the development of American Indian education policies in both traditional and contemporary society.

IED 530 Issues in Language and Literacy of Indigenous Peoples. (3)

spring

Examines issues, policies, theoretical foundations, and practices of indigenous peoples and other language minority communities from a sociolinguistics and language reclamation perspective.

IED 544 The Role of Governments in Native Education Policy and Administration. (3)

fall

Examines the interrelationship of federal Indian policy, federal/state/tribal law, and tribal sovereignty as they have shaped American Indian education. Analyzes administrative practices and personnel, program and fiscal management, and resources as they reflect the historic and present influence of this triad of factors. Credit is allowed for only IED 544 or 444. Lecture, seminar.

IED 560 Yaqui History and Culture. (3)

fall

Yaqui history and culture ranging from precontact to the present. Larger themes of Yaqui identity, belief systems, family, traditions, community, resistance, dispersion, and survival.

IED 594 Workshop in Indian Education. (6)

summer

Examines curriculum, pedagogy, community involvement, current issues, and research.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

LIBRARY SCIENCE (LIS)

LIS 410 Children's Literature. (3)

fall, spring, summer

Selects, analyzes, and utilizes modern and classic literature with young readers.

LIS 510 Computers and Technology in the School Library. (3)

fall

Library uses of technology and computers. Fundamental concepts and issues in library media centers. Prerequisites: both LIS 571 and 581 or only instructor approval.

LIS 533 Current Library Problems. (3)

fall

Critical analysis of current practices and problems in school librarianship. Prerequisites: a combination of LIS 540 and 561 and 571 and 581 or only instructor approval.

LIS 540 Classification and Cataloging. (3)

fall

Descriptive cataloging and Dewey Decimal Classification of print and nonprint library materials.

LIS 561 Selection of Library Materials. (3)

fall

Principles and procedures used in the selection of materials for the school library.

LIS 563 Children’s Literature. (3)

fall, spring, summer

Selects and uses children’s literature and related nonprint media to support the elementary school curriculum. Cross-listed as RDG 563. Credit is allowed for only LIS 563 or RDG 563.

LIS 565 Literature for Hispanic Youth/Literatura para Jóvenes Hispanoparlantes. (3)

spring

Selects, analyzes, and utilizes literature for Hispanic and Spanish-speaking children and adolescents. Cross-listed as BLE 565. Credit is allowed for only BLE 565 or LIS 565.

LIS 571 Basic Reference Resources. (3)

spring

Provides reference service in the school library. Content and use of basic resources.

LIS 581 School Library Administration. (3)

spring

Administration of K–12 libraries and media centers.

LIS 584 School Library Internship. (1–6)

fall and spring

Prerequisites: LIS 410, 540, 561, 571, 581; instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 56.

MULTICULTURAL EDUCATION (MCE)

MCE 446 Understanding the Culturally Diverse Child. (3)

once a year

Survey of cultural and linguistic diversity in American education, including education equity, pluralism, learning styles, and roles of schools in a multiethnic society.

General Studies: C

MCE 447 Diversity in Families and Communities in Multicultural Settings. (3)

fall and spring

Diversity and the changing role of schools in a multiethnic society. Lecture, simulation activities, discussion.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 56.

READING EDUCATION (RDG)

RDG 301 Literacy and Instruction in the Content Areas. (3)

fall, spring, summer

Required course for all Secondary Education candidates. Introduces theory and instructional strategies for learning written and oral texts across academic disciplines. Prerequisite: ITC admission.

RDG 334 Children’s Literature and Elementary School Curriculum. (3)

fall and spring

Selecting and using children’s literature in various curriculum areas in elementary school classrooms with diverse student populations. Lecture, discussion, lab. Cross-listed as EED 334. Credit is allowed for only EED 334 or RDG 334. Prerequisite: professional program admission. Corequisite: DCI 396 or EED 496.

RDG 414 Teaching Reading/Decoding. (3)

fall and spring

Emphasizes teaching reading as part of an integrated classroom curriculum. Includes strategies and skills for teaching decoding (phonics), vocabulary, comprehension, study skills, and content area reading. Prerequisite: ITC admission.

RDG 481 Reading Practicum. (3)

fall, spring, summer

Applies concepts from RDG 414 in classroom settings. Students demonstrate teaching strategies under supervision. Required for Elementary Education candidates. Prerequisite: ITC admission.

RDG 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Reading/Decoding. (3)

RDG 505 Developmental Reading. (3)

fall, spring, summer

For classroom and special reading teachers. Specific professional skills in decoding, comprehension, and evaluation. Required for Special Reading Endorsement. Prerequisite: teaching certificate.

RDG 507 Content Area Literacy. (3)

fall, spring, summer

Theory, teaching strategies, and practical application concerning learning from text across subject matter disciplines.

RDG 522 Literacy/Biliteracy Development. (3)

fall

Acquaints teachers with first- and second-language literacy research, practice, and assessment in elementary school settings (Spanish-English emphasis). Lecture, discussion. Cross-listed as BLE 522. Credit is allowed for only BLE 522 or RDG 522. Prerequisite: BLE 511.

RDG 525 Emergent Literacy. (3)

spring

Examines recent research on oral language and literacy development and effective strategies for teaching language and literacy in prekindergarten to grade 3. Lecture, discussion. Cross-listed as ECD 525. Credit is allowed for only ECD 525 or RDG 525.

RDG 530 Research Issues in Literacy. (3)

spring in odd years

For graduate students interested in research on major issues related to literacy instruction. Seminar activities include reviewing quantitative and qualitative methods and analyzing literacy research. Prerequisite: COE 501 or DCI 510 or EDP 502.

RDG 533 Literacy in Secondary BLE/ESL Settings. (3)

spring

Examines first- and second-language literacy research, practice, and assessment across content areas in secondary school settings. Lecture, discussion. Cross-listed as BLE 533. Credit is allowed for only BLE 533 or RDG 533. Prerequisite: BLE 511.

RDG 544 Adolescent Literacy Programs for New Times. (3)

selected semesters

Theories, strategies, and issues in developing, implementing, and assessing approaches to literacy instruction for today’s diverse adolescent students (grades 7–12). Prerequisite: RDG 507 or instructor approval.

RDG 550 Practicum Experiences in Elementary and Secondary Reading. (3)

spring and summer

Practicum experience utilizing assessment and instructional techniques for classroom settings. See RDG 557 for State of Arizona reading endorsement. Lab. Prerequisite: RDG 505 (or its equivalent).

RDG 556 Assessment and Procedures in Elementary and Secondary Reading. (3)

fall

Techniques for classroom and clinical reading assessment and instruction. Emphasizes continuous assessment. May be taken concurrently with RDG 557. Recommended for State of Arizona reading endorsement. Lecture, lab. Prerequisite: RDG 505.

RDG 557 Advanced Elementary and Secondary Reading Practicum. (3)

spring and summer

Advanced practicum experience utilizing specialized reading and other assessment and instruction techniques for classroom and clinic settings. Lab sections. Recommended for State of Arizona reading endorsement. May be taken concurrently with RDG 556. Lab. Prerequisites: RDG 505; instructor approval.

RDG 563 Children’s Literature. (3)

fall, spring, summer

Selects and uses children’s literature and related nonprint media to support the elementary school curriculum. Cross-listed as LIS 563. Credit is allowed for only LIS 563 or RDG 563.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF EDUCATION

RDG 581 Literature-Based Reading Programs. (3)

fall, spring, summer

For classroom and special reading teachers. The role of literature in the acquisition and development of literacy. Specific suggestions for helping students learn to read and/or expand their reading ability with literature. Introduces literature studies. Prerequisite: teaching certificate.

RDG 582 Practicum: Literature Studies. (3)

spring

Practical application of literature study group principles in field sites or through on-campus simulations. Lecture, supervised practice. Prerequisite: RDG 581 or instructor approval.

RDG 596 Gender, Culture, and Literacies. (3)

spring

Influence of gender and culture on written, oral, and post-typographical texts. Seminar.

RDG 630 Research in Literacy. (3)

selected semesters

For advanced graduate students interested in applied research problems, literature of literacy instruction, and major issues related to literacy research. Prerequisite: instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

SECONDARY EDUCATION (SED)

SED 400 Principles of Effective Instruction in Secondary Education. (3)

fall, spring, summer

Examines different models of education. Develops and applies appropriate teaching practices for each model to secondary school classrooms. Lecture, discussion. Prerequisite: ITC admission.

SED 403 Principles, Curricula, and Methods. (3)

fall, spring, summer

Advanced level of development of knowledge and skills of instructional planning and methods of teaching and evaluating in the secondary school. Requires observation/participation. Prerequisite: ITC admission.

SED 478 Student Teaching in Secondary Schools. (3–15)

fall and spring

Practice of teaching. Relationship of theory and practice in teaching. Fee. Prerequisite: ITC admission.

SED 480 Special Methods of Teaching Social Studies. (3)

fall and spring

Interdisciplinary approaches; production and collection of materials. Prerequisite: ITC admission.

SED 496 Field Experience. (0)

fall and spring

Applies course content in a secondary school setting. Emphasizes observation, pupil management, planning and delivering instruction, and assessment. Fee. Corequisite: SED 403.

SED 501 Introduction to Effective Instruction. (6)

fall, spring, summer

Introductory course for postbaccalaureate certification program in secondary education. Emphasizes developing basic classroom management, instruction, and evaluation. Includes a field assignment of at least 120 hours. Prerequisite: admission to postbaccalaureate certification program.

SED 522 Secondary School Curriculum Development. (3)

fall, spring, summer

Social processes, issues, principles, patterns, and procedures in curriculum development.

SED 533 Improving Instruction in Secondary Schools. (3)

fall, spring, summer

Analyses of procedures, methods, techniques, and experiments in teaching in secondary schools. Prerequisites: SED 478, 578.

SED 577 Issues and Trends in Secondary Education. (3)

selected semesters

Analyses of lay and professional reports; problems and issues in American secondary education. Prerequisites: SED 478, 578.

SED 578 Student Teaching in the Secondary Schools. (3–15)

fall and spring

Practice of teaching. Relationship of theory and practice in teaching. Postbaccalaureate students only. Fee. Prerequisites: completion of approved postbaccalaureate program; minimum 2.50 GPA; approval of the Office of Professional Field Experiences.

SED 588 Human Relations in the Secondary Schools. (3)

once a year

Problems in human relations inherent in the interaction of pupils, teachers, administrators, nonprofessional staff, and laymen. Prerequisites: SED 478, 578.

SED 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Using Math Manipulatives/Middle Schools
Fee.

SED 711 Secondary Curriculum Development. (3)

spring and summer

Theories and processes of developing curriculum; evaluation of research. Prerequisites: SED 478, 522 (or its equivalent), 578.

SED 722 Improvement of Instruction in the Secondary School. (3)

fall

Evaluates the research; issues and theories related to the improvement of instruction. Prerequisite: SED 533.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

SPECIAL EDUCATION (SPE)

SPE 294 Special Topics. (1–4)

selected semesters

SPE 309 Basic Special Education Curriculum. (3)

fall, spring, summer

Introduces curricular practices used in inclusion classrooms.

SPE 311 Orientation to Education of Exceptional Children. (3)

fall, spring, summer

Includes gifted, mildly handicapped, severely handicapped, and the bilingual/multicultural exceptional child.

General Studies: SB

SPE 312 Mental Retardation. (3)

fall, spring, summer

Characteristics and assessment specific to mental retardation. Emphasizes terminology, development, educational programming, and therapeutic procedures. Prerequisite: ITC admission.

SPE 314 Introduction to Bilingual/Multicultural Special Education. (3)

fall, spring, summer

Theoretical background and practical application of general issues regarding the education of bilingual/multicultural handicapped children. Prerequisite: ITC admission.

SPE 336 Behavioral and Emotional Problems in Children. (3)

fall, spring, summer

Characteristics and assessment specific to emotionally and behaviorally disturbed children. Emphasizes terminology, development, and educational programming. Prerequisite: ITC admission.

SPE 361 Introduction to Learning Disabilities. (3)

fall, spring, summer

Characteristics and assessment specific to learning disabilities. Emphasizes terminology, development, and educational programming. Prerequisite: ITC admission.

SPE 394 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Basic Special Education Curriculum. (3)
- Inclusion Practices at the Secondary Level. (3)
- Quality Practices in the Collaborative Classroom. (3)

Prerequisite: ITC admission.

SPE 411 Parent Involvement and Regulatory Issues. (3)

fall and spring

Emphasizes parent and school relations through effective communication and state and federal regulations impacting services for the handicapped. Prerequisite: ITC admission.

SPE 412 Evaluating Exceptional Children. (3)

fall and spring

Normative and criterion-referenced diagnostic techniques, including formative evaluation. Emphasizes application. Requires daily practicum. Prerequisite: ITC admission.

SPE 413 Methods in Language, Reading, and Arithmetic for Exceptional Children. (3)

fall and spring

Methods, techniques, and materials for use in prescriptive teaching. Requires daily practicum. Prerequisite: ITC admission.

SPE 414 Methods and Strategies in Behavior Management. (3)

fall and spring

Organization and delivery of instruction, including formative evaluation techniques. Techniques of behavior management. Requires daily practicum. Prerequisite: ITC admission.

SPE 415 Social Behavior Problems of Exceptional Children. (3)

fall and spring

Analysis and intervention into social behavior problems of exceptional populations. Requires daily practicum. Prerequisite: ITC admission.

SPE 455 Early Childhood and the Handicapped. (3)

fall

Early childhood education as it applies to the handicapped child.

SPE 478 Student Teaching in Special Education. (3–15)

fall and spring

"Y" grade only. Fee. Prerequisite: ITC admission.

SPE 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Instruction in Content Areas: Science/Social Studies. (3)

Prerequisite: ITC admission.

SPE 496 Field Experience. (0)

selected semesters

Applies course content in a special education setting. Emphasizes observation, pupil management, planning and delivering instruction, and assessment. Fee. Prerequisite: ITC admission.

SPE 498 Pro-Seminar. (1–7)

fall and spring

Topics may include the following:

- Field Experience. (1–3)

Applies course content in a special education setting. Emphasizes observation, pupil management, planning and delivering instruction, and assessment. Fee. Prerequisite: ITC admission.

SPE 510 Inclusionary Curriculum for Special Education Teachers. (3)

fall and summer

Curricular practices used in inclusion classrooms.

SPE 511 The Exceptional Child. (3)

fall, spring, summer

Educational needs of exceptional children and adults. Not recommended for students who have completed SPE 311.

SPE 512 Individuals with Mental Retardation. (3)

fall, spring, summer

Etiology, diagnosis, and management of individuals with mental retardation. Current trends in prevention, programming, and teacher preparation. Not recommended for students who have completed SPE 312.

SPE 514 Bilingual/Multicultural Aspects of Special Education. (3)

fall, spring, summer

Theories and issues related to the education of bilingual and culturally diverse exceptional children.

SPE 515 Methods for the Remediation of Learning Problems of Exceptional Children. (3)

spring

Methods and materials for remediating the basic academic problems of exceptional children. Prerequisites: SPE 511; a methods course in teaching reading and mathematics.

SPE 522 Academic Assessment of Exceptional Children. (3)

fall

Normative and criterion-referenced assessment of learning problems in exceptional children. Includes formative evaluation. Requires practicum. Lecture, practicum. Prerequisites: SPE 311 (or 511); elementary methods courses; program approval.

SPE 523 Prescriptive Teaching with Exceptional Children. (3)

fall

Language, reading, and arithmetic methods, techniques, and materials used in individualized instruction. Requires practicum. Lecture, practicum. Prerequisites: SPE 311 (or 511); elementary methods courses; program approval. Pre- or corequisite: SPE 522.

SPE 524 Effective Classroom Behavior Management. (3)

spring

Organization and delivery of instruction including formative evaluation and techniques of academic behavior management for exceptional children. Requires practicum. Lecture, practicum. Prerequisites: SPE 311 (or 511), 522, 523; program approval.

SPE 525 Social Behavior Interventions. (3)

spring

Analysis and intervention into social behavior problems of exceptional students. Focuses on strategies to change maladaptive social behavior. Requires practicum. Prerequisites: SPE 311 (or 511 or 522 or 523); program approval.

SPE 531 Behavior Management Approaches with Exceptional Children. (3)

fall and summer

Behavior management approaches for classroom behavior of exceptional children. Prerequisite: SPE 511 (or its equivalent).

SPE 536 Characteristics of Children with Behavioral Disorders. (3)

fall, spring, summer

Variables contributing to behavior patterns of behaviorally disordered children.

SPE 551 Teaching Young Children with Special Needs. (3)

spring

Methods, materials, and curriculum for preschool and primary-aged children with special needs. Prerequisites: SPE 455 and 511 (or their equivalents).

SPE 552 Management of Individuals with Severe Handicaps. (3)

spring

Instruction and management of school-aged and adult individuals with severe, physical, or multiple handicaps. Prerequisites: SPE 511 (or its equivalent); instructor approval.

SPE 553 Developmental/Functional Assessment. (3)

fall

Teacher-focused developmental/functional assessment of preschool and severely, physically, and multiply handicapped individuals. Requires field experience. Prerequisites: SPE 511 and 512 and 574 (or their equivalents).

SPE 554 The Parent/School Partnership. (3)

spring

Includes knowledge and procedures for involvement and training of parents and caregivers of preschool and severely handicapped individuals. Requires field experience. Prerequisites: SPE 455 and 511 (or their equivalents).

SPE 561 Characteristics/Diagnosis of Learning Disabilities. (3)

fall, spring, summer

Theories related to learning disabilities, including identification and characteristics.

SPE 562 Methods of Teaching Students with Learning Disabilities. (3)

selected semesters

Various methods and intervention strategies for remediating learning disabilities of children and youth. Prerequisite: SPE 361 or 561.

SPE 574 Educational Evaluation of Exceptional Children. (3)

fall

Design and statistical considerations of normative and criterion-referenced tests. Collection, recording, and analysis of data from formative evaluation. Prerequisites: SPE 511 (or its equivalent); a methods course in teaching reading and mathematics.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF EDUCATION

SPE 575 Current Issues in the Education of Exceptional Children. (3)

fall

Mainstreaming, noncategorical, financing, legal diagnostic, labeling, legislative, and other critical and controversial issues related to the education of exceptional children.

SPE 577 Mainstreaming Methods. (3)

spring

Addresses successful mainstreaming methods, practical problem-solving sessions related to teacher's classroom needs, and individual contracts focusing on mainstreaming issues. General educators encouraged.

SPE 578 Student Teaching in Special Education. (3–15)

fall and spring

"Y" grade only. Fee. Prerequisites: completion of specified courses; approval by the special education program coordinator.

SPE 582 Classroom Research with Exceptional Children. (3)

summer

Introduces interpreting research. Specific research techniques with primary emphasis on classroom research, including applied behavior analysis.

SPE 585 Creativity: Research and Development. (3)

spring

Explores nature of creativity in terms of philosophical underpinnings, empirical evidence, human development, self-actualization, and the ecology surrounding the creative event.

SPE 586 Advising the Gifted Child. (3)

once a year

Focuses on educational planning and guidance, social and emotional development, and family problem solving regarding needs of gifted children.

SPE 587 Controversies in Educating the Gifted. (3)

fall

In-depth analysis of major controversies in educating the gifted, including nature/nurture, the role of mental tests, and sex differences.

SPE 588 The Gifted Child. (3)

fall and summer

Gifted children's characteristics, identification, needs, school and home environments, definitions, and misunderstandings. Research by Pressey, Stanley, Terman, and others.

SPE 589 Methods in Teaching the Gifted. (3)

spring and summer

Methods in teaching elementary and secondary school gifted children, including individualized and computer-assisted instruction, team teaching. Prerequisite: SPE 588.

SPE 774 Characteristics and Causation of Exceptionality. (3)

fall

In-depth analysis of literature pertaining to causes of exceptionality and learning, educational, personal-social, and cognitive characteristics. Lecture, discussion.

SPE 775 Evaluation and Intervention in Special Education. (3)

spring

In-depth analysis of research and literature on evaluation procedures and intervention approaches for exceptional individuals at all age levels. Lecture, discussion.

SPE 781 Research and Evaluation in Special Education. (3)

spring

Issues and problems in conducting research and/or evaluation programs involving exceptional children.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

Division of Educational Leadership and Policy Studies

www.ed.asu.edu/elps

480/965-6357

ED 120

Terrence G. Wiley, Director

Regents' Professor: Berliner

Professors: Appleton, Barone, Fenske, Glass, González, Hanson, Molnar, Norton, Smith, Turner, Valverde, Webb, Wiley

Associate Professors: Danzig, Hunnicutt, Margolis, Peña, Rund, Wilkinson

Assistant Professors: Moses, Powers

Clinical Professor: Dyer

Clinical Associate Professor: Macey

Research Professor: de los Santos

PROGRAM AREAS

Educational Administration and Supervision
Educational Policy Studies
Higher and Postsecondary Education
Social and Philosophical Foundations

Degrees: M.A., M.Ed., Ed.D., Ph.D.

GRADUATE PROGRAMS

The faculty in the Division of Educational Leadership and Policy Studies offer several graduate degrees in a number of majors.

For more information on courses, faculty, and programs, contact the division office or see the *Graduate Catalog*.

EDUCATIONAL ADMINISTRATION AND SUPERVISION (EDA)

See the *Graduate Catalog* for the EDA courses.

HIGHER AND POSTSECONDARY EDUCATION (HED)

See the *Graduate Catalog* for the HED courses.

SOCIAL AND PHILOSOPHICAL FOUNDATIONS (SPF)

SPF 301 Culture and Schooling. (3)

fall and spring

For the professional teacher preparation program. Overview of the cultural, social, and political milieus in which formal schooling takes place in the United States. Lecture, recitation. Prerequisite: education major. *General Studies: L*

SPF 401 Theory and Practice in Education. (1–2)

fall and spring

For the professional teacher preparation program. Analysis and interpretation of classroom behavior from perspectives derived from philosophy, social science, and law. Prerequisite: education major.

SPF 501 Culture and Schooling. (3)

fall and spring

Introduces social science concepts of culture and the cultural milieu in which schooling takes place in the United States. Lecture, recitation.

SPF 510 Introduction to Organization and Administration of American Public Schools. (3)

fall and spring

Explores organizational structure and administration of public education through the application of legal and ethical concepts and relevant information of the social sciences. Cross-listed as EDA 510. Credit is allowed for only EDA 510 or SPF 510.

SPF 511 School and Society. (3)

fall, spring, summer

Interrelationship of school and society and the role of education in social change.

SPF 515 Gender and Education. (3)

spring

Analyzes relationships of gender and education emphasizing analyses and critiques of traditional conception of knowledge, identity, and feminist theory. Seminar.

SPF 520 Cultural Diversity in Education. (3)

spring

Philosophic and sociological investigation of cultural diversity in the United States and how it relates to education.

SPF 530 Sociology of Education. (3)

fall

Current issues in the sociology of education: stratification, social mobility.

SPF 533 Comparative Education in the Western World. (3)

selected semesters

Educational practices and traditions in the leading nations of Europe and the Soviet Union.

SPF 544 Philosophical Foundations of Education. (3)

fall

Theories of education in ancient, medieval, and modern classical and contemporary philosophies.

SPF 566 History of Education. (3)

spring

Development of educational institutions and ideas in the Western world, from ancient times to the 20th century.

SPF 603 Visual Ethnography in Education. (3)

fall

Advanced qualitative methods class combining ethnography with the use of video and still photography in data gathering and presentation. Seminar. Corequisite: COE 503.

SPF 612 Evaluation Theory. (3)

fall

Explores the major theories of evaluation (inquiry leading to value judgments) in educational policy through examination of cases.

SPF 622 Organizational Theory. (3)

spring

Major views of organizations and their influence on role definition and participant behaviors in educational organization. Seminar, discussion. Cross-listed as HED 688. Credit is allowed for only HED 688 or SPF 622.

SPF 711 Social and Historical Foundations of Education. (3)

spring

Explores the history of sociological thought, especially theories of the relations between educational systems and the social/cultural world.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

Division of Psychology in Education

coe.asu.edu/psyched

480/965-3384

EDB 302

Elsie G. J. Moore, Director

Regents' Professors: Berliner, Kulhavy

Professors: Barona, Bernstein, Bitter, Blanchard, Claiborn, Garcia, Glass, Green, Hackett, Horan, Kerr, Kinnier, Klein, Krus, McWhirter, Nelsen, Robinson Kurpius, Santos de Barona, Smith, Strom, Sullivan, Tracey, Zimiles

Associate Professors: Arciniega, Arredondo, Behrens, Brown, Brush, Hood, Moore, Savenye, Stafford

Assistant Professors: Brem, Julian, Kochenderfer Ladd, Nakagawa, Ota Wang, Thompson

Clinical Associate Professor: Homer

Clinical Assistant Professors: Glidden-Tracey, Igoe, Stamm

PROGRAM AREAS

Counseling Psychology
 Counselor Education
 Educational Psychology
 Learning
 Lifespan Developmental Psychology
 Measurement, Statistics, and Methodological
 Studies
 School Psychology
 Educational Technology

Degrees: M.A., M.C., M.Ed., Ph.D.

GRADUATE PROGRAMS

The faculty in the Division of Psychology in Education offer graduate degrees in a number of majors.

For more information on courses, faculty, and programs, contact the division office or see the *Graduate Catalog*.

COUNSELOR EDUCATION (CED)

CED 111 Exploration of Education. (3)

fall and spring

Education as an instrument in the development of the individual and society, and its significance as an American institution.

General Studies: SB

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF EDUCATION

CED 294 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Career Development. (1–3)
- Foundations of Leadership. (1–3)
- Leadership Colloquium. (1–3)
- Trio. (1–3)

CED 394 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Special Topics in Leadership. (1)

Courses bring together a faculty member with no more than 12 students to discuss and learn about a specific interest or topic. Topics designed to engage students in intellectual dialogue on one of the themes of leadership, diversity, and service/civic responsibility.

Pass/fail elective; taught in the classroom of McClintock Residence Hall. Open to freshmen through senior undergraduates; all majors welcome.

CED 484 Internship. (1–12)

fall and spring

Topics may include the following:

- Leadership Internship
- Leadership Internship and Capstone

CED 493 Honors Thesis. (1–6)

fall and spring

CED 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Paraprofessional Training. (3)

CED 498 Pro-Seminar. (1–7)

fall and spring

Topics may include the following:

- Resident Assistant Experience. (2)

CED 512 Introduction to Helping Relationships. (3)

fall, spring, summer

Introduces the skills used in the helping professions and an examines the settings in which they occur.

CED 522 Theories of Counseling and Psychotherapy. (3)

fall, spring, summer

Presents major theories of psychological intervention as well as underlying personality theory upon which they are based.

CED 523 Psychological Tests. (3)

fall, spring, summer

Standardized tests in the study of the individual, with emphasis on test score interpretation in counseling. Prerequisite: COE 502 (or its equivalent).

CED 527 Community Counseling. (3)

fall and summer

Community focus with emphasis on outreach, prevention, psychoeducation, consulting, and advocacy from a systematic multicultural perspective. Lecture, discussion, visitations, experiential activities.

CED 534 Occupations and Careers. (3)

fall, spring, summer

The world of work, career development, education, and training for occupational entry and mobility.

CED 545 Analysis of the Individual. (3)

fall, spring, summer

Theory and methods commonly used in studying the individual. Observational methods, diagnostic interviews, structured, and semi-structured methods for assessing personality. Pre- or corequisite: CED 523.

CED 567 Group Dynamics and Counseling. (3)

fall, spring, summer

Group process factors, theory, and diversity issues determining effective interaction in small groups. Emphasis placed on lecturettes, self awareness, and experiential components. Lecturettes, discussion, experiential. Prerequisite: admission to graduate degree program.

CED 577 Counseling Prepracticum. (3)

fall, spring, summer

Focus on racial, social, and cultural factors in the development of helping relationships through integration of cognitive and affective self-awareness with counseling skills. Lecture, lab. Prerequisite: admission to M.C. or school counselor certification program. Pre- or corequisite: CED 522.

CED 655 Student Development Programs in Higher Education. (3)

once a year

Emerging conceptual models of student development. Overview of student personnel and student affairs programs in community colleges, four-year colleges, and universities. Observation on campuses.

CED 656 The American College Student. (3)

spring

Overview of American college student from demographic, background characteristics, and values/attitudes/perspectives. Includes access, persistence, and degree completion. Lecture, group discussion, research projects. Cross-listed as HED 679. Credit is allowed for only CED 656 or HED 679.

CED 672 Marriage and Family Counseling. (3)

fall

Introduces marriage and family counseling theories. Emphasizes a systems-communication model utilizing cocounseling.

CED 684 Internship in Community Counseling. (3–6)

fall, spring, summer

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

COUNSELING PSYCHOLOGY (CPY)

See the *Graduate Catalog* for the CPY courses.

EDUCATIONAL PSYCHOLOGY (EDP)

EDP 301 Learning and Motivation in Education. (2)

fall and spring

Applies learning and motivation principles to education contexts, using a case format. Prerequisite: education major.

EDP 302 Assessment and Evaluation in Education. (1)

fall and spring

Applies assessment and evaluation principles to education contexts, using a case format. Prerequisite: education major.

EDP 303 Human Development. (3)

fall and spring

Selected aspects of child and adolescent development. Emphasizes possibilities for influence by teachers and parents. Prerequisites: CDE 232 (or its equivalent); education major.

General Studies: L

EDP 310 Educational Psychology. (1–6)

fall, spring, summer

Presents human behavior in educational situations through instructional modules. May be repeated for credit for total of 6 hours.

General Studies: SB

EDP 313 Childhood and Adolescence. (3)

fall, spring, summer

Principles underlying total development of pre- and early-adolescent children. Emphasizes physical, intellectual, social, and emotional development with practical implications for teachers grades 5–9. Prerequisite: EDP 303 or admission to College of Education postbaccalaureate program.

EDP 454 Statistical Data Analysis in Education. (3)

fall, spring, summer

Role of data analysis in research and decision making. Elements of exploratory data analysis, descriptive indexes, and statistical inference. Lecture, lab. Prerequisite: MAT 117.

General Studies: CS

EDP 502 Introduction to Data Analysis. (3)

fall, spring, summer

Descriptive statistics, visual approaches, estimation, and inferential methods for univariate and bivariate educational research problems. Experience using statistical software. Cross-listed as COE 502. Credit is allowed for only COE 502 or EDP 502.

EDP 503 Introduction to Qualitative Research. (3)

fall, spring, summer

Terminology, historical development, approaches (including ethnography, ethnomethodology, critical theory, grounded theory, and hermeneutics), and qualitative versus quantitative social sciences; methods of inquiry. Cross-listed as COE 503. Credit is allowed for only COE 503 or EDP 503.

EDP 504 Learning and Instruction. (3)

fall, spring, summer

Introduces psychology of learning and instruction. Includes the foundations of learning theories and their application to educational practice. Cross-listed as COE 504. Credit is allowed for only COE 504 or EDP 504.

EDP 510 Essentials of Classroom Learning. (3)

fall, spring, summer

Theoretical and empirical foundations of learning in the classroom milieu. Critical exposure to research and method in instructional psychology.

EDP 513 Child Development. (3)

fall, spring, summer

Examines problems and achievements experienced by children growing up in a technological society. Emphasizes discovering the child's perspective.

EDP 514 Psychology of the Adolescent. (3)

fall, spring, summer

Cognitive, physical, and social development of adolescents in contemporary society. Impact of family, school, and workplace on adolescent development. Prerequisite: EDP 310 or PGS 101 (or its equivalent).

EDP 530 Theoretical Issues and Research in Human Development. (3)

fall

Psychological theories, research, and methods relevant to human development, emphasizing the relations between early development and later performance.

EDP 535 Applied Behavior Analysis. (3)

fall

Principles of conditioning as applied to behavior. Current research on the experimental analysis of behavior in educational psychology.

EDP 536 Physiology of Behavioral Disorders. (3)

fall

Critical study of nervous system, brain function for fundamental behaviors, and system dysfunctions in mental/neurological disorders. Prerequisite: instructor approval.

EDP 540 Theoretical Views of Learning. (3)

fall and spring

Classical and cognitive theories of learning, plus recent orientations. Illustrative experimental and rational foundations; implications for educational practice.

EDP 542 Research Methods in the Learning Sciences. (3)

spring

Students read, design, and carry out original research in the learning sciences. Lecture, discussion. Prerequisites: EDP 540; instructor approval.

EDP 544 Psychology of Reading. (3)

fall

Alternate analyses of the reading process; designs and procedures for investigating instructional and noninstructional variables related to reading achievement.

EDP 545 Higher-Order Processes in the Learning Sciences. (3)

spring

Examines original research on induction, deduction, analogy and transfer, knowledge representation, and other issues in learning. Discussion. Prerequisite: EDP 540 or instructor approval.

EDP 550 Introduction to Measurement in Education. (3)

fall and spring

Nature and types of educational measures. Critiquing and selecting appropriate measuring devices. Constructing measuring devices. Social controversies about tests. Lecture, lab. Prerequisite: EDP 502 or instructor approval.

EDP 552 Multiple Regression and Correlation Methods. (3)

fall, spring, summer

Educational applications of regression techniques. Quantitative and qualitative predictors, curvilinear trends, and interactions. Emphasizes analyzing data and interpreting results. Lecture, lab. Prerequisite: EDP 502 or instructor approval.

EDP 554 Analysis-of-Variance Methods. (3)

fall, spring, summer

Educational applications of ANOVA techniques. Between- and within-subjects designs, multiple comparisons. Emphasizes using statistical software and interpreting results. Lecture, lab. Prerequisites: EDP 502, 552.

EDP 556 Data Processing Techniques in Measurement and Research. (3)

once a year

Use of statistical packages for data analysis. Emphasizes data management, data structures, and related statistical procedures. Lecture, lab. Prerequisite: EDP 552. Pre- or corequisite: EDP 554 or instructor approval.

EDP 560 Individual Intellectual Assessment. (3)

fall and spring

Issues in administration and interpretation of individual intelligence tests. Theoretical basis, ethical considerations, and diagnostic use of test results. Fee. Prerequisite: admission to a program in professional psychology or instructor approval.

EDP 561 Lab in Psychological Assessment. (3)

spring

Lab experience in administration, scoring, and interpretation of individual intelligence tests. Lab. Prerequisite: admission to a program in professional psychology or instructor approval. Corequisite: EDP 560.

EDP 562 School Psychology: Ethics, Theory, and Practice. (3)

fall

Provides information regarding the ethics, history, and theory of current school psychology practice.

EDP 563 Interventions in School Psychology. (3)

fall

Examines case-based consultation and consultation research relevant to school psychology practice. Field experience. Prerequisite: school psychology program or instructor approval.

EDP 564 Academic Interventions. (3)

spring

Skills-building course emphasizing academic interventions and outcome-based educational decisions. Prerequisite: EDP 535.

EDP 566 Diagnosis of Learning Difficulties. (3)

spring

Clinical diagnosis of learning difficulties, emphasizing specific academic problems. Use and interpretation of diagnostic instruments in practical school situations. Prerequisites: EDP 560 and 562 (or their equivalents); instructor approval.

EDP 567 School Psychological Services to Minority Students. (3)

spring

Historical perspectives and major issues in psychological and academic assessment and interventions with minority school children.

EDP 568 Diagnosis and Interventions for Children and Adolescents with Emotional Handicaps. (3)

fall

Clinical diagnosis of emotional handicaps in children and adolescents with emphasis on interpretation of diagnostic instruments and designing appropriate interventions in school settings. Lecture, lab. Prerequisites: EDP 566; PSY 578 (or its equivalent).

EDP 651 Methods and Practices of Qualitative Research. (3)

spring

Advanced course for students familiar with theory and extant work. Topics include data collection, analysis, reporting, and an extensive fieldwork project. Prerequisite: COE 503.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF EDUCATION

EDP 652 Multivariate Procedures for Data Analysis. (3)

fall

Educational applications of multivariate methods, including MANOVA, discriminant analysis, and exploratory factor analysis. Emphasizes analyzing data and reporting results. Lecture, lab. Prerequisite: EDP 554 or instructor approval.

EDP 654 Structural Equation Modeling in Educational Research. (3)

spring

Educational applications of confirmatory factor analysis, path analysis, and full latent variable models. Experience in conducting analyses and reporting results. Lecture, lab. Prerequisite: EDP 652 or instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

EDUCATIONAL TECHNOLOGY (EDT)

EDT 300 Computers in Education. (1)

fall, spring, summer

Introduces general computer applications, teacher utility programs, World Wide Web, and evaluation of educational software. Required for majors in the College of Education.

EDT 321 Computer Literacy. (3)

fall, spring, summer

Survey of the role of computers in business and education. Laboratory experience in using word processing, database, and spreadsheet software. 2 hours lecture, 2 hours lab.

General Studies: CS

EDT 323 Computer Applications. (3)

fall, spring, summer

Introduces computer applications such as HyperCard, telecommunications, authoring Languages, and expert systems. Lecture, lab.

General Studies: CS

EDT 405 Presentation Technology for Multimedia. (3)

fall

Explores multimedia hardware and software used in creating presentations for educational, corporate, and commercial applications.

EDT 406 Computer Graphics and Animation. (3)

spring

Studies and applies design and animation techniques for use in video or computer-based presentations.

EDT 455 Authoring Tools. (3)

fall, spring, summer

Use of current authoring tools to design and deliver computer-based instructional materials.

EDT 501 Foundations and Issues in Educational Technology. (3)

fall and spring

Introduction to educational technology. Examines accomplishments and issues in the field.

EDT 502 Design and Development of Instruction. (3)

fall and spring

Design, development, and formative evaluation of objectives-based instructional materials.

EDT 503 Instructional Media Design. (3)

fall and spring

Uses media selection, design, and production principles to prepare design specifications for solutions to instructional messages and products. Pre- or corequisite: EDT 502.

EDT 504 Development of Computer-Based Instruction. (3)

fall and spring

Systematic design, development, and formative evaluation of computer-based instruction. Prerequisites: EDT 455 (or instructor approval), 502.

EDT 505 Multimedia Presentation Technologies. (3)

fall

Explores the design of multimedia presentations and the utilization of tools and resources to effectively deliver those presentations. Lecture, lab.

EDT 506 Educational Evaluation. (3)

spring

Procedures for evaluating educational programs, training systems, and new-technology applications. Prerequisite: EDT 502.

EDT 511 Technology Applications in Education. (3)

fall and summer

Integration and evaluation of emerging technologies into K–12 and adult teaching and learning. Online and lecture.

EDT 520 Educational Technology and Training. (3)

spring

Applications of educational technology to training and human performance systems in business, industry, and government; emphasizing trends and project management. Lecture, lab. Prerequisites: EDT 501, 502.

EDT 523 Distance Education Theory and Practice. (3)

fall

Explores development of distance learning principles by examining national and international systems and applications. Online and lecture.

EDT 525 Web Resources for Educators. (3)

spring

Explores Web-based and distance learning applications for educators. Online and lecture.

EDT 527 Instructional Video Production. (3)

spring

Design and production of instructional video. Lecture, lab. Prerequisite: EDT 503 or instructor approval.

EDT 528 Development of Web-Based Instruction. (3)

fall

Design and development of online instruction using advanced technologies. Prerequisite: EDT 502.

EDT 531 Hypermedia. (3)

fall

Design, development, and evaluation of open-ended, nonlinear computer-based tools and applications. Lecture, lab. Prerequisites: EDT 455 (or instructor approval), 502.

EDT 701 Research in Educational Technology. (3)

spring

Review and analysis of research studies in educational technology. Methodology for designing, conducting, and reporting educational technology research. Prerequisites: EDT 501, 502; instructor approval.

EDT 702 Research in Technology-Based Education. (3)

fall

Critical exposure to theories, research, and methods in technology-based education.

EDT 703 Research in Distance Education. (3)

spring

Seminar with emphasis on research in telecommunications and distance education.

EDT 704 Emerging Technologies in Education. (3)

spring

Examines the role and impact of emerging technologies in education.

EDT 780 Advanced Instructional Development. (3)

spring

Conducting and documenting selected instructional development activities. Prerequisites: EDT 502; instructor approval.

EDT 792 Advanced Educational Technology Research. (3)

fall and spring

Design and execution of educational technology research on selected topics. Prerequisites: EDT 701; instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

College of Engineering and Applied Sciences

www.eas.asu.edu

Peter E. Crouch, Ph.D., Dean

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PURPOSE

The purpose of the College of Engineering and Applied Sciences is to provide students with a range of educational opportunities by which they may achieve competence in the major branches of engineering, in computer science, and construction. Considerable effort is spent on the development and delivery of well-rounded programs that enhance student preparation for professional careers, lifelong learning, and responsible participation as a member of society.

For more information, access the college's Web site at www.eas.asu.edu.

ORGANIZATION

The College of Engineering and Applied Sciences is composed of the following academic and service units (with seven departments making up the School of Engineering):

Del E. Webb School of Construction

School of Engineering

- Department of Bioengineering
- Department of Chemical and Materials Engineering
- Department of Civil and Environmental Engineering
- Department of Computer Science and Engineering
- Department of Electrical Engineering
- Department of Industrial Engineering
- Department of Mechanical and Aerospace Engineering

Research Centers. The college is committed to the development of research programs of national prominence and to the concept that research is an important part of its educational role. The college encourages the participation of qualified undergraduate students and graduate students in various research activities. Most of the faculty are involved in government or industry-sponsored research programs in a wide variety of topics. A partial list of these topics includes aerodynamics, biotechnology, computer design, computer-integrated manufacturing, environmental fluid dynamics, innovative engineering education, microelectronics manufacturing, power systems, semiconductor materials and devices, signal processing, solar energy, solid-state electronic devices, structural dynamics, telecommunications, thermosciences, and transportation systems. This research is carried out in the departments and schools listed above and in the following interdisciplinary research centers:

- Center for Low Power Electronics
- Center for Research on Education in Science, Mathematics, Engineering, and Technology
- Center for Solid State Electronics Research
- Center for System Science and Engineering Research
- Institute for Manufacturing Enterprise Systems
- Telecommunications Research Center

Center for Professional Development. The Center for Professional Development, often in cooperation with the college's academic units and research centers, provides a variety of technical conferences, seminars, short courses, and televised and satellite-transmitted programs to enable engineers, scientists, and managers to continue the lifelong learning that is so necessary in a constantly changing world. Programs may be conducted on campus, at various off-campus locations, or at company sites upon request. For more information, visit the Center for Professional Development in ECG 148, call 480/965-1740, or access the center's Web site at www.eas.asu.edu/cpd.

ADMISSION

The admission criteria and standards for the B.S. in Computer Science and the B.S.E. in Computer Systems Engineering programs are currently under review and are changing effective spring 2002. For current information, visit the Computer Science and Engineering advising office in GWC 302, call 480/965-3199, or access the Web site at cse.asu.edu.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

Professional Status Requirements

Student	School	High School Rank	ABOR GPA	Minimum Scores		Transfer GPA*	
				ACT	SAT	Resident	Nonresident
Resident	Construction	Upper 25%	3.00	23	1140	—	—
	Engineering	Upper 25%	3.00	23	1140	—	—
Nonresident	Construction	Upper 25%	3.00	24	1140	—	—
	Engineering	Upper 25%	3.00	24	1140	—	—
Transfer	Construction	—	—	—	—	2.25	2.50
	Engineering	—	—	—	—	2.50	2.50

* The cumulative GPA is calculated using all credits from ASU as well as all transfer credits from other colleges and universities.

Individuals wishing to be admitted to freshman standing in the College of Engineering and Applied Sciences should have completed certain secondary-school units. These units are identified in the requirements for each of the two schools in the college. If these conditions are not met, additional university course work, possibly unacceptable for degree credit, may be required.

Entrance requirements of this college may differ from those of other ASU academic units. Students may be admitted under one of two different classifications, professional or preprofessional.

Professional Status. For admission to professional status, Arizona residents and nonresidents must meet one of the requirements as listed in the appropriate section of the [“Professional Status Requirements” table, on this page](#). In addition, students who are required to take the Test of English as a Foreign Language (TOEFL) must earn a score of at least 550 (230 on the computerized version).

Students admitted to the university after successful completion of the General Education Development examination are admitted as preprofessional students within their major. Professional status is attained by meeting the minimum ACT or SAT score required for admission as listed in the [“Professional Status Requirements” table, on this page](#).

For Computer Science and Computer Systems Engineering professional status requirements, see [“Admission Requirements,” page 245](#).

Preprofessional Status. In the College of Engineering and Applied Sciences, there are two versions of *preprofessional status*. One applies to a college-level preprofessional status; the conditions associated with the CEAS preprofessional status are described in the following material. The second version is of concern only to students interested in pursuing majors within the Department of Computer Science and Engineering (CSE); for descriptive material on the CSE preprofessional status, see [“Department of Computer Science and Engineering,” page 245](#), or access the CSE Web site at cse.asu.edu.

A student not admissible to professional status within the college but otherwise regularly admissible to ASU as stated in [“Undergraduate Admission,” page 58](#), may be admitted as a *preprofessional student* to any one of the academic programs of the college. A student admitted into this classification follows the freshman-sophomore sequence of courses

as required by the chosen major. Courses are selected with the assistance of an academic advisor. After completing a minimum of 30 semester hours of required or approved elective courses *with a cumulative GPA equivalent to that required of transfer students and corresponding to the chosen major, students may apply for admission to professional status*. Preprofessional students are not permitted to register for 300- and 400-level courses in the college until their status is changed to the professional classification.

Readmission. Students applying for readmission to professional status for any program in this college must have a cumulative GPA for all college course work equal to that of the transfer admission requirements shown in the [“Professional Status Requirements” table, on this page](#).

Transfer into and Within the College. Students transferring between academic programs within the college or from other colleges within the university must meet both the cumulative GPA requirement and the catalog requirements of the desired program in effect at the time of transfer. Students who are transferring from an Arizona community college and have been in continuous residence may continue under the catalog in effect at the time of their entrance into the community college.

Transfer Students. A student who contemplates transferring into this college from another institution, whether a community college or four-year institution, should carefully study the catalog material pertaining to the particular program and consult an advisor in this college before enrolling in the other institution. These steps assure a smooth transition at the time of transfer. Transfer students may request admission to either preprofessional or professional status in any of the programs offered by this college.

The minimum requirements for admission of resident, nonresident, and transfer students to the professional program are shown in the [“Professional Status Requirements” table, on this page](#). The academic units may impose additional admission and graduation requirements beyond the minimum specified by the college.

Credit is granted for transferred courses deemed equivalent to corresponding courses in the selected program of study, subject to grade and ASU resident credit requirements. No grades lower than “C” are accepted as transfer credit to meet the graduation requirements of this college.

College of Engineering and Applied Sciences Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Del E. Webb School of Construction			
Construction ¹	B.S.	General building construction, heavy construction, residential construction, specialty construction	Del E. Webb School of Construction
School of Engineering			
Aerospace Engineering ¹	B.S.E.	—	Department of Mechanical and Aerospace Engineering
Bioengineering ¹	B.S.E.	—	Department of Bioengineering
Chemical Engineering ¹	B.S.E.	—	Department of Chemical and Materials Engineering
Civil Engineering ¹	B.S.E.	Construction engineering, environmental engineering	Department of Civil and Environmental Engineering
Computer Science ¹	B.S.	Software Engineering	Department of Computer Science and Engineering
Computer Systems Engineering ¹	B.S.E.	—	Department of Computer Science and Engineering
Electrical Engineering ¹	B.S.E.	—	Department of Electrical Engineering
Engineering Interdisciplinary Studies ²	B.S.	—	School of Engineering
Engineering Special Studies ¹	B.S.E.	Premedical engineering	School of Engineering
Industrial Engineering ¹	B.S.E.	—	Department of Industrial Engineering
Materials Science and Engineering ¹	B.S.E.	—	Department of Chemical and Materials Engineering
Mechanical Engineering ¹	B.S.E.	—	Department of Mechanical and Aerospace Engineering

¹ This major requires a minimum of 128 semester hours to complete.

² Applications for this program are not being accepted at this time.

Credits transferred from a community college or two-year institution are applied only as lower-division credits. For a listing of the acceptable courses transferable to the various college degree programs, prospective Arizona community college transfer students should consult their advisors and refer to the ASU transfer guides available on the Web at www.asu.edu/provost/articulation.

It should be noted that some courses taken in other ASU colleges or other universities may be acceptable for general university credit but may not be acceptable toward the degree requirements of this college. Determination of those particular courses acceptable to a specific degree program is made within the appropriate academic unit with the approval of the dean.

ADVISING

For assistance and counseling in planning a program of study, each student in this college is assigned a faculty advisor who is familiar with the chosen field of specialization and who must be consulted before registering each semester. The student should inform the advisor of any outside work or activity so that course loads may be adjusted accordingly.

Most students attending college find it necessary to obtain part-time employment; consequently, it is suggested

that a careful balance of work and class requirements be considered to avoid academic problems.

Students enrolled in an undergraduate degree program in this college may register for a maximum of 19 semester hours each semester. Any student wanting to register for more than the maximum must submit a petition and have an approval on file before registering for the overload.

Students who are enrolled in an undergraduate nondegree status in this college must obtain advising and approval to register before registering each semester from the director of Student Academic Services in ECG 205. For more information, see [“Admission of Undergraduate Nondegree Applicants.” page 64](#)

UNDERGRADUATE DEGREES

The faculty in the College of Engineering and Applied Sciences offer programs leading to the B.S. and B.S.E. degrees with majors in the subjects shown in the “College of Engineering and Applied Sciences Baccalaureate Degrees and Majors,” on this page. Each major is administered by the academic unit indicated.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

College of Engineering and Applied Sciences Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Del E. Webb School of Construction			
Construction	M.S.	Construction science, facilities, management	Del E. Webb School of Construction
School of Engineering			
Aerospace Engineering	M.S., M.S.E., Ph.D.	—	Department of Mechanical and Aerospace Engineering
Bioengineering	M.S., Ph.D.	—	Department of Bioengineering
Chemical Engineering	M.S., M.S.E., Ph.D.	—	Department of Chemical and Materials Engineering
Civil Engineering	M.S., M.S.E., Ph.D.	—	Department of Civil and Environmental Engineering
Computer Science	M.C.S., M.S., Ph.D.	—	Department of Computer Science and Engineering
Electrical Engineering	M.S., M.S.E., Ph.D.	—	Department of Electrical Engineering
Engineering	M.E. ¹	—	School of Engineering
Engineering Science	M.S., M.S.E., Ph.D.	—	School of Engineering
Industrial Engineering	M.S., M.S.E., Ph.D.	—	Department of Industrial Engineering
Materials Engineering	M.S., M.S.E.	—	Department of Chemical and Materials Engineering
Materials Science	M.S. ²	—	Committee on the Science and Engineering of Materials
Mechanical Engineering	M.S., M.S.E., Ph.D.	—	Department of Mechanical and Aerospace Engineering
Science and Engineering of Materials	Ph.D. ²	High-resolution nanostructure analysis, solid-state device materials design	Committee on the Science and Engineering of Materials

¹ This collaborative program is offered by the three state universities.

² This program is administered by the Graduate College.

Integrated B.S.E.-M.S. Program. To provide greater program flexibility, qualified students of the School of Engineering may undertake a program with an integrated fourth- and fifth-year sequence of study in one of several fields of specialization in engineering. This program provides an opportunity to meet the increasing demands of the profession for graduates who can begin their engineering careers at an advanced level.

Students admitted to this program are assigned a faculty committee that supervises a program of study in which there is a progression in the course work and in which earlier work is given application in the later engineering courses for both the bachelor's and master's degrees. Entry into the integrated program requires an application submitted to the dean through the faculty advisor and the department chair. Applications are reviewed by a school committee that recommends the appropriate action to the dean. The application may be submitted in the fifth semester.

GRADUATE DEGREES

The faculty in the College of Engineering and Applied Sciences offer master's and doctoral degrees as shown in the "[College of Engineering and Applied Sciences Graduate Degrees and Majors](#)" table, on this page. School of Engineering faculty participate in offering the Master of Engineering (M.E.) as a collaborative degree program offered by

Arizona's three state universities. For more information, see the *Graduate Catalog*.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges, including the College of Engineering and Applied Sciences, to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning. The Extended Campus also offers a variety of professional continuing education and community outreach programs.

For more information, see "[ASU Extended Campus](#)," page 703, or access the Web site at www.asu.edu/xed.

UNDERGRADUATE DEGREE REQUIREMENTS

For detailed information on the degree requirements of a major in the College of Engineering and Applied Sciences, refer to that department's or school's individual description on the following pages.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to department and school requirements, students must meet all university graduation requirements (see ["University Graduation Requirements," page 79](#)). A well-planned program of study enables students to meet all requirements in a timely fashion. Students are encouraged to consult with an academic advisor in planning a program to ensure that they comply with all necessary requirements.

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35 hours of approved course work in General Studies. General Studies courses are listed in the ["General Studies Courses" table, page 86](#), in the course descriptions in this catalog, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*, or on the Web. Consult with an advisor for an approved list of courses.

First-Year Composition Requirement

As a minimum, completion of ENG 101 and 102, or ENG 107 and 108, or ENG 105 with grades of "C" or higher is required for graduation from ASU in any baccalaureate program. See ["First-Year Composition Requirement," page 79](#). Any student whose written or spoken English in any course is unsatisfactory may be required by the appropriate director or department chair to take additional course work.

COLLEGE DEGREE REQUIREMENTS

Pass/Fail Grades

Students enrolled in the college do not receive degree credit for pass/fail courses taken at this institution. In addition, no course in this college is offered for pass/fail credit. Students requesting credit for pass/fail courses taken at another institution must file a Petition for Adjustment to Curriculum Requirements to the department of their major. Each request is judged on its particular merits.

Entry into Upper-Division Courses

Before enrolling in courses at the 300 level and above, students must be in good academic standing in professional program status in this college and have the approval of their advisors. A student who is not in good academic standing must secure approval from his or her advisor and the college's Student Academic Services. Students whose grades in 300-level courses are unsatisfactory may be required to retake one or more courses for which credit has previously been granted.

The departments and schools have certain additional requirements that must be met in addition to the above college requirements, and students should consult them for details.

Non-CEAS Students. Students who are not admissible to programs in this college and who enroll in another college at

ASU may not register for any 300- or 400-level courses in this college unless they are required in their degree programs and the students have the proper course prerequisites.

Currency of Course Work

Courses taken more than five years before admission to degree programs in this college are not normally accepted for transfer credit at the option of the department in which the applicant wishes to enroll. Courses completed within the five years preceding admission are judged as to their applicability to the student's curriculum.

ACADEMIC STANDARDS

Probation. A student is expected to make satisfactory progress toward completion of degree requirements to continue enrollment in the college. Any one of the following conditions is considered unsatisfactory progress and results in the student being placed on probationary status:

1. a semester or summer session with a GPA less than or equal to 1.50;
2. two successive semesters with GPAs less than 2.00; or
3. an ASU cumulative GPA less than 2.00.

Students on probation are subject to disqualification if

1. they do not attain a semester GPA of 2.25;
2. their cumulative GPA is below 2.00 at the end of the probationary semester; or
3. they are placed on probation for two consecutive semesters.

Courses completed during the summer sessions may not be used to reevaluate a student's fall semester probationary status.

Students on academic probation are not allowed to register for more than 13 semester hours of course work. Probationary students may not register for the next semester without a special permit from an advisor in Student Academic Services. Special permits are not given until grades are recorded by the registrar for the current semester.

Disqualification. During a semester on academic probation, a student who fails to meet the retention standards specified above is disqualified. Students may request a review of their disqualification status by contacting the director of Student Academic Services in ECG 205. Any disqualified student who is accepted by another college at ASU may not register for courses in this college unless the courses are required for the new major. Disqualified students who do register for courses in this college may be withdrawn from these courses any time during that semester. Furthermore, students at the university who have been disqualified academically by this college are not eligible to enroll in summer session courses in this college until the disqualification period has expired and they have been reinstated.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).



Student and instructor work together in engineering lab.

Tim Trumble photo

Reinstatement. The college does not accept an application for reinstatement until the disqualified student has remained out of this college for at least a 12-month period. Merely having remained in a disqualified status for this period of time does not, in itself, constitute a basis for reinstatement. Proof of ability to do satisfactory college work in the chosen discipline is required, for example, completing at least 15 semester hours of pertinent courses in the discipline at a community college with a GPA of 2.50 or higher, and a cumulative GPA of 2.50 or higher for all courses completed.

Student Academic Services. The College of Engineering and Applied Sciences maintains a unit to assist individual students in various matters. This office coordinates the work of the College Academic Standards Committee; administers the probation, disqualification, and readmission processes, student disciplinary actions, and grade grievances; and reviews and processes requests for medical and compassionate withdrawal. This office also administers the college's scholarship program. Additional information is available at www.eas.asu.edu/sas.

STUDENT RESPONSIBILITIES

Course Prerequisites. Students should consult the *Schedule of Classes* and the catalog for course prerequisites. Students who register for courses without the designated prerequisites may be withdrawn without the student's consent at any time before the final examination. Such withdrawal may be initiated by the instructor, the chair of the department offering the course, the director of Student Academic Services, or the dean of the college. In such cases, students will not receive monetary reimbursement. However, such withdrawal is considered to be unrestricted as described under "[Grading System,](#)" page 72, and does not count against the number of restricted withdrawals allowed.

SPECIAL OPPORTUNITIES

Cooperative Education. The co-op program is a work-study plan of education that alternates periods of academic study with periods of employment in business, industry, or government. Students who choose this program ideally complete 12 months of employment and graduate with both the academic background and practical experience gained from working with professionals in a chosen field.

A student in the college is eligible to apply to the co-op program upon completion of 45 or more hours of classes required for the selected major. Transfer students are required to complete at least one semester at ASU before beginning work. All student applicants must have a GPA of at least 2.50 and the approval of an advisor and the dean of the college.

To maintain continuous student status in the university, each co-op student must be enrolled in ASE 399 Cooperative Work Experience for one semester hour during each work session. Such credit cannot be applied toward degree requirements. For more information, visit Student Academic Services in ECG 205, or call 480/965-1750, and visit the Career Services office in SSV 329, or call 480/965-2350.

Foundation Coalition. ASU is a member of the Foundation Coalition, a National Science Foundation-funded group of seven institutions of higher learning across the U.S. that is working to improve engineering education. Foundation Coalition programs are intended to

1. demonstrate and promote the interrelationships of subject matter within the curriculum;
2. improve the interpersonal skills of students and the understanding of concepts through the use of more teaming and cooperative learning environments;
3. increase the use of technology in the curriculum; and
4. assess and evaluate intended improvements.

Such changes address the desires of employers, increase the numbers of baccalaureate degrees earned by members of currently underrepresented groups, and promote curriculum improvement. Foundation Coalition programs are available to all freshmen and sophomores in the School of Engineering and to juniors and seniors in Electrical Engineering and Industrial Engineering.

Foundation Coalition programs offer students a more hands-on, team-based, computer-intensive approach to the

curriculum. The freshman programs provide an important opportunity for new students to get to know a small group of students, making a large university seem less overwhelming. The programs also involve more interactions with faculty and access to special tutors. All students get a team-based, computer-intensive education in ECE 100 (or ECE 194) Introduction to Engineering Design, and the Foundation Coalition program extends this experience to many more subjects and courses.

Freshmen Foundation Coalition programs offer both an integrated set of courses that include engineering, calculus, physics, and English in both the first and second semesters, and smaller course packages that include engineering, math, science, and English. In these packages, the same set of students take all of the courses in the package in high-tech, team-promoting classrooms while the faculty work together to deliver a unified set of courses. Sophomore programs involve courses in mathematics, mechanics, and electrical circuits.

Students interested in these programs should see their department advisor, visit the Foundation Coalition Office in ECG 303, call 480/965-5350, or access the Web site at www.eas.asu.edu/~asufc.

Minority Engineering Program. The staff of the Minority Engineering Program (MEP) is available to assist the academic and professional development of prospective, newly admitted, and continuing students through a variety of support services. In addition, advice on financial aid, scholarships, and employment is provided. For more information, visit the MEP office in ECG 307, call 480/965-8275, or access the MEP Web site at www.eas.asu.edu/~omep.

Women in Applied Sciences and Engineering Program. The Women in Applied Sciences and Engineering (WISE) Program hosts seminars and workshops, and provides outreach programs to high school and community college students to acquaint students with a variety of technical careers. The WISE Center, in room ECG 214, is open for study groups, tutoring, and informal discussions. For more information, call 480/965-6882, or access the Web site at www.eas.asu.edu/~wise.

Honor Societies. Students in the College of Engineering and Applied Sciences are encouraged to seek information concerning entry into those honor societies for which they may qualify. Membership in such organizations enhances the student's professional stature. The following honor societies are active within the college:

- Alpha Pi Mu—Industrial Engineering Honor Society
- Chi Epsilon—Civil Engineering Honor Society
- Eta Kappa Nu—Electrical Engineering Honor Society
- Pi Tau Sigma—Mechanical Engineering Honor Society
- Sigma Gamma Tau—Aerospace Engineering Honor Society
- Sigma Lambda Chi—Construction Honor Society
- Tau Beta Pi—National Engineering Honor Society
- Upsilon Pi Epsilon—National Computer Science Honor Society

Information on any of these organizations may be obtained from the respective department or school offices.

Honors Students. The College of Engineering and Applied Sciences participates in the programs of the Barrett Honors College, which provides enhanced educational experiences to academically superior undergraduate students. Participating students can major in any academic program. A description of the requirements and the opportunities offered by the Barrett Honors College can be found in [“Curriculum,” page 118](#).

Internships. A variety of internship programs exist within the college. Information on these programs can be obtained from the Engineering Internship Program coordinator in the office of the associate dean for Academic Affairs.

Scholarships. Information and applications for academic scholarships for continuing students may be obtained by contacting the college's Student Academic Services or the various department or school offices. Other scholarships may be available through the university Student Financial Assistance Office. For application and more information, access the Web site at www.eas.asu.edu/sas.

ROTC. Students pursuing a commission through either the Air Force or Army ROTC programs are required to take courses in the Department of Aerospace Studies or Department of Military Science. To preclude excessive overloads, these students should plan on at least one additional semester to complete degree requirements. Because of accreditation requirements, aerospace studies (AES) or military science (MIS) courses are not acceptable for degree credit in engineering as social and behavioral science or humanities and fine arts under General Studies. ROTC students must also meet all other degree requirements of this college.

GENERAL INFORMATION

Definition of Terms. The terms used in this college to describe offerings are defined below for purposes of clarity.

Program of Study. This broad term describes the complete array of courses included in the study leading to a degree.

Major. This term describes a specialized group of courses contained within the program of study. Example: program of study—engineering; major—Civil Engineering.

Area of Study (Technical Electives) or Concentration. Each of these terms describes a selection of courses within a major or among one or more majors. The number of technical electives varies from curriculum to curriculum. In several majors, the technical electives must be chosen from preselected groups. For this reason the choice of specific technical electives for an area of study should be made with the advice and counsel of an advisor. Example: major—Mechanical Engineering; area of study—thermosciences.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

Del E. Webb School of Construction

construction.asu.edu
480/965-3615
SCOB 241

William W. Badger, Director

Professors: Badger, Mulligan

Associate Professors: Ariaratnam, Bashford, Chasey, Duffy, Ernzen, Kashiwagi, Sawhney, Walsh, Weber, Wiesel

Assistant Professors: Fiori, Knutson

Visiting Eminent Scholar: Schexnayder

PURPOSE

Construction careers are so broadly diversified that no single curriculum prepares the student for universal entry into all fields. As an example, heavy construction contractors usually place more emphasis on technical and engineering science skills than do residential contractors/developers, who usually prefer a greater depth of knowledge in management and construction. To ensure a balanced understanding of the technical, professional, and philosophical standards that distinguish modern-day constructors, advisory groups representing leading associations of contractors and builders provide counsel in curriculum development. Construction has a common core of engineering science, management, and behavioral courses on which students may build defined concentrations to suit individual backgrounds, aptitudes, and objectives. These concentrations are not absolute but generally match major divisions of the construction industry.

DEGREES

Construction—B.S.

The faculty in the Del E. Webb School of Construction offer the B.S. degree in Construction. Four concentrations are available: general building construction, heavy construction, residential construction, and specialty construction.

Each concentration is arranged to accent requisite technical skills and to develop management, leadership, and competitive qualities in the student. Prescribed are a combination of General Studies courses, technical courses basic to engineering and construction, and courses on a broad range of applied management subjects fundamental to the business of construction contracting.

Construction—M.S.

The faculty in the school also offer the M.S. degree in Construction. Details for this degree are found in the *Graduate Catalog*.

Professional Accreditation and Affiliations. The Del E. Webb School of Construction is a member of the Associated

Schools of Construction, an organization dedicated to the development and advancement of construction education. The construction program is accredited by the American Council for Construction Education.

SPECIAL PROGRAMS

The Del E. Webb School of Construction maintains a cooperative agreement with community colleges within Arizona and also with selected out-of-state colleges and universities to structure courses that are directly transferable into the construction program at ASU.

Student Organizations. The school has a chapter of Sigma Lambda Chi, a national honor society that recognizes high academic achievement in accepted construction programs. The school is also host to the Associated General Contractors of America student chapter, the National Association of Home Builders student chapter, and the Construction Women's Alliance.

Scholarships. Apart from those given by the university, a number of scholarships from the construction industry are awarded to students registered in the construction program. The scholarships are awarded on the basis of academic achievement and participation in activities of the construction program.

ADMISSION

For information regarding requirements for admission, transfer, retention, qualification, and reinstatement, see [“Undergraduate Admission,” page 58](#); [“Admission,” page 207](#); and [“College Degree Requirements,” page 211](#). A preprofessional category is available for applicants deficient in regular admission requirements. Vocational and craft-oriented courses taught at the community colleges are not accepted for credit toward a bachelor's degree in Construction.

BASIC REQUIREMENTS

Students complete the following basic requirements before registering for advanced courses: (1) All first-semester, first-year courses and the university First-Year Composition requirement (see [“University Graduation Requirements,” page 79](#)) must be completed by the time the student has accumulated 48 semester hours of program requirements, and (2) all second-semester, first-year courses must be completed by the time the student has completed 64 semester hours of program requirements. Transfer students are given a one-semester waiver. Participation in a summer field internship activity is required for all students between the second and third years of the program.

Any student not making satisfactory progress is permitted to register for only those courses required to correct any deficiencies.

DEGREE REQUIREMENTS

A minimum of 128 semester hours with at least 50 hours at the upper-division level is required for graduation in general building construction, heavy construction, residential construction, and specialty construction. Students in all concentrations are required to complete a construction core

of science-based engineering, construction, and management courses.

GRADUATION REQUIREMENTS

A student must earn a grade of “C” or higher in the mathematics and physics courses listed in the program of study.

In addition to fulfilling school and major requirements, majors must satisfy the General Studies requirements as noted in “[General Studies](#),” page 83, and all university graduation requirements as noted in “[University Graduation Requirements](#),” page 79. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses.

SCHOOL COURSE REQUIREMENTS

The school requires that the General Studies requirement be satisfied in the following manner:

Humanities and Fine Arts/Social and Behavioral Sciences

CON 101 Construction and Culture: A Built Environment <i>HU, G, H</i>	3
ECN 111 Macroeconomic Principles <i>SB</i>	3
ECN 112 Microeconomic Principles <i>SB</i>	3
HU/SB and awareness area courses as needed	3
HU/SB and awareness area courses as needed (upper division).....	3
Total	15

Literacy and Critical Inquiry

COM 225 Public Speaking <i>L</i>	3
CON 496 Construction Contract Administration <i>L</i>	3
Total	6

Natural Sciences

PHY 111 General Physics <i>SQ</i> ¹	3
PHY 112 General Physics <i>SQ</i> ²	3
PHY 113 General Physics Laboratory <i>SQ</i> ¹	1
PHY 114 General Physics Laboratory <i>SQ</i> ²	1
Total	8

Mathematical Studies

MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
STP 226 Elements of Statistics <i>CS</i>	3
Total	7
General Studies/school requirements total ³	36

¹ Both PHY 111 and 113 must be taken to secure SQ credit.
² Both PHY 112 and 114 must be taken to secure SQ credit.
³ Because of the school’s requirement for MAT 270, the total semester hours exceed the General Studies requirement of 35.

Construction Major Requirements Common to All Concentrations (Except as Noted)

ACC 230 Uses of Accounting Information I.....	3
or ACC 394 ST: Financial Analysis and Accounting for Small Businesses (3)*	
CEE 340 Hydraulics and Hydrology	3
CON 221 Applied Engineering Mechanics: Statics	3
CON 243 Heavy Construction Equipment, Methods, and Materials.....	3
CON 244 Working Drawings Analysis	1
CON 251 Microcomputer Applications for Construction	3
CON 252 Building Construction Methods, Materials, and Equipment.....	3

CON 273 Electrical Construction Fundamentals	3
CON 296 Field Internship	0
CON 310 Testing of Materials for Construction	3
CON 323 Strength of Materials.....	3
CON 341 Surveying	3
CON 345 Mechanical Systems.....	3
CON 371 Construction Management and Safety	3
CON 383 Construction Estimating.....	3
CON 389 Construction Cost Accounting and Control <i>CS</i>	3
CON 424 Structural Design	3
CON 450 Soil Mechanics in Construction	3
CON 453 Construction Labor Management	3
CON 455 Construction Project Management.....	3
CON 463 Foundations.....	3
CON 495 Construction Planning and Scheduling <i>CS</i>	3
ECE 100 Introduction to Engineering Design <i>CS</i>	3
LES 305 Legal, Ethical, and Regulatory Issues in Business.....	3
or LES 306 Business Law (3) (ASU West) or LES 380 Consumer Perspective of Business Law (3)	
Physical science elective with lab.....	4
Total common to all concentrations	71

* ACC 394 ST: Financial Analysis and Accounting for Small Businesses is recommended.

Advisor-approved alternates/transfer credits for these courses may vary from the total required semester hours indicated. Such variances do not reduce the minimum of 128 semester hours required for the degree.

The course work for the first two years is the same for all concentrations.

First Semester

CON 101 Construction and Culture: A Built Environment <i>HU, G, H</i>	3
ECN 111 Macroeconomic Principles <i>SB</i>	3
ENG 101 First-Year Composition.....	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
PHY 111 General Physics <i>SQ</i> ¹	3
PHY 113 General Physics Laboratory <i>SQ</i> ¹	1
Total	17

Second Semester

CON 244 Working Drawings Analysis	1
ECE 100 Introduction to Engineering Design <i>CS</i>	3
ECN 112 Microeconomic Principles <i>SB</i>	3
ENG 102 First-Year Composition.....	3
PHY 112 General Physics <i>SQ</i> ²	3
PHY 114 General Physics Laboratory <i>SQ</i> ²	1
HU elective with awareness area as needed.....	3
Total	17

Third Semester

CON 221 Applied Engineering Mechanics: Statics	3
CON 243 Heavy Construction Equipment, Methods, and Materials	3
CON 251 Microcomputer Applications for Construction	3
CON 273 Electrical Construction Fundamentals	3
STP 226 Elements of Statistics <i>CS</i>	3
Total	15

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “[General Studies](#),” page 83.

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

Fourth Semester

ACC 230	Uses of Accounting Information I.....	3
	or ACC 394 ST: Financial Analysis and Accounting for Small Businesses ³ (3)	
COM 225	Public Speaking <i>L</i>	3
CON 252	Building Construction Methods, Materials, and Equipment.....	3
CON 323	Strength of Materials.....	3
	Physical science elective with lab.....	4
Total	.....	16

¹ Both PHY 111 and 113 must be taken to secure SQ credit.

² Both PHY 112 and 114 must be taken to secure SQ credit.

³ ACC 394 ST: Financial Analysis and Accounting for Small Businesses is recommended.

Concentration in General Building Construction

The general building construction concentration provides a foundation for students who wish to pursue careers as estimators, project managers, project engineers, and eventually, owners of firms engaged in the construction of industrial, commercial, and institutional structures. Educational focus is on building systems required for the mass development and production of large-scale projects. General building construction is addressed as an integrated process from conception through delivery of completed facilities to users.

Requirements

CON 472	Development Feasibility Reports <i>L</i>	3
CON 483	Advanced Building Estimating.....	3
PUP 432	Planning and Development Control Law.....	3
	or PUP 433 Zoning Ordinances, Subdivision Regulations, and Building Codes (3)	
REA 380	Real Estate Fundamentals.....	3
	Upper-division technical elective.....	3
Total	.....	15

Concentration in Heavy Construction

The heavy construction concentration prepares students for careers related to the public works discipline. Typical projects in which they are involved are highways, railroads, airports, power plants, rapid transit systems, process plants, harbor and waterfront facilities, pipelines, dams, tunnels, bridges, canals, sewerage and water works, and mass earth-work.

Requirements

CON 344	Route Surveying.....	3
CON 486	Heavy Construction Estimating.....	3
	Upper-division business electives.....	6
	Upper-division technical elective.....	3
Total	.....	15

Concentration in Residential Construction

The residential construction concentration prepares students for careers in the residential sector of the industry. This concentration covers the specific methods and processes during the planning, production, marketing, and business-related activities common to residential construction.

Requirements

CON 377	Residential Construction Production Procedures.....	3
CON 477	Residential Construction Business Practices.....	3
CON 484	Internship.....	3

MKT 300	Principles of Marketing.....	3
PUP 432	Planning and Development Control Law.....	3
	or PUP 433 Zoning Ordinances, Subdivision Regulations, and Building Codes (3)	
Total	.....	15

Concentration in Specialty Construction

The specialty construction concentration prepares students for careers with specialty constructors, such as mechanical and electrical construction firms. It emphasizes the construction process at the trade contractor level.

Requirements

CON 468	Mechanical and Electrical Estimating.....	3
CON 471	Mechanical and Electrical Project Management.....	3
CON 494	ST: Cleanroom Construction.....	3
	Upper-division business electives.....	6
Total	.....	15

CONSTRUCTION (CON)

CON 101 Construction and Culture: A Built Environment. (3)

fall and spring

Analyzes the cultural context of construction, emphasizing its centrality in the evolution and expansion of built environments as expressions of ethical and historical value systems. Lecture, speakers.

General Studies: HU, G, H

CON 221 Applied Engineering Mechanics: Statics. (3)

fall and spring

Vectors, forces and moments, force systems, equilibrium, analysis of basic structures and structural components, friction, centroids, and moments of inertia. Prerequisites: MAT 270; PHY 111, 113.

CON 243 Heavy Construction Equipment, Methods, and Materials. (3)

fall and spring

Emphasizes "Horizontal" construction. Fleet operations, maintenance programs, methods, and procedures to construct tunnels, roads, dams, and the excavation of buildings. Lab, field trips.

CON 244 Working Drawings Analysis. (1)

fall and spring

In-depth analysis of construction drawings (blueprint reading), interpreting symbols, dimensioning, projections, and general plan organization. Extensive workbook activity. Lecture, lab.

CON 251 Microcomputer Applications for Construction. (3)

fall and spring

Applies the microcomputer as a problem-solving tool for the constructor. Uses spreadsheets, information management, and multimedia software. Prerequisite: ECE 100.

CON 252 Building Construction Methods, Materials, and Equipment. (3)

fall and spring

Emphasizes "Vertical" construction. Methods, materials, codes, and equipment used in building construction corresponding to the 16 division "Master Format." Lecture, lab.

CON 273 Electrical Construction Fundamentals. (3)

fall and spring

Circuits and machinery. Power transmission and distribution, with emphasis on secondary distribution systems. Measurements and instrumentation. Lecture, field trips. Prerequisites: PHY 112, 114.

CON 294 Special Topics. (1-4)

selected semesters

Topics may include the following:

- Working Drawings and Specifications Analysis

CON 296 Field Internship. (0)

summer

Participation as interns on construction projects to observe and experience the daily activities. Internship.

CON 310 Testing of Materials for Construction. (3)

fall and spring

Structural and behavioral characteristics, engineering properties, measurements, and application of construction materials. Not open to engineering students. Lecture, lab. Prerequisite: CON 323.

CON 323 Strength of Materials. (3)

fall and spring

Analyzes strength and rigidity of structural members in resisting applied forces. Stress, strain, shear, moment, deflections, combined stresses, connections, and moment distribution. Both U.S. and SI units of measurement. Prerequisite: CON 221.

CON 341 Surveying. (3)

fall and spring

Theory and field work in construction and land surveys. Lecture, lab. Prerequisite: MAT 170.

CON 344 Route Surveying. (3)

spring

Simple, compound, and transition curves, including reconnaissance, preliminary, and location surveys. Calculation of earthwork. Dimensional control for construction projects. Lecture, lab. Prerequisites: CON 243, 341.

CON 345 Mechanical Systems. (3)

fall and spring

Design parameters and equipment related to heating and cooling systems for mechanical construction. Computer-aided calculations. Lecture, field trips. Prerequisites: CON 252; PHY 111, 113.

CON 371 Construction Management and Safety. (3)

fall and spring

Organization and management theory applied to the construction process. Leadership functions. Safety procedures and equipment. OSHA requirements for construction. Prerequisite: CON 252.

CON 377 Residential Construction Production Procedures. (3)

spring

Process used in residential construction. How a house is built: design, permits, scheduling, codes, contracting, site management, mechanical/electrical. Prerequisite: CON 252.

CON 383 Construction Estimating. (3)

fall and spring

Drawings and specifications. Methods and techniques used in construction estimating procedures. Introduces computer software used in industry. Lecture, project workshops. Prerequisites: a combination of CON 243 and 251 and 252 or only instructor approval.

CON 389 Construction Cost Accounting and Control. (3)

fall and spring

Nature of construction cost. Depreciation and tax theory and variable equipment costs. Cash flow theory, investment models, profitability, and analysis. Computer applications. Funding sources and arrangements. Builder's insurance. Prerequisites: ACC 230 (or 394 ST: Financial Analysis and Accounting for Small Businesses); CON 251. *General Studies: CS*

CON 424 Structural Design. (3)

fall

Economic use of concrete, steel, and wood in building and engineered structures. Design of beams, columns, concrete formwork, and connections. Lecture, field trips. Prerequisite: CON 310.

CON 450 Soil Mechanics in Construction. (3)

fall and spring

Soil mechanics as applied to the construction field, including foundations, highways, retaining walls, and slope stability. Relationship between soil characteristics and geologic formations. Not open to engineering students. Lecture, lab. Prerequisite: CON 323.

CON 453 Construction Labor Management. (3)

fall and spring

Labor and management history, union, and open shop organization of building and construction workers; applicable laws and government regulations; goals, economic power, jurisdictional disputes, and grievance procedures. Lecture, lab. Prerequisites: CON 371; ECN 112.

CON 455 Construction Project Management. (3)

fall and spring

Study of methods for coordinating people, equipment, materials, money, and schedule to complete a project on time and within approved cost. Lecture, class projects. Prerequisite: CON 371. Pre- or corequisite: CON 495.

CON 463 Foundations. (3)

spring

Subsurface construction theory and practice for description, excavations, exploration, foundations, pavements, and slopes. Evaluation of specifications and plans of work. Lecture, recitation, field trips. Prerequisites: CON 424, 450.

CON 468 Mechanical and Electrical Estimating. (3)

fall

Analysis and organization of performing a cost estimate for both mechanical and electrical construction projects. Computer usage. Prerequisites: a combination of CON 273 and 345 and 383 or only instructor approval.

CON 471 Mechanical and Electrical Project Management. (3)

spring

Specialty contracts and agreements, scheduling, material handling, labor unit analysis, and job costing for mechanical and electrical construction. Prerequisite: CON 371.

CON 472 Development Feasibility Reports. (3)

fall and spring

Integrates economic location theory, development cost data, market research data, and financial analysis into a feasibility report. Computer orientation. Prerequisite: REA 380.

General Studies: L

CON 477 Residential Construction Business Practices. (3)

fall

Topics addressed include development, marketing, financing, legal issues, and sales. Prerequisite: CON 377 or instructor approval.

CON 483 Advanced Building Estimating. (3)

fall and spring

Concepts of pricing and markup, development of historic costs, life cycle costing, change order and conceptual estimating, and emphasizing microcomputer methods. Prerequisite: CON 383.

CON 484 Internship. (1–12)

selected semesters

CON 486 Heavy Construction Estimating. (3)

fall

Methods analysis and cost estimation for construction of highways, bridges, tunnels, dams, and other engineering works. Lecture, field trips. Prerequisites: CON 344, 383.

CON 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Cleanroom Construction. (3)

fall

CON 495 Construction Planning and Scheduling. (3)

fall and spring

Various network methods of project scheduling, such as AOA, AON Pert, bar-charting, line-of-balance, and VPM techniques. Microcomputers used for scheduling, resource allocation, and time/cost analysis. Lecture, lab. Prerequisites: CON 383; STP 226. Pre- or corequisite: CON 389.

General Studies: CS

CON 496 Construction Contract Administration. (3)

fall and spring

Surveys administrative procedures of general and subcontractors. Studies documentation, claims, arbitration, litigation, bonding, insurance, and indemnification. Discusses ethical practices. Lecture, field trips. Prerequisites: COM 225 or ECE 300; senior standing.

General Studies: L

CON 533 Strategies of Estimating and Bidding. (3)

fall

Explores advanced concepts of the estimating process, such as modeling and statistical analysis, to improve bid accuracies. Prerequisite: CON 483 or 486 or instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

CON 540 Construction Productivity. (3)

fall

Productivity concepts. Data collection. Analysis of productivity data and factors affecting productivity. Means for improving production and study of productivity improvement programs. Pre- or corequisite: CON 495.

CON 543 Construction Equipment Engineering. (3)

spring

Analyzes heavy construction equipment productivity using case studies. Applies engineering fundamentals to the planning, selection, and utilization of equipment. Lecture, case studies.

CON 545 Construction Project Management. (3)

spring

Theory and practice of construction project management. Roles of designer, owner, general contractor, and construction manager. Lecture, field trips. Pre- or corequisite: CON 495.

CON 547 Strategic Planning. (3)

fall

Business planning process of the construction enterprise. Differences between publicly held and closely held businesses and their exposure.

CON 561 International Construction. (3)

spring

Investigation of the cultural, social, economic, political, and management issues related to construction in foreign countries and remote regions.

CON 565 Performance-Based Systems. (3)

fall

Identifying the multicriteria methodology in the procurement of facilities contractual work. Prerequisite: instructor approval.

CON 567 Advanced Procurement Systems. (3)

spring

Development of multicriteria decision procurement model for selecting the performing contractor. Prerequisite: instructor approval.

CON 570 Cleanroom Construction I. (3)

fall

Design issues for cleanroom facilities; the construction's viewpoint including planning, structures, mechanical, and tool installation. Lecture, site visits. Prerequisite: instructor approval.

CON 571 Cleanroom Construction II. (3)

spring

Construction issues for cleanroom facilities including scheduling, cost estimating, project management, mechanical, safety certification, and tool hook-up. Lecture, site visits. Prerequisite: CON 570 or instructor approval.

CON 575 Information Technology in Construction. (3)

spring

Use of information technology in the construction enterprise for improved communications, process modeling, and decision making. Prerequisite: instructor approval.

CON 589 Construction Company Financial Control. (3)

fall

Financial accounting and cost control at the company level in construction companies. Accounting systems. Construction project profit calculations. Financial analysis. Lecture, case studies.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

School of Engineering

480/965-1726

ECG 104

Ronald J. Roedel, Director

PURPOSE

A large percentage of all engineering degree holders are found in leadership positions in a wide variety of industrial settings. Although an education in engineering is generally considered to be one of the best technical educations, it also provides an opportunity for the development of many additional attributes, including ethical and professional characteristics. In this era of rapid technological change, an engineering education serves society well as a truly liberal education. Society's needs in the decades ahead call for engineering contributions on a scale not previously experienced. The well-being of civilization as we know it may depend upon how effectively this resource is developed.

Students studying engineering at ASU are expected to acquire a thorough understanding of the fundamentals of mathematics and the sciences and their applications to the solution of problems in the various engineering fields. The program is designed to develop a balance between science and engineering and an understanding of the economic and social consequences of engineering activity. The goals include the promotion of the general welfare of the engineering profession.

The courses offered are designed to meet the needs of the following students:

1. those who wish to pursue a career in engineering;
2. those who wish to do graduate work in engineering;
3. those who wish to have one or two years of training in mathematics, applied science, and engineering in preparation for some other technical career;
4. those who desire preengineering for the purpose of deciding which program to undertake or those who desire to transfer to another college or university; and
5. those who wish to take certain electives in engineering while pursuing another program in the university.

ADMISSION

For information regarding requirements for admission, transfer, retention, disqualification, and reinstatement, see ["Undergraduate Admission," page 58;](#) ["Admission," page 207;](#) ["College Degree Requirements," page 211;](#) and ["Academic Standards," page 211.](#)

Individuals who are beginning their initial college work in the School of Engineering should have completed certain secondary school units in addition to the minimum university admission requirements. Four units are required in

mathematics; a course with trigonometry should be included. The laboratory sciences chosen must include at least one unit in physics and one unit in chemistry. Calculus, biology, and computer programming are also recommended. Students who do not meet the college’s subject matter requirements may be required to complete additional university course work that may not apply toward an engineering degree. One or more of the courses—CHM 113 General Chemistry, CSE 181 Applied Problem Solving with Visual BASIC, MAT 170 Precalculus, and PHY 105 Basic Physics—may be required to satisfy omissions or deficiencies upon admission.

DEGREES

The Bachelor of Science in Engineering (B.S.E.) degree consists of three parts:

1. university requirements (e.g., General Studies, First-Year Composition);
2. an engineering core; and
3. a major.

The B.S. degree in Computer Science consists of two parts: (1) university requirements (e.g., General Studies, First-Year Composition); and (2) a major.

The courses identified for each of these parts are intended to meet requirements imposed by the university and by the professional accrediting agency, Accreditation Board for Engineering and Technology, Inc. (ABET), for programs in engineering and computing science, respectively.

In addition to First-Year Composition, the university requires, through the General Studies requirement, courses in literacy and critical inquiry, humanities and fine arts, social and behavioral sciences, mathematical studies, and natural sciences (see “General Studies,” page 83). There are also requirements for historical awareness, global awareness, and cultural diversity in the United States. ABET imposes additional requirements, particularly in mathematics and the basic sciences and in the courses for the major.

The engineering core is an organized body of knowledge that serves as a foundation to engineering and to specialized studies in a particular engineering major.

The courses included in the engineering core are taught in such a manner that they serve as basic background material (1) for all engineering students who will be taking subsequent work in the same and related subject areas; and (2) for those students who may not desire to pursue additional studies in a particular subject area. Thus, subjects within the engineering core are taught with an integrity and quality appropriately relevant to the particular discipline but always with an attitude and concern for both engineering in general and for the particular major(s).

The majors available are of two types: (1) those associated with a particular department within the School of Engineering (for example, Electrical Engineering and Civil Engineering) and (2) those offered as concentrations in Engineering Special Studies (for example, premedical engineering). With the exception of the Computer Science major, all curricula are extensions beyond the engineering core and cover a wide variety of subject areas within each field. Some of the credits in the major are reserved for the

student’s use as an area of study. These credits are traditionally referred to as *technical electives*.

Majors and areas of study are offered by the seven departments:

- Department of Bioengineering
- Department of Chemical and Materials Engineering
- Department of Civil and Environmental Engineering
- Department of Computer Science and Engineering
- Department of Electrical Engineering
- Department of Industrial Engineering
- Department of Mechanical and Aerospace Engineering

The major in Engineering Special Studies is administered by the Office of the Dean. Engineering Special Studies makes use of the general structure of the engineering curricula noted above and provides students with an opportunity for study in engineering concentrations not available in the traditional engineering curricula at ASU.

The first two years of study are concerned primarily with general education requirements, English proficiency, and the engineering core. The final two years of study are concerned with the engineering core and the major, with a considerable part of the time being spent on the major.

The semester-by-semester selection of courses may vary from one field to another, particularly at the upper-division level, and is determined by the student in consultation with a faculty advisor. An example of a typical full-time freshman-year schedule is shown below; depending on a particular student’s circumstances, many other examples are possible.

Typical Freshman Year

CHM 114 General Chemistry for Engineers <i>SQ</i>	4
ECE 100 Introduction to Engineering Design <i>CS</i>	3
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
ENG 101 First-Year Composition.....	3
ENG 102 First-Year Composition.....	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
PHY 121 University Physics I: Mechanics <i>SQ*</i>	3
PHY 122 University Physics Laboratory I <i>SQ*</i>	1
HU/SB and awareness area course.....	3
<hr/> Total	<hr/> 31

* Both PHY 121 and 122 must be taken to secure SQ credit.

Well-prepared students who have no outside commitments can usually complete the program of study leading to an undergraduate degree in engineering in four years (eight semesters at 16 semester hours per semester). Many students, however, find it advantageous or necessary to devote more than four years to the undergraduate program by pursuing, in any semester, fewer studies than are regularly prescribed. Where omissions or deficiencies exist—e.g., in chemistry, computer programming, English, mathematics, and physics—the student must complete more than the minimum of 128 semester hours. Therefore, in cases of

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

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inadequate secondary preparation, poor health, or financial necessity requiring considerable time for outside work, the undergraduate program is extended beyond four years.

DEGREE REQUIREMENTS

The degree programs in engineering at ASU are intended to develop habits of quantitative thought having equal utility for both the practice of engineering and other professional fields. In response to the opportunities provided by changing technology, educational research, and industrial input, possible improvements of various aspects of these programs are routinely considered. It is the intent of the faculty that all students be appropriately prepared in the four areas described below.

1. *Oral and written English.* Communication skills are an essential component of an engineering education. All engineering students must complete the university First-Year Composition requirement (see [“University Graduation Requirements,” page 79](#)), and the literacy and critical inquiry component (see [“Five Core Areas,” page 83](#)) of the General Studies requirement, which involves two courses beyond First-Year Composition.
2. *Selected nonengineering topics.* This area ensures that the engineering student acquires a satisfactory level of basic knowledge in the humanities and fine arts, social and behavioral sciences, mathematical studies, and the natural sciences. Courses in these subjects give engineers an increased awareness of their social responsibilities, provide an understanding of related factors in the decision-making process, and also provide a foundation for the study of engineering. Required courses go toward fulfilling the General Studies requirement. Additional courses in mathematics and the basic sciences are selected to meet ABET requirements.
Because of accreditation requirements, aerospace studies (AES) and military science (MIS) courses are not acceptable for engineering degree credit in fulfilling the humanities and fine arts and social and behavioral science portions of the General Studies requirement.
3. *Selected engineering topics.* This area involves courses in engineering science and engineering design. The courses further develop the foundation for the study of engineering and provide the base for specialized studies in a particular engineering discipline. The specific courses are included in the engineering core and in the major. While some departmental choices are allowed, all students are required to take ECE 100 Introduction to Engineering Design and ECE 300 Intermediate Engineering Design as part of the engineering core. These courses, together with other experiences in the engineering core and in the major, serve to integrate the study of design, the “process of devising a system, component, or process to meet desired needs” (ABET), throughout the engineering curricula.
4. *Specific engineering discipline.* This area provides a depth of understanding of a more definitive body of

knowledge that is appropriate for a specific engineering discipline. Courses build upon the background provided by the earlier completed portions of the curriculum and include a major design experience as well as technical electives that may be selected by the student with the assistance of an advisor. The catalog material for the individual engineering majors describes specific departmental requirements.

COURSE REQUIREMENTS

A summary of the degree requirements is as follows:

First-Year Composition.....	6
General Studies/school requirements.....	56
Engineering core.....	14–18
Major (including area of study or concentration)*.....	48–52
Minimum total.....	128

* The requirements for each of the majors offered are described on the following pages.

Specific course requirements for the B.S. and B.S.E. degrees follow.

First-Year Composition

Choose among the course combinations below.....	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
_____or_____	
ENG 105 Advanced First-Year Composition (3)	
Elective chosen with an advisor (3)	
_____or_____	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
Total.....	6

General Studies/School Requirements

<i>Humanities and Fine Arts/Social and Behavioral Sciences</i> ¹	
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
HU and awareness area courses.....	6 or 9
SB and awareness area course(s).....	6 or 3
Total.....	15

Literacy and Critical Inquiry

ECE 300 Intermediate Engineering Design <i>L</i>	3
ECE 400 Engineering Communications <i>L</i>	3
or approved department L course (3)	
Total.....	6

Mathematical, Computation, and Quantitative Studies

ECE 100 Introduction to Engineering Design <i>CS</i>	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
MAT 274 Elementary Differential Equations <i>MA</i>	3
Department mathematics elective.....	2
Total.....	20

Natural Sciences/Basic Sciences

CHM 114 General Chemistry for Engineers <i>SQ</i>	4
or CHM 116 General Chemistry <i>SQ</i> (4)	
PHY 121 University Physics I: Mechanics <i>SQ</i> ²	3
PHY 122 University Physics Laboratory I <i>SQ</i> ²	1

PHY 131 University Physics II: Electricity and Magnetism SQ ³	3
PHY 132 University Physics Laboratory II SQ ³	1
Department basic science elective	3
<hr/>	
Total	15
General Studies/school requirements total.....	56

- ¹ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU or SB requirements. Courses in the awareness areas of global, historical, and cultural diversity in the United States must also be represented in the program of study. One course must be upper-division.
- ² Both PHY 121 and 122 must be taken to secure SQ credit.
- ³ Both PHY 131 and 132 must be taken to secure SQ credit.

Engineering Core Requirement

In addition in ECE 100 and 300, which also fulfill a portion of the university General Studies requirement, a minimum of five of the following eight courses are required. Courses selected are subject to departmental approval. See department requirements.

ECE 201 Electrical Networks I	4
ECE 210 Engineering Mechanics I: Statics.....	3
ECE 212 Engineering Mechanics II: Dynamics.....	3
ECE 214 Engineering Mechanics.....	4
ECE 313 Introduction to Deformable Solids.....	3
ECE 334 Electronic Devices and Instrumentation	4
ECE 340 Thermodynamics.....	3
or CHE 342 Applied Chemical Thermodynamics (4)	
or MSE 430 Thermodynamics of Materials (3)	
ECE 350 Structure and Properties of Materials	3
or ECE 351 Civil Engineering Materials (3)	
or ECE 352 Properties of Electronic Materials (4)	
Choose one microcomputer/microprocessor course below	3 or 4
BME 470 Microcomputer Applications in Bioengineering (4)	
CHE 461 Process Control CS (4)	
CSE 225 Assembly Language Programming and Microprocessors (Motorola) (4)	
or EEE 225 Assembly Language Programming and Microprocessors (Motorola) (4)	
CSE 226 Assembly Language Programming and Microprocessors (Intel) (4)	
or EEE 226 Assembly Language Programming and Microprocessors (Intel) (4)	
IEE 463 Computer-Aided Manufacturing and Control CS (3)	

GRADUATION REQUIREMENTS

To qualify for graduation from the School of Engineering, a student must have a minimum cumulative GPA of 2.00 in addition to having a GPA of at least 2.00 for the courses in the major field.

PROFESSIONAL ACCREDITATION

The undergraduate programs in Aerospace Engineering, Bioengineering, Chemical Engineering, Civil Engineering, Computer Systems Engineering, Electrical Engineering, Industrial Engineering, Materials Science and Engineering, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of ABET, Baltimore, Maryland, 410/347-7700. The B.S. program in Computer

Science is accredited by the Computer Science Accreditation Commission of ABET.

ANALYSIS AND SYSTEMS (ASE)

ASE 100 College Adjustment and Survival. (2)

fall and spring
Explores career goals and majors. Emphasizes organization and development of study skills, including time management, stress management, and use of the library.

ASE 194 Special Topics. (1–4)

fall
Topics may include the following:
• MEP Academic Success. (2)

ASE 399 Cooperative Work Experience. (1)

fall, spring, summer
Work periods with industrial firms or government agencies alternated with full-time course work. Not open to students from other colleges. May be repeated for credit. Prerequisites: 45 hours completed in major with 2.50 GPA; dean approval.

ASE 485 Engineering Statistics. (3)

fall, spring, summer
Designing statistical studies for solutions to engineering problems. Methods include regression, design and analysis of experiments, and other statistical topics. Prerequisite: ECE 380.
General Studies: CS

ASE 490 Project in Design and Development. (2–3)

fall, spring, summer
Individual project in creative design and synthesis. May be repeated for credit. Prerequisite: senior standing.

ASE 496 Professional Seminar. (0)

fall and spring
Topics of interest to students in the engineering special and interdisciplinary studies.

ASE 500 Research Methods: Engineering Statistics. (3)

fall, spring, summer
Designing statistical studies for solutions to engineering problems. Methods include regression, design and analysis of experiments, and other statistical topics. Prerequisite: ECE 380.

ASE 582 Linear Algebra in Engineering. (3)

fall
Development and solution of systems of linear algebraic equations. Applications from mechanical, structural, and electrical fields of engineering. Prerequisite: MAT 242 (or its equivalent).

ASE 586 Partial Differential Equations in Engineering. (3)

spring
Development and solution of partial differential equations in engineering. Applications in solid mechanics, vibrations, and heat transfer. Prerequisites: MAT 242, 274.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

ENGINEERING CORE (ECE)

ECE 100 Introduction to Engineering Design. (3)

fall and spring
Introduces engineering design; teaming; the profession of engineering; computer models in engineering; communication skills; quality and customer satisfaction. Prerequisites: high school computing and physics and algebra courses (or their equivalents).
General Studies: CS

ECE 194 Special Topics. (1–4)

fall and spring
Topics may include the following:
• Introduction to Engineering Design I
• Introduction to Engineering Design II

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

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ECE 200 Elements of Engineering Design. (3)

fall and spring

Advanced version of ECE 100 for students who transfer to ASU after completion of the stated prerequisites. Credit is allowed for only ECE 100 or 200. Lecture, lab. Prerequisite for engineering majors: ENG 101 (or 105); MAT 270; PHY 121, 122. Prerequisite for Construction majors: ENG 101 (or 105); MAT 270; PHY 111, 113. Pre- or corequisite for engineering majors: CHM 113 or 114 or 116.

ECE 201 Electrical Networks I. (4)

fall, spring, summer

Introduces electrical networks. Component models, transient, and steady-state analysis. Lecture, lab. Prerequisite: ECE 100 or 194 (ST: Introduction to Engineering Design I and ST: Introduction to Engineering Design II) or 200. Pre- or corequisites: MAT 274; PHY 131, 132.

ECE 210 Engineering Mechanics I: Statics. (3)

fall, spring, summer

Force systems, resultants, equilibrium, distributed forces, area moments, fluid statics, internal stresses, friction, energy criterion for equilibrium, and stability. Lecture, recitation. Prerequisites: ECE 100 or 194 (ST: Introduction to Engineering Design I and ST: Introduction to Engineering Design II) or 200; MAT 271 (or 291); PHY 121, 122.

ECE 212 Engineering Mechanics II: Dynamics. (3)

fall, spring, summer

Kinematics and kinetics of particles, translating and rotating coordinate systems, rigid body kinematics, dynamics of systems of particles and rigid bodies, and energy and momentum principles. Lecture, recitation. Prerequisites: ECE 210; MAT 274.

ECE 214 Engineering Mechanics. (4)

fall, spring, summer

Force systems, resultants, moments and equilibrium. Kinematics and kinetics of particles, systems of particles and rigid bodies. Energy and momentum principles. Lecture, recitation. Prerequisites: ECE 100 or 194 (ST: Introduction to Engineering Design I and ST: Introduction to Engineering Design II) or 200; MAT 274; PHY 121, 122.

ECE 294 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Elements of Engineering Design

ECE 300 Intermediate Engineering Design. (3)

fall, spring, summer

Engineering design process concentrating on increasing the ability to prepare well-written technical communication and to define problems and generate and evaluate ideas. Teaming skills enhanced. Prerequisites: ECE 100 or 194 (ST: Introduction to Engineering Design I and ST: Introduction to Engineering Design II) or 200; ENG 102 (or 105 or 108); at least two other engineering core courses.

General Studies: L

ECE 313 Introduction to Deformable Solids. (3)

fall, spring, summer

Equilibrium, strain-displacement relations, and stress-strain-temperature relations. Applications to force transmission and deformations in axial, torsional, and bending of bars. Combined loadings. Lecture, recitation. Prerequisites: ECE 210 (or 214); MAT 274.

ECE 334 Electronic Devices and Instrumentation. (4)

fall, spring, summer

Applies electric network theory to semiconductor circuits. Diodes/transistors/amplifiers/opamps/digital logic gates, and electronic instruments. Lecture, lab. Prerequisite: ECE 201.

ECE 340 Thermodynamics. (3)

fall, spring, summer

Work, heat, and energy transformations and relationships between properties; laws, concepts, and modes of analysis common to all applications of thermodynamics in engineering. Lecture, recitation. Prerequisites: CHM 114 (or 116); ECE 210 (or 214); PHY 131, 132. Pre- or corequisite: MAT 274.

ECE 350 Structure and Properties of Materials. (3)

fall, spring, summer

Basic concepts of material structure and its relation to properties. Application to engineering problems. Prerequisites: CHM 114 (or 116); PHY 121, 122.

ECE 351 Civil Engineering Materials. (3)

fall and spring

Structure and behavior of civil engineering materials. Laboratory investigations and test criteria. Lecture, lab. Prerequisite: ECE 313.

ECE 352 Properties of Electronic Materials. (4)

fall, spring, summer

Schrodinger's wave equation, potential barrier problems, bonds of crystals, the band theory of solids, semiconductors, superconductor dielectric, and magnetic properties. Prerequisites: CHM 114 (or 116); MAT 274; PHY 241.

ECE 380 Probability and Statistics for Engineering Problem Solving. (3)

fall and spring

Applications-oriented course with computer-based experience using statistical software for formulating and solving engineering problems. 2 hours lecture, 2 hours lab. Prerequisite: MAT 271.

General Studies: CS

ECE 384 Numerical Methods for Engineers. (4)

fall and spring

Numerical methods and computational tools for selected problems in engineering. Prerequisites: ECE 100 or 194 (ST: Introduction to Engineering Design I and ST: Introduction to Engineering Design II) or 200; MAT 274; at least two other engineering core courses. Pre- or corequisite: MAT 272.

ECE 394 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Conservation Principles. (4)
- Engineering Systems. (4)
- Introduction to Manufacturing Engineering. (3)
- Properties that Matter. (3)

ECE 400 Engineering Communications. (3)

fall, spring, summer

Planning and preparing engineering publications and oral presentations, based on directed library research related to current engineering topics. Prerequisites: ENG 102 (or 105 or 108); completion of General Studies L requirement (or ECE 300); senior standing in an engineering major.

General Studies: L

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

SOCIETY, VALUES, AND TECHNOLOGY (STE)

STE 208 Patterns in Nature. (4)

fall and spring

Project-oriented science course with computer training to develop critical thinking and technical skills for student-oriented K–12 science lessons. Lecture, lab. Cross-listed as PHS 208. Credit is allowed for only PHS 208 or STE 208. Prerequisite: a college-level course in science or instructor approval.

General Studies: SQ

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Bioengineering

www.eas.asu.edu/~bme

480/965-3028

ECG 334

Eric J. Guilbeau, Chair

Professors: Guilbeau, Towe

Associate Professors: Garcia, He, Iasemidis, Massia, Pizziconi Sweeney, Yamaguchi

Assistant Professors: Muthuswamy, Panitch, Vernon

Senior Research Professional: Brandon

The faculty in the Department of Bioengineering offer the B.S.E. degree in Bioengineering. The major builds on a broad base of knowledge within the basic and mathematical sciences and the engineering core. The major offers graduates excellent career opportunities.

Faculty within the department also participate in the Engineering Special Studies program in premedical engineering, which is described separately in "[Programs in Engineering Special Studies](#)," page 273.

BIOENGINEERING—B.S.E.

Bioengineering (synonyms: biomedical engineering, medical engineering) is the discipline of engineering that applies principles and methods from engineering, the physical sciences, the life sciences, and the medical sciences to understand, define, and solve problems in medicine, physiology, and biology. The mission of the bioengineering program at ASU is to educate students to use engineering and scientific principles and methods to develop instrumentation, materials, diagnostic and therapeutic devices, artificial organs, or other equipment and technologies needed in medicine and biology and to discover new fundamental principles regarding the functioning and structure of living systems. The overall goal of the program is to produce high-quality graduates with a broad-based education in engineering and the life and natural sciences who are well prepared for further graduate study in bioengineering, a career in the medical device or biotechnology industries, a career in biomedical research, or entry into a medical or other health profession school.

The program's mission is achieved by having its faculty and graduate teachers fulfill the following objectives: to provide students with a strong foundation in mathematics, the physical and life sciences, and basic engineering; and to give students a balance of theoretical understanding and ability in order to apply modern techniques, skills, and tools for problem solving at the interface of engineering with the biological and medical sciences. Students demonstrate an ability to make measurements on and interpret data from living systems, addressing the problems associated with the

interaction between living and nonliving materials and systems. Students are able to design systems, devices, components, processes, and experiments with an understanding of manufacturing processes to meet real-world needs for solutions to problems in the biomedical device industries, medicine, and the life sciences. Students are able to communicate effectively as bioengineers in oral, written, computer-based, and graphical forms. Faculty seek to instill students with a sense of commitment to professionalism and ethical responsibility as bioengineers. Students are given opportunities to interact with and gain real-world experience with local and national medical device and technology industries, health-care organizations, educational institutions, and constituent populations. Faculty seek to develop within students an understanding of and positive approach toward continued lifelong learning of new technologies and relevant issues in the discipline of bioengineering.

Graduate degree programs in Bioengineering are offered at ASU at the master's and doctoral levels. For more information, consult the *Graduate Catalog*.

DEGREE REQUIREMENTS

A minimum of 128 semester hours is necessary for the B.S.E. degree in Bioengineering. A minimum of 50 upper-division semester hours is required. Students must attain a GPA of at least 2.00 for the courses in the major field.

GRADUATION REQUIREMENTS

In addition to fulfilling school and major requirements, students must satisfy all university graduation requirements. See "[University Graduation Requirements](#)," page 79.

COURSE REQUIREMENTS

The course work, in semester hours, for the undergraduate degree can be classified into the following categories:

First-Year Composition

Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
_____	_____
_____ or _____	
ENG 105 Advanced First-Year Composition (3)	
Elective chosen with an advisor (3)	
_____	_____
_____ or _____	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	

Total	6
-------------	---

General Studies/School Requirements

<i>Humanities and Fine Arts/Social and Behavioral Sciences</i>	
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
HU/ <i>SB</i> and awareness area courses	12
Total	15
<i>Literacy and Critical Inquiry</i>	
BME 413 Biomedical Instrumentation <i>L</i>	3
BME 423 Biomedical Instrumentation Laboratory <i>L</i>	1

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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ECE 300 Intermediate Engineering Design <i>L</i>	3
Total	7
<i>Natural Sciences/Basic Sciences</i>	
CHM 113 General Chemistry <i>SQ</i>	4
CHM 116 General Chemistry <i>SQ</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122 University Physics Laboratory I <i>SQ</i> ¹	1
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132 University Physics Laboratory II <i>SQ</i> ²	1
Total	16
<i>Mathematical Studies</i>	
ECE 100 Introduction to Engineering Design <i>CS</i>	3
ECE 384 Numerical Methods for Engineers.....	4
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
MAT 274 Elementary Differential Equations <i>MA</i>	3
Total	22
General Studies/school requirements total.....	60
Engineering Core	
ECE 201 Electrical Networks I.....	4
ECE 210 Engineering Mechanics I: Statics.....	3
ECE 334 Electronic Devices and Instrumentation.....	4
ECE 340 Thermodynamics.....	3
ECE 350 Structure and Properties of Materials.....	3
Total	17
Major	
BIO 188 General Biology II <i>SQ</i>	4
BME 201 Introduction to Bioengineering <i>L</i>	3
BME 318 Biomaterials.....	3
BME 331 Biomedical Engineering Transport: Fluids.....	3
BME 334 Bioengineering Heat and Mass Transfer.....	3
BME 416 Biomechanics.....	3
BME 417 Biomedical Engineering Capstone Design I.....	3
BME 435 Physiology for Engineers.....	4
BME 470 Microcomputer Applications in Bioengineering.....	4
BME 490 Biomedical Engineering Capstone Design II.....	3
ECE 380 Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
Technical electives	9
Minimum total	45

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

The major BME courses require a grade of “C” or higher to advance in the program and to receive a baccalaureate degree.

Bioengineering Areas of Study

Technical electives should in general be selected from one of the following emphasis areas. Students can elect to emphasize biochemical engineering, bioelectrical engineering, biomaterials engineering, biomechanical engineering, biomedical imaging engineering, biosystems engineering, molecular and cellular bioengineering, or premedical engineering in their studies. A student may also, with prior approval of the department, select a general area of study or combination of courses that support a career in bioengineering not covered by the following areas.

Biochemical Engineering. This area is designed to strengthen the student’s knowledge of chemistry and transport phenomena and is particularly well suited for students interested in biotechnology. Students should choose technical electives from the following:

BCH 361 Principles of Biochemistry.....	3
or BCH 461 General Biochemistry (3)	
BCH 462 General Biochemistry.....	3
CHE 475 Biochemical Engineering.....	3
CHE 476 Bioreaction Engineering.....	3
CHE 477 Bioprocesses.....	3
CHM 331 General Organic Chemistry.....	3
CHM 332 General Organic Chemistry.....	3
CHM 335 General Organic Chemistry Laboratory.....	1
CHM 336 General Organic Chemistry Laboratory.....	1
MIC 420 Immunology: Molecular and Cellular Foundations.....	3

Bioelectrical Engineering. This area is designed to strengthen the student’s knowledge of electrical systems, electronics, and signal processing. Students considering a career in bioelectric phenomena, biocontrol systems, medical instrumentation, neural engineering, or electrophysiology should consider this area of study. Students should choose technical electives from the following:

BME 350 Signals and Systems for Bioengineers.....	3
or EEE 303 Signals and Systems (3)	
BME 419 Biocontrol Systems.....	3
EEE 302 Electrical Networks II.....	3
EEE 425 Digital Systems and Circuits.....	3
or EEE 433 Analog Integrated Circuits (3)	

Biomaterials Engineering. This area integrates the student’s knowledge of materials science and engineering with biomaterials science and engineering concepts for the design of materials intended to be used for the development of medical and diagnostic devices. It emphasizes structure-property relationships of engineering materials (metals, polymers, ceramics, and composites) and biological materials, biomaterial-host response phenomena, technical and regulatory aspects of biomaterials testing and evaluation. Students interested in careers in the biomaterials, medical device, or biotechnology industries should consider this area of study. Students must take the following two courses:

MSE 353 Introduction to Materials Processing and Synthesis.....	3
MSE 355 Introduction to Materials Science and Engineering.....	3

Students should choose additional technical electives from the following:

BME 494 ST: Biopolymeric Drug Delivery.....	3
MSE 431 Corrosion and Corrosion Control.....	3
MSE 441 Analysis of Material Failures.....	3
MSE 470 Polymers and Composites.....	3
MSE 471 Introduction to Ceramics.....	3

Biomechanical Engineering. This area is designed to strengthen the student’s knowledge of mechanics and control theory. Students interested in careers related to biomechanical analyses, the design of orthotic/prosthetic devices and orthopaedic implants, forensic biomechanics, and rehabilitation engineering should consider this area of study. While students may choose any combination of the following technical electives, it is recommended that courses be

selected from one of three subareas: movement biomechanics, rehabilitation engineering, or orthopaedic biomechanics. The movement biomechanics area is designed to strengthen the student's knowledge of dynamics and control theory. Students interested in analyzing pathological movement disorders, sports techniques, and neuromuscular control should select courses from this area. Rehabilitation engineering emphasizes the design of highly functional products for people with disabilities. Biomechanical, electrical, and mechanical design procedures are used to develop new assistive devices, orthoses, and prostheses. The student primarily interested in the material properties of bones, cartilage, soft tissues, and the design of implants for tissue repair and replacement should select courses from the orthopaedic biomechanics area.

Recommended subarea selections of courses are as follows:

Movement Biomechanics

BME 350 Signals and Systems for Bioengineers.....3	
or EEE 303 Signals and Systems (3)	
BME 419 Biocontrol Systems.....3	
ECE 212 Engineering Mechanics II: Dynamics.....3	
EPE 334 Functional Anatomy and Kinesiology.....3	
or EPE 414 Electromyographic Kinesiology (3)	

Rehabilitation Engineering

ECE 212 Engineering Mechanics II: Dynamics.....3	
EPE 334 Functional Anatomy and Kinesiology.....3	
IEE 437 Human Factors Engineering.....3	
or DSC 344 Human Factors in Design (3)	
IND 354 Principles of Product Design.....3	
MAE 341 Mechanism Analysis and Design.....3	

Orthopaedic Biomechanics

ECE 212 Engineering Mechanics II: Dynamics.....3	
ECE 313 Introduction to Deformable Solids.....3	
EPE 412 Biomechanics of the Skeletal System.....3	
MAE 404 Finite Elements in Engineering.....3	

Biomedical Imaging Engineering. This area is designed to strengthen the student's knowledge of radiation interactions, health physics, medical diagnostic imaging (MRI, PET, X-ray, CT), radiation protection, and nuclear instrumentation. Students considering careers in medical engineering or health physics should consider this area of study. Students should choose technical electives from the following or other departmental approved electives:

BME 350 Signals and Systems for Bioengineers.....3	
or EEE 303 Signals and Systems (3)	
BME 494 ST: Scanning Probe Microscopy.....3	
EEE 460 Nuclear Concepts for the 21st Century.....3	
PHY 361 Introductory Modern Physics.....3	

Biosystems Engineering. This area is designed to strengthen the background of students interested in physiological systems modeling and analysis and design and evaluation of artificial organs and medical devices. Analyzing physiological systems and designing artificial organs require knowledge in integrating electrical, mechanical, transport, and thermofluid systems. Students considering careers in medical device industries, clinical engineering, or artificial organs should consider this area of study.

Students should choose technical electives from the following:

BME 350 Signals and Systems for Bioengineers.....3	
or BME 419 Biocontrol Systems (3)	
BME 411 Biomedical Engineering I.....3	
BME 412 Biomedical Engineering II.....3	
BME 415 Biomedical Transport Processes.....3	
CHE 476 Bioreaction Engineering.....3	

Molecular and Cellular Bioengineering. This area is designed to strengthen and integrate the student's knowledge of molecular and cellular biology, biochemistry, and biomaterials science and engineering for the design of biomolecular- and cellular-based hybrid medical and diagnostic devices. It is particularly suited for students interested in pursuing graduate studies in molecular and cellular bioengineering and health-related biotechnologies.

Students are encouraged to choose the following courses:

BIO 353 Cell Biology.....3	
BME 494 ST: Biotechnology Laboratory Techniques.....3	
CHM 331 General Organic Chemistry.....3	

Students should choose additional or alternative technical electives from the following:

BCH 361 Principles of Biochemistry.....3	
or BCH 461 General Biochemistry (3)	
BIO 340 General Genetics.....4	
or MBB 350 Applied Genetics (4)	
or PLB 350 Applied Genetics (4)	
BIO 343 Genetic Engineering and Society.....4	
or MBB 343 Genetic Engineering and Society (4)	
BME 494 ST: Cell Biotechnology.....3	
BME 494 ST: Introduction to Molecular, Cellular, and Tissue Engineering.....3	
CHE 475 Biochemical Engineering.....3	
or CHE 476 Bioreaction Engineering (3)	
or CHE 477 Bioseparation processes (3)	
CHM 335 General Organic Chemistry Laboratory.....1	

Premedical Engineering. This area is designed to meet the needs of students desiring entry into a medical, dental, or veterinary school. The course sequence provides an excellent background for advanced study leading to a career in research in the medical or life sciences. Technical electives must include the following:

CHM 331 General Organic Chemistry.....3	
CHM 332 General Organic Chemistry.....3	
CHM 335 General Organic Chemistry Laboratory.....1	
CHM 336 General Organic Chemistry Laboratory.....1	

Additional technical electives should be chosen from any of the course offerings listed for the other bioengineering areas of study listed. Note that, to fulfill medical school admission requirements, BIO 187 General Biology is required in addition to the degree requirements and cannot generally be used as a technical elective.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

Bioengineering Program of Study Typical Four-Year Sequence

First Year

First Semester

CHM 113	General Chemistry <i>SQ</i>	4
ECE 100	Introduction to Engineering Design <i>CS</i>	3
ENG 101	First-Year Composition	3
MAT 270	Calculus with Analytic Geometry I <i>MA</i>	4
Total		14

Second Semester

CHM 116	General Chemistry <i>SQ</i>	4
ENG 102	First-Year Composition	3
MAT 271	Calculus with Analytic Geometry II <i>MA</i>	4
PHY 121	University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122	University Physics Laboratory I <i>SQ</i> ¹	1
Total		15

Second Year

First Semester

BIO 188	General Biology II <i>SQ</i>	4
BME 201	Introduction to Bioengineering <i>L</i>	3
ECE 210	Engineering Mechanics I: Statics	3
MAT 272	Calculus with Analytic Geometry III <i>MA</i>	4
PHY 131	University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132	University Physics Laboratory II <i>SQ</i> ²	1
Total		18

Second Semester

ECE 201	Electrical Networks I	4
ECE 350	Structure and Properties of Materials	3
ECN 111	Macroeconomic Principles <i>SB</i>	3
	or ECN 112 Microeconomic Principles <i>SB</i> (3)	
MAT 274	Elementary Differential Equations <i>MA</i>	3
HU/SB and awareness area course ³		3
Total		16

Third Year

First Semester

BME 331	Biomedical Engineering Transport: Fluids	3
BME 435	Physiology for Engineers	4
ECE 300	Intermediate Engineering Design <i>L</i>	3
ECE 340	Thermodynamics	3
ECE 384	Numerical Methods for Engineers	4
Total		17

Second Semester

BME 318	Biomaterials	3
BME 334	Bioengineering Heat and Mass Transfer	3
ECE 334	Electronic Devices and Instrumentation	4
ECE 380	Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
HU/SB and awareness area course ³		3
Total		16

Fourth Year

First Semester

BME 413	Biomedical Instrumentation <i>L</i>	3
BME 416	Biomechanics	3
BME 417	Biomedical Engineering Capstone Design I	3
BME 423	Biomedical Instrumentation Laboratory <i>L</i>	1
HU/SB and awareness area course ³		3

Technical elective(s)	3
Total	16

Second Semester

BME 470	Microcomputer Applications in Bioengineering	4
BME 490	Biomedical Engineering Capstone Design II	3
HU/SB and awareness area course ³		3
Technical electives	6	
Total		16
Total degree requirements	128	

¹ Both PHY 121 and 122 must be taken to secure *SQ* credit.

² Both PHY 131 and 132 must be taken to secure *SQ* credit.

³ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU and SB requirements.

BIOENGINEERING (BME)

BME 201 Introduction to Bioengineering. (3)

fall and spring

Impact of bioengineering on society. Develops an awareness of the contributions of bioengineering to solve medical and biological problems. Prerequisite: ENG 101 or 102 or 105 or 108.

General Studies: L

BME 202 Global Awareness Within Biomedical Engineering Design. (3)

selected semesters

Introduction to ethical, legal, social, economic, and technical issues arising from the design and implementation of bioengineering technology. Lecture, critical discourse. Prerequisites: ECE 100; ECN 111 (or 112); ENG 102 (or 105).

General Studies: L/HU

BME 318 Biomaterials. (3)

spring

Material properties of natural and artificial biomaterials. Tissue and blood biocompatibility. Uses of materials to replace body parts. Prerequisite: ECE 350.

BME 331 Biomedical Engineering Transport: Fluids. (3)

fall

Transport phenomena with emphasis on biomedical engineering fluid systems. Prerequisites: MAT 274; PHY 131.

BME 334 Bioengineering Heat and Mass Transfer. (3)

spring

Applies the principles of heat and mass transfer phenomena to solution of problems in medicine and medical device design. Prerequisite: ECE 340. Prerequisite with a grade of "C" or higher: BME 331.

BME 350 Signals and Systems for Bioengineers. (3)

spring

Applies principles of calculus and ordinary differential equations to modeling and analysis of responses, signals, and signal transfers in biosystems. Prerequisites: ECE 201; MAT 272, 274.

BME 411 Biomedical Engineering I. (3)

once a year

Reviews diagnostic and prosthetic methods using engineering methodology. Introduces transport, metabolic, and autoregulatory processes in the human body. Prerequisite with a grade of "C" or higher: BME 334.

BME 412 Biomedical Engineering II. (3)

once a year

Reviews electrophysiology and nerve pacing applications. Introduces biomechanics and joint/limb replacement technology, cardiovascular and pulmonary fluid mechanics, and the application of mathematical modeling. Prerequisite: instructor approval.

BME 413 Biomedical Instrumentation. (3)

fall

Principles of medical instrumentation. Studies of medical diagnostic instruments and techniques for the measurement of physiologic variables in living systems. Prerequisites: ECE 300, 334. Prerequisite with a grade of "C" or higher: BME 435. Corequisite: BME 423.

General Studies: L (if credit also earned in BME 423)

BME 415 Biomedical Transport Processes. (3)

once a year

Principles of momentum, heat, and mass transport with applications to medical and biological systems and medical device design. Prerequisites: MAT 274; PHY 131.

BME 416 Biomechanics. (3)

fall

Mechanical properties of bone, muscle, and soft tissue. Static and dynamic analysis of human movement tasks such as locomotion. Prerequisite with a grade of "C" or higher: BME 318.

BME 417 Biomedical Engineering Capstone Design I. (3)

fall

Technical, regulatory, economic, legal, social, and ethical aspects of medical device systems engineering design. Lecture, field trips. Prerequisite: ECE 300. Prerequisites with a grade of "C" or higher: BME 318, 334.

BME 419 Biocontrol Systems. (3)

fall

Applies linear and nonlinear control systems techniques to analysis of neuromusculoskeletal, cardiovascular, thermal, and mass transfer systems of the body. Prerequisites: ECE 201; MAT 274.

BME 423 Biomedical Instrumentation Laboratory. (1)

fall

Laboratory experience with problems, concepts, and techniques of biomedical instrumentation in static and dynamic environments. Lab. Prerequisites: ECE 300, 334. Prerequisite with a grade of "C" or higher: BME 435. Corequisite: BME 413.

General Studies: L (if credit also earned in BME 413)

BME 435 Physiology for Engineers. (4)

fall

Physiology of the nervous, muscular, cardiovascular, endocrine, renal, and respiratory systems. Emphasizes use of quantitative methods in understanding physiological systems. Lecture, lab. Prerequisites: a combination of BIO 188 and CHM 116 and PHY 131 or only instructor approval.

BME 470 Microcomputer Applications in Bioengineering. (4)

spring

Uses microcomputers for real-time data collection, analysis, and control of experiments involving actual and simulated physiological systems. Lecture, lab. Prerequisites: ECE 100, 334. Prerequisite with a grade of "C" or higher: BME 435.

BME 490 Biomedical Engineering Capstone Design II. (1–5)

spring

Individual projects in medical systems or medical device design and development. Lecture, lab. Prerequisite with a grade of "C" or higher: BME 417.

BME 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Biopolymeric Drug Delivery. (3)
- Biotechnology Laboratory Techniques. (3)
- Cell Biotechnology. (3)
- Introduction to Molecular, Cellular, and Tissue Engineering. (3)
- Scanning Probe Microscopy. (3)

BME 496 Professional Seminar. (1–3)

fall and spring

Professional and ethical aspects with a discussion of responsibilities. Lecture, field trips. Prerequisite: instructor approval.

BME 511 Biomedical Engineering I. (3)

once a year

Diagnostic and prosthetic methods using engineering methodology. Transport, metabolic, and autoregulatory processes in the body.

BME 512 Biomedical Engineering II. (3)

once a year

Electrophysiology and nerve pacing applications. Introduces biomechanics and joint/limb replacement, technology, cardiovascular and pulmonary fluid mechanics, and mathematical modeling.

BME 513 Biomedical Instrumentation. (3)

fall

Principles of medical instrumentation. Studies of medical diagnostic instruments and techniques for the measurement of physiologic variables in living systems.

BME 514 Advanced Biomedical Instrumentation. (3)

selected semesters

Principles of applied biophysical measurements using bioelectric and radiological approach. Prerequisites: ECE 334; MAT 274 (or its equivalent).

BME 515 Biomedical Transport Processes. (3)

selected semesters

Principles of momentum, heat, and mass transport with applications to medical and biological systems and medical device design. Prerequisite: instructor approval.

BME 516 Topics in Biomechanics. (3)

fall

Mechanical properties of bone, muscle, and soft tissue. Static and dynamic analysis of human movement tasks, including in-depth project. Prerequisite: instructor approval.

BME 518 Introduction to Biomaterials. (3)

spring

Topics include structure property relationships for synthetic and natural biomaterials, biocompatibility, and uses of materials to replace body parts. Prerequisite: ECE 350 (or its equivalent) or instructor approval.

BME 519 Topics in Biocontrol Systems. (3)

fall

Linear and nonlinear control systems analysis of neuromusculoskeletal, cardiovascular, thermal, and mass transfer systems of the body, including in-depth project. Prerequisites: both ECE 201 and MAT 274 or only instructor approval.

BME 520 Bioelectric Phenomena. (3)

selected semesters

Study of the origin, propagation, and interactions of bioelectricity in living things; volume conductor problem, mathematical analysis of bioelectric interactions, and uses in medical diagnostics.

BME 521 Neuromuscular Control Systems. (3)

spring

Overview of sensorimotor brain structures. Application of nonlinear, adaptive, optimal, and supervisory control theory to eye-head-hand coordination and locomotion.

BME 522 Biosensor Design and Application. (3)

once a year

Theory and principles of biosensor design and application in medicine and biology. Principles of measurements with biosensors. Prerequisite: instructor approval.

BME 523 Physiological Instrumentation Lab. (1)

fall

Laboratory experience with problems, concepts, and techniques of biomedical instrumentation in static and dynamic environments. Lab. Prerequisites: BME 435; ECE 334. Pre- or corequisite: BME 513.

BME 524 Fundamentals of Applied Neural Control. (3)

once a year

Fundamental concepts of electrical stimulation and recording in the nervous system with the goal of functional control restoration. Pre- or corequisite: BME 435 or instructor approval.

BME 525 Surgical Techniques. (2)

spring

Principles of surgical techniques, standard operative procedures, federal regulations, guidelines, and state-of-the-art methods. Lecture, lab.

BME 532 Prosthetic and Rehabilitation Engineering. (3)

once a year

Analysis and critical assessment of design and control strategies for state-of-the-art medical devices used in rehabilitation engineering. Pre- or corequisite: BME 416 or 516 or EPE 610.

BME 533 Transport Processes I. (3)

fall

Unified treatment of momentum, heat, and mass transfer from molecular theory, and continuum points of view. Continuum equations of microscopic and macroscopic systems and multicomponent and

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

multiphase systems. Cross-listed as CHE 533. Credit is allowed for only BME 533 or CHE 533.

BME 534 Transport Processes II. (3)

spring

Continuation of BME 533 or CHE 533, emphasizing mass transfer. Cross-listed as CHE 534. Credit is allowed for only BME 534 or CHE 534. Prerequisite: BME 533 or CHE 533.

BME 543 Thermodynamics of Chemical Systems. (3)

fall

Classical and statistical thermodynamics of nonideal physicochemical systems and processes; prediction of optimum operating conditions. Cross-listed as CHE 543. Credit is allowed for only BME 543 or CHE 543.

BME 544 Chemical Reactor Engineering. (3)

spring

Reaction rates, thermodynamics, and transport principles applied to the design and operation of chemical reactors. Cross-listed as CHE 544. Credit is allowed for only BME 544 or CHE 544. Prerequisite: BME 543 or CHE 543.

BME 551 Movement Biomechanics. (3)

spring

Mechanics applied to the analysis and modeling of physiological movements. Computational modeling of muscles, tendons, joints, and the skeletal system with application to sports and rehabilitation. Prerequisite: BME 416 or 516 or instructor approval.

BME 566 Medical Imaging Instrumentation. (3)

selected semesters

Design and analysis of imaging systems and nuclear devices for medical diagnosis, therapy, and research. Laboratory experiments using diagnostic radiology, fluoroscopy, ultrasound, and CAT scanning. Lecture, lab. Prerequisite: instructor approval.

BME 568 Medical Imaging. (3)

selected semesters

CT, SPECT, PET, and MRI. 3-dimensional *in vivo* measurements. Instrument design, physiological modeling, clinical protocols, reconstruction algorithms, and quantitation issues. Prerequisite: instructor approval.

BME 593 Applied Project. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Chemical and Materials Engineering

www.eas.asu.edu/~cme

480/965-3313

ECG 202

Subhash Mahajan, Chair

Regents' Professor: Mayer

Professors: Adams, Dey, Krause, Mahajan, Newman, Picraux, Raupp, Sieradzki

Associate Professors: Alford, Beaudoin, Beckman, Burrows, Rivera, Sierks, Van Schilfgaarde

Assistant Professors: Allen, Chawla, Dillner, Razatos

The faculty in the Department of Chemical and Materials Engineering offer the B.S.E. degree in Chemical Engineer-

ing and in Materials Science and Engineering. Each of these majors builds on a broad base of knowledge within the basic and mathematical sciences and the engineering core. Each offers excellent career opportunities.

Chemical engineers design and operate processes that may include chemical change. They combine the science of chemistry with the discipline of engineering in order to solve complex problems in a wide variety of industries. Challenging job opportunities exist not only in the chemical and petroleum industries, but also in the plastics, electronics, computer, metals, space, food, drug, and health care industries. In these industries, chemical engineers practice in a wide variety of occupations including environmental control, surface treatments, energy and materials transformation, biomedical applications, fermentation, protein recovery, extractive metallurgy, and separations. In the environmental area, chemical engineers develop methods to reduce the pollution created in manufacturing processes, devise techniques to recover usable materials from wastes, design waste storage and treatment facilities, and design pollution control strategies.

Materials science and engineering uses fundamental knowledge in chemistry and physics to correlate relationships between the structure and processing of materials and their properties. Students educated in this discipline decide how to optimize existing materials or how to develop new advanced materials and processing techniques. Students who major in materials science and engineering will find employment opportunities in a variety of industries and research facilities, which include aerospace, electronics, energy conversion, manufacturing, medical devices, semiconductors, and transportation.

CHEMICAL ENGINEERING—B.S.E.

Chemical engineers are generally concerned with transfer within and between liquid, gas, and solid phases and the chemical changes that may also occur. The engineers design and operate processes that accommodate such changes, including the chemical activation of materials. Typically this involves complex multicomponent systems wherein the interactions between species have to be considered and analyzed. The new challenge in chemical engineering is to apply the principles of fluid dynamics, mass transfer, solution thermodynamics, reaction kinetics, and separation techniques to technological endeavors such as pollution control within manufacturing and the environment, integrated circuit design, solid-state surface treatments, and materials processing.

Consequently, in addition to the chemical and petroleum industries, chemical engineers find challenging opportunities in the plastics, solid-state, electronics, computer, metals, space, food, drug, and health care industries, where they practice in a wide variety of occupations, such as environmental control, surface treatments, energy and materials transformations, biomedical applications, fermentation, protein recovery, extractive metallurgy, and separations. While a large percentage of the industrial positions are filled by graduates with bachelor's degrees, there are lucrative and creative opportunities in research and development for those who acquire postgraduate education.

Subspecializations have developed within the profession. However, the same broad body of knowledge is generally expected of all chemical engineers for maximum flexibility in industrial positions. The preparation for chemical engineering is accomplished by a blend of classroom instruction and laboratory experience.

DEGREE REQUIREMENTS

A minimum of 128 semester hours is necessary for the B.S.E. degree in Chemical Engineering. A minimum of 50 upper-division semester hours is required. Students must attain a GPA of at least 2.00 for the courses in the major field.

GRADUATION REQUIREMENTS

In addition to fulfilling school and major requirements, majors must satisfy all university graduation requirements. See ["University Graduation Requirements," page 79.](#)

COURSE REQUIREMENTS

The course work for the undergraduate degree can be classified into the following categories (in semester hours):

First-Year Composition

Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
-----or-----	
ENG 105 Advanced First-Year Composition (3)	
Elective chosen with an advisor (3)	
-----or-----	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
Total	6

General Studies/School Requirements

Humanities and Fine Arts/Social and Behavioral Sciences

ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
HU/SB and awareness area courses ¹	12
Total	15

Literacy and Critical Inquiry

CHE 352 Transport Laboratories <i>L</i>	3
ECE 300 Intermediate Engineering Design <i>L</i>	3
Total	6

Natural Sciences/Basic Sciences

CHM 113 General Chemistry <i>SQ</i>	4
CHM 116 General Chemistry <i>SQ</i>	4
CHM 331 General Organic Chemistry	3
CHM 335 General Organic Chemistry Laboratory	1
PHY 121 University Physics I: Mechanics <i>SQ</i> ²	3
PHY 122 University Physics Laboratory I <i>SQ</i> ²	1
Total	16

Mathematical Studies

ECE 100 Introduction to Engineering Design <i>CS</i>	3
ECE 384 Numerical Methods for Engineers	4
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4

MAT 274 Elementary Differential Equations <i>MA</i>	3
Total	22
General Studies/school requirements total	59
Engineering Core	
CHE 342 Applied Chemical Thermodynamics	4
CHE 461 Process Control <i>CS</i>	4
ECE 394 ST: Conservation Principles	4
ECE 394 ST: Engineering Systems	4
ECE 394 ST: Properties that Matter	3
Total	19
Major	
CHE 311 Introduction to Chemical Processing	3
CHE 331 Transport Phenomena I: Fluids	3
CHE 332 Transport Phenomena II: Energy Transfer	3
CHE 333 Transport Phenomena III: Mass Transfer	3
CHE 432 Principles of Chemical Engineering Design	3
CHE 442 Chemical Reactor Design	3
CHE 451 Chemical Engineering Laboratory	2
CHE 462 Process Design	3
CHM 332 General Organic Chemistry	3
ECE 380 Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
Technical electives	15
Total	44

¹ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU or SB requirements.
² Both PHY 121 and 122 must be taken to secure SQ credit.

Students should consult with their department academic advisors to ensure that all requirements are met.

The technical elective courses must be selected from upper-division courses with an advisor's approval and must include two three-semester-hour chemistry courses; a three-semester-hour natural science or materials course; and a three-semester-hour chemical engineering course.

To fulfill accreditation requirements and to prepare adequately for the advanced chemistry courses, Chemical Engineering majors are required to take the CHM 113 and 116 introductory chemistry sequence (CHM 117 and 118 are acceptable substitutes). Other freshman chemistry courses are *not acceptable*, and transfer students who have taken another chemistry course may be required to enroll in CHM 113 and 116.

Chemical Engineering Areas of Study

Students who wish to specialize may develop an area of interest through the use of technical electives and selective substitutions for required courses. Substitutions must be approved by the advisor and the Department Standards Committee and must be consistent with ABET accreditation criteria. No substitution of CHE 462 is allowed. The following are possible elective areas with suggested courses. A student may choose electives within the general department guidelines and does not have to select one of the areas listed.

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See ["General Studies," page 83.](#)

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

Biochemical. Students wishing to prepare for a career in biotechnology, fermentation, food processing, pharmaceuticals, and other areas within biochemical engineering should select from the following:

Chemistry Electives

BCH 361 Principles of Biochemistry.....3 or BCH 461 General Biochemistry (3)	3
BCH 462 General Biochemistry	3

Technical Electives

CHE 475 Biochemical Engineering.....3	3
CHE 476 Bioreaction Engineering	3
CHE 477 Bioseparation Processes.....3	3
CHE 494 ST: Biotechnology Techniques	3

Biomedical. Students who are interested in biomedical engineering but wish to maintain a strong, broad chemical engineering base should select from the following:

Chemistry Electives

BCH 361 Principles of Biochemistry.....3 or BCH 461 General Biochemistry (3)	3
BCH 462 General Biochemistry	3

Technical Electives

BME 318 Biomaterials	3
BME 435 Physiology for Engineers.....4	4

Environmental. Students interested in environmental engineering are encouraged to pursue a B.S.E. degree in Chemical Engineering with this area of study. Students interested in the management of hazardous wastes and air and water pollution should select from the following:

Chemistry Electives

BCH 361 Principles of Biochemistry.....3 or BCH 461 General Biochemistry (3)	3
CHM 302 Environmental Chemistry	3
CHM 481 Geochemistry	3
CHM 494 ST: Chemistry of Global Climate Change	3

Technical Electives

CEE 561 Physical-Chemical Treatment of Water and Waste	3
CEE 563 Environmental Chemistry Laboratory	3
CHE 474 Chemical Engineering Design for the Environment	3
CHE 478 Industrial Water Quality Engineering	3
CHE 479 Air Quality Control.....3	3

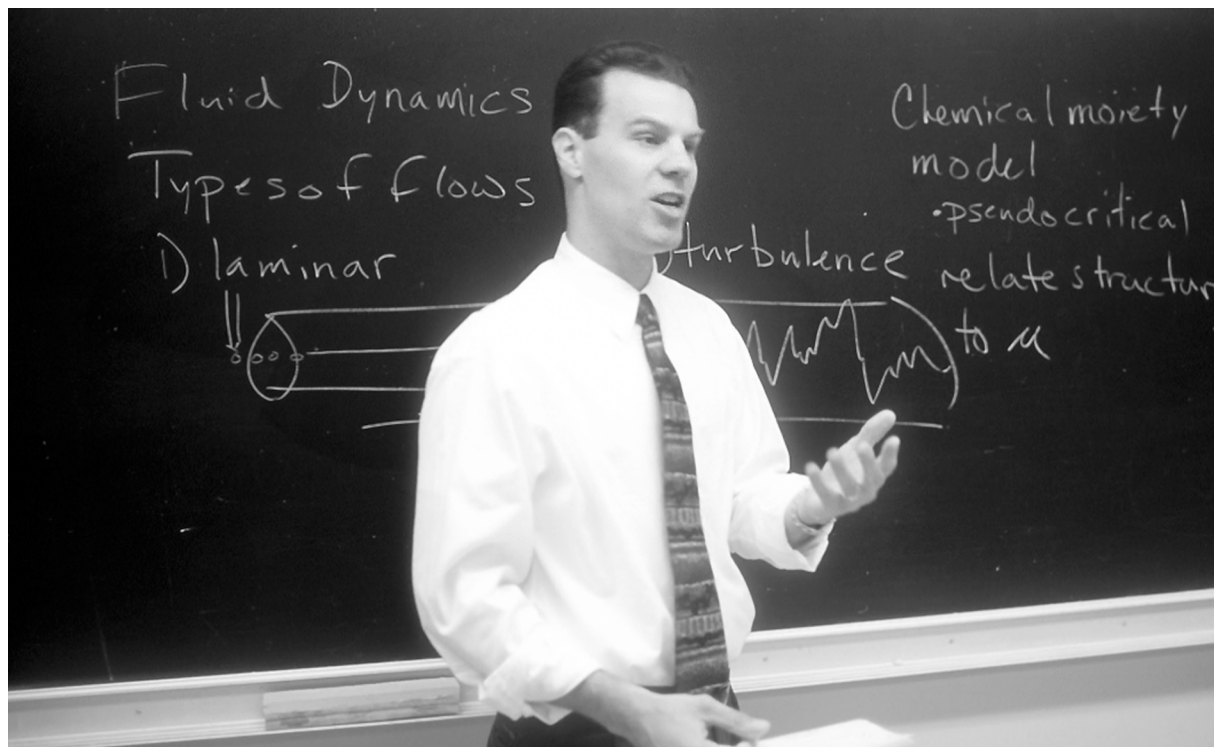
Materials. Students interested in the development and production of new materials such as alloys, ceramics, composites, polymers, semiconductors, and superconductors should select from the following:

Chemistry Electives

CHM 345 Physical Chemistry I.....3	3
CHM 346 Physical Chemistry II.....3	3
CHM 453 Inorganic Chemistry.....3	3
CHM 471 Solid-State Chemistry	3

Technical Electives

BME 318 Biomaterials	3
CHE 458 Semiconductor Material Processing	3
ECE 352 Properties of Electronic Materials	4
MSE 353 Introduction to Materials Processing and Synthesis	3
MSE 354 Experiments in Materials Synthesis and Processing I...2	2
MSE 431 Corrosion and Corrosion Control.....3	3
MSE 470 Polymers and Composites.....3	3



Dr. Steve Beaudoin addresses his chemical and materials engineering class. Beaudoin has been identified by his students, a parent organization, and his colleagues as a talented faculty member and gifted researcher.

John Phillips photo

DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING

Premedical. Students planning to attend medical school should select courses from those listed under the biomedical area. In addition, BIO 187, 188, and CHM 336 must be taken to satisfy medical-school requirements but are not counted toward the Chemical Engineering bachelor's degree.

Process Engineering. The engineering core and required chemical engineering courses serve as a suitable background for students intending to enter the traditional petrochemical and chemical process industries. Students can build on this background by selecting courses with the approval of their advisor. Examples of these courses are as follows:

CHE 474	Chemical Engineering Design for the Environment	.....3
CHE 478	Industrial Water Quality Engineering	.....3
CHE 479	Air Quality Control	.....3
CHE 494	ST: Advanced Process Control	.....3
CHE 528	Process Optimization Techniques	.....3
CHE 556	Separation Processes	.....3
CHE 563	Chemical Engineering Design	.....3
MAE 436	Combustion	.....1-4

Semiconductor Processing. Students interested in the development and manufacturing of semiconductor and other electronic devices should select from the following:

Chemistry Electives		
CHM 345	Physical Chemistry I	.....3
CHM 346	Physical Chemistry II	.....3
CHM 453	Inorganic Chemistry	.....3
CHM 471	Solid-State Chemistry	.....3

Technical Electives		
CHE 458	Semiconductor Material Processing	.....3
CHE 494	Special Topics	.....1-4
ECE 352	Properties of Electronic Materials	.....4
EEE 435	Microelectronics	.....3
EEE 436	Fundamentals of Solid-State Devices	.....3
EEE 439	Semiconductor Facilities and Cleanroom Practices	.....3
MSE 353	Introduction to Materials Processing and Synthesis	.....3
MSE 354	Experiments in Materials Synthesis and Processing I	...2

Chemical Engineering Program of Study Typical Four-Year Sequence

First Year

First Semester		
CHM 113	General Chemistry <i>SQ</i>	.....4
ECE 100	Introduction to Engineering Design <i>CS</i>	.....3
ENG 101	First-Year Composition	.....3
MAT 270	Calculus with Analytic Geometry I <i>MA</i>	.....4
Total		.....14

Second Semester		
CHM 116	General Chemistry <i>SQ</i>	.....4
ENG 102	First-Year Composition	.....3
MAT 271	Calculus with Analytic Geometry II	.....4
PHY 121	University Physics I: Mechanics <i>SQ*</i>3
PHY 122	University Physics Laboratory I <i>SQ*</i>1
Total		.....15

Second Year

First Semester		
CHE 311	Introduction to Chemical Processing	.....3
CHM 331	General Organic Chemistry	.....3

CHM 335	General Organic Chemistry Laboratory	.....1
ECE 394	ST: Conservation Principles	.....4
ECN 111	Macroeconomic Principles <i>SB</i>	.....3
	or ECN 112 Microeconomic Principles <i>SB</i> (3)	
MAT 274	Elementary Differential Equations <i>MA</i>	.....3
Total		.....17

Second Semester		
CHE 331	Transport Phenomena I: Fluids	.....3
CHM 332	General Organic Chemistry	.....3
ECE 394	ST: Properties that Matter	.....3
MAT 272	Calculus with Analytic Geometry III <i>MA</i>	.....4
HU/SB	and awareness area course	.....3
Total		.....16

Third Year

First Semester		
CHE 332	Transport Phenomena II: Energy Transfer	.....3
CHE 342	Applied Chemical Thermodynamics	.....4
ECE 300	Intermediate Engineering Design <i>L</i>	.....3
ECE 380	Probability and Statistics for Engineering Problem Solving	.....3
ECE 384	Numerical Methods for Engineers	.....4
Total		.....17

Second Semester		
CHE 333	Transport Phenomena III: Mass Transfer	.....3
CHE 352	Transport Laboratories <i>L</i>	.....3
CHE 432	Principles of Chemical Engineering Design	.....3
ECE 394	ST: Engineering Systems	.....4
HU/SB	and awareness area course	.....3
Total		.....16

Fourth Year

First Semester		
CHE 442	Chemical Reactor Design	.....3
CHE 451	Chemical Engineering Laboratory	.....2
CHE 461	Process Control <i>CS</i>	.....4
HU/SB	and awareness area course	.....3
Technical electives		.....6
Total		.....18

Second Semester		
CHE 462	Process Design	.....3
HU/SB	and awareness area course	.....3
Technical electives		.....9
Total		.....15
Total degree requirements		.....128

* Both PHY 121 and 122 must be taken to secure *SQ* credit.

MATERIALS SCIENCE AND ENGINEERING— B.S.E.

Materials engineers create innovations that result in new and improved materials that help drive the cutting edge of new technologies in many industries. These include the auto, aerospace, electronics, semiconductor, materials production, and health professions. The space shuttle, light-weight cars, and today's fastest computers have all been

L literacy and critical inquiry / *MA* mathematics / *CS* computer/statistics/quantitative applications / *HU* humanities and fine arts / *SB* social and behavioral sciences / *SG* natural science—general core courses / *SQ* natural science—quantitative / *C* cultural diversity in the United States / *G* global / *H* historical / See "General Studies," page 83.

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

developed using the latest materials technologies. In advancing today's technologies, materials engineers fulfill a wide range of job responsibilities that significantly impact other engineering disciplines and include

1. selecting the best material for a given application or developing innovative materials and processing techniques for new applications;
2. characterizing and analyzing failed products in order to redesign more reliable and robust engineering components; and
3. impacting technological advances in larger-scale projects through working in a team environment with other engineers from the chemical, electrical, mechanical, aerospace and other engineering disciplines.

The Materials Science and Engineering degree program at ASU has outstanding faculty who have national reputations in the areas of both structural and electronic materials. The faculty bring significant professional expertise to classroom teaching, which is complemented by enlightening experimental work in the program's contemporary, well-equipped laboratory facilities. This atmosphere promotes quality undergraduate research projects and senior design projects that frequently result in patents and technical publications. Examples of recent patent applications include an improved method for producing artificial Teflon arteries and an improved technique for testing steel in air bag containers. Such preparation and experiences give the programs's graduates an edge in seeking employment at the best companies or admission to the nation's leading graduate schools. The program's educational experience is also enhanced by numerous scholarships available to students ranging from entering freshman to final-year seniors.

The Materials Science and Engineering degree program is accredited by the national organization of Accreditation Board for Engineering and Technology, Inc. As such, it has an identifiable program mission, objectives, and outcomes, which reflect, encompass, and embody the unique educational development that a student experiences as he or she progresses through the program to graduation. The mission and objectives are described below.

The mission of the Materials Science and Engineering degree program is to educate students in the application of basic principles of science toward the design, utilization, and improvement of materials in engineering components and systems for the betterment of society. To accomplish this mission, the program's graduates fulfill the following objective: (1) Graduates will have the strong educational foundation in materials science and engineering that promotes success in the broad range of career opportunities available in graduate school, industry, and government; and (2) graduates will have the personal skills and values that promote their success in the rapidly changing, culturally diverse workplace that reflects the needs of contemporary society.

DEGREE REQUIREMENTS

A minimum of 128 semester hours is necessary for the B.S.E. degree in Materials Science and Engineering. A min-

imum of 50 upper-division semester hours is required. Students must attain a GPA of at least 2.00 for the courses in the major field.

Graduation Requirements. In addition to fulfilling school and major requirements, majors must satisfy all university graduation requirements. See "[University Graduation Requirements](#)," page 79.

Course Requirements. The undergraduate curriculum requires that students take a series of interdisciplinary courses of fundamental importance to an understanding of all engineering materials. Following these are additional courses that may be taken as technical electives to develop an area of study. The courses for the undergraduate degree can be classified into the following categories (in semester hours):

First-Year Composition

Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
_____or_____	
ENG 105 Advanced First-Year Composition (3)	
Elective chosen with an advisor (3)	
_____or_____	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	

Total	6

General Studies/School Requirements

<i>Humanities and Fine Arts/Social and Behavioral Sciences</i>	
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
HU, SB, and awareness area courses	12

Total	15
<i>Literacy and Critical Inquiry</i>	
ECE 300 Intermediate Engineering Design <i>L</i>	3
MSE 482 Materials Engineering Design	3

Total	6
<i>Natural Sciences/Basic Sciences</i>	
CHM 113 General Chemistry <i>SQ</i>	4
CHM 116 General Chemistry <i>SQ</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122 University Physics Laboratory <i>SQ</i> ¹	1
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132 University Physics Laboratory II <i>SQ</i> ²	1

Total	16
<i>Mathematical Studies</i>	
ECE 100 Introduction to Engineering Design <i>CS</i>	3
MAT 242 Elementary Linear Algebra	2
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
MAT 274 Elementary Differential Equations <i>MA</i>	3

Total	20
General Studies/school requirements total	57

Engineering Core

ECE 201 Electrical Networks I	4
ECE 210 Engineering Mechanics I: Statics	3
ECE 313 Introduction to Deformable Solids	3

DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING

ECE 350 Structure and Properties of Materials	3
MSE 430 Thermodynamics of Materials	3
Total	16

Major

ECE 380 Probability and Statistics for Engineering Problem Solving CS	3
MSE 194 ST: Challenges in Materials Engineering	1
MSE 353 Introduction to Materials Processing and Synthesis	3
MSE 354 Experiments in Materials Synthesis and Processing.....	2
MSE 355 Introduction to Materials Science and Engineering.....	3
MSE 420 Physical Metallurgy	3
MSE 421 Physical Metallurgy Laboratory	1
MSE 440 Mechanical Properties of Solids	3
MSE 450 X-ray and Electron Diffraction	3
MSE 470 Polymers and Composites.....	3
MSE 471 Introduction to Ceramics.....	3
MSE 490 Capstone Design Project.....	3
Select two of the following four courses ³	6
CHM 325 Analytical Chemistry (3)	
CHM 331 General Organic Chemistry (3)	
CHM 341 Elementary Physical Chemistry (3)	
PHY 361 Introductory Modern Physics (3)	
Technical electives	12
Total	49

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

³ To take CHM 341 Elementary Physical Chemistry, CHM 331 Organic Chemistry must be taken as the prerequisite.

Materials Science and Engineering Areas of Study

Technical electives may be selected from one or more of the following areas. A student may, with prior approval of the department, select a general area or a set of courses that would support a career objective not covered by the following categories.

Biomaterials. Students interested in the materials used in the body and other living systems to improve or replace body components should choose from the following technical electives:

BME 318 Biomaterials	3
BME 411 Biomedical Engineering I	3
BME 412 Biomedical Engineering II.....	3
BME 413 Biomedical Instrumentation <i>L</i>	3
BME 416 Biomechanics.....	3

Ceramic Materials. Students who want to develop an understanding of the chemistry and processing that control the structure and properties of ceramics and their application should select from these technical electives:

CHM 331 General Organic Chemistry	3
CHM 332 General Organic Chemistry	3
CHM 471 Solid-State Chemistry	3
EEE 435 Microelectronics	3
EEE 436 Fundamentals of Solid-State Devices	3
EEE 439 Semiconductor Facilities and Cleanroom Practices.....	3

Energy Systems. Students interested in the materials used in energy conversion systems such as solar energy or nuclear energy should choose from the following technical electives:

MAE 441 Principles of Design.....	3
MAE 442 Mechanical Systems Design	3
MSE 431 Corrosion and Corrosion Control.....	3
MSE 441 Analysis of Material Failures.....	3

Integrated Circuit Materials. Students interested in the materials used in the semiconductor industry and in how they are processed to achieve the desired properties should choose from the following technical electives:

CHE 458 Semiconductor Material Processing	3
EEE 435 Microelectronics	3
EEE 436 Fundamentals of Solid-State Devices	3
EEE 439 Semiconductor Facilities and Cleanroom Practices.....	3

Manufacturing and Materials Processing. Students interested in the manufacturing and processing of materials for a broad base of applications should choose from the following technical electives:

CHE 458 Semiconductor Material Processing	3
IEE 360 Manufacturing Processes	3
IEE 361 Manufacturing Processes Laboratory	1
MAE 422 Mechanics of Materials.....	4
MAE 441 Principles of Design.....	3
MAE 442 Mechanical Systems Design	3
MSE 431 Corrosion and Corrosion Control.....	3
MSE 441 Analysis of Material Failures.....	3

Mechanical Metallurgy. Students interested in understanding the design, processing, and manufacturing of metals for structural applications, such as autos, airplanes, and buildings, should choose from the following technical electives:

MAE 415 Vibration Analysis.....	4
MAE 422 Mechanics of Materials.....	4
MAE 441 Principles of Design.....	3
MAE 442 Mechanical Systems Design	3
MSE 431 Corrosion and Corrosion Control.....	3
MSE 441 Analysis of Materials Failures.....	3

Metallic Materials Systems. Students interested in building an understanding of the basis for the design and processing of metals and alloys should choose from the following technical electives:

MAE 351 Manufacturing Processes	3
MSE 431 Corrosion and Corrosion Control.....	3
MSE 441 Analysis of Material Failures.....	3

Polymers and Composites. Students who desire to build an understanding of the chemical and processing basis for the properties of polymers and their applications, including composite systems, should select from the following technical electives:

CHM 331 General Organic Chemistry	3
CHM 332 General Organic Chemistry	3
CHM 471 Solid-State Chemistry	3
MSE 441 Analysis of Material Failures.....	3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

Materials Science and Engineering Program of Study Typical Four-Year Sequence

First Year

First Semester

CHM 113	General Chemistry <i>SQ</i>	4
ECE 100	Introduction to Engineering Design <i>CS</i>	3
ENG 101	First-Year Composition	3
MAT 270	Calculus with Analytic Geometry I <i>MA</i>	4
MSE 194	ST: Challenges in Materials Engineering	1
Total		15

Second Semester

CHM 116	General Chemistry <i>SQ</i>	4
ENG 102	First-Year Composition	3
MAT 271	Calculus with Analytic Geometry II <i>MA</i>	4
PHY 121	University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122	University Physics Laboratory I <i>SQ</i> ¹	1
Total		15

Second Year

First Semester

ECE 210	Engineering Mechanics I: Statics	3
ECE 350	Structure and Properties of Materials	3
MAT 242	Elementary Linear Algebra	2
MAT 272	Calculus with Analytic Geometry III <i>MA</i>	4
PHY 131	University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132	University Physics Laboratory II <i>SQ</i> ²	1
Total		16

Second Semester

ECE 201	Electrical Networks I	4
ECE 313	Introduction to Deformable Solids	3
ECE 380	Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
MAT 274	Elementary Differential Equations <i>MA</i>	3
Technical elective		3
Total		16

Third Year

First Semester

ECE 300	Intermediate Engineering Design <i>L</i>	3
ECN 111	Macroeconomic Principles <i>SB</i>	3
MSE 353	Introduction to Materials Processing and Synthesis	3
MSE 355	Introduction to Materials Science and Engineering	3
Advanced science course ³		3
Total		15

Second Semester

MSE 354	Experiments in Materials Synthesis and Processing	2
MSE 420	Physical Metallurgy	3
MSE 421	Physical Metallurgy Laboratory	1
MSE 430	Thermodynamics of Materials	3
MSE 450	X-ray and Electron Diffraction	3
HU/SB and awareness area courses ⁴		6
Total		18

Fourth Year

First Semester

MSE 440	Mechanical Properties of Solids	3
MSE 470	Polymers and Composites	3
MSE 471	Introduction to Ceramics	3
MSE 482	Materials Engineering Design	3

Technical electives	3
HU/SB and awareness area course ⁴	3
Total	18

Second Semester

MSE 490	Capstone Design Project	3
Advanced science course ⁵		3
HU/SB and awareness area course ⁴		3
Technical elective		6
Total		15
Total degree requirements		128

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

³ To take CHM 341 Elementary Physical Chemistry, CHM 331 Organic Chemistry must be taken as the prerequisite.

⁴ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU and SB requirements.

GRADUATE STUDY

The faculty in the Department of Chemical and Materials Engineering also offer graduate programs leading to the M.S., M.S.E., and Ph.D. degrees. These programs provide a blend of classroom instruction and research. Many various topical and relevant research projects are available for thesis topics. Students interested in these programs should contact the department for up-to-date descriptive literature.

CHEMICAL ENGINEERING (CHE)

CHE 311 Introduction to Chemical Processing. (3)

fall

Applies chemical engineering analysis and problem solving to chemical processes material and energy balance methods and skills. Prerequisites: CHM 116; MAT 271.

CHE 331 Transport Phenomena I: Fluids. (3)

spring

Transport phenomena, with emphasis on fluid systems. Prerequisites: CHE 311; ECE 394 ST: Conservation Principles; MAT 274.

CHE 332 Transport Phenomena II: Energy Transfer. (3)

fall

Continuation of transport principles, with emphasis on energy transport in stationary and fluid systems. Prerequisite: CHE 331.

CHE 333 Transport Phenomena III: Mass Transfer. (3)

spring

Applies transport phenomena to mass transfer. Design of mass transfer equipment, including staged processes. Prerequisite: CHE 332.

CHE 342 Applied Chemical Thermodynamics. (4)

fall

Applies conservation and accounting principles with nonideal property estimation techniques to model phase and chemical equilibrium processes. Lecture, recitation. Prerequisites: CHE 311; ECE 394 ST: Conservation Principles, ECE 394 ST: Properties that Matter. Pre- or corequisite: MAT 272.

CHE 352 Transport Laboratories. (3)

spring

Demonstrates transport phenomena principles with experiments in fluid flow, heat, and mass transfer. Prerequisites: CHE 332; ECE 300. Pre- or corequisite: CHE 333.

General Studies: L

CHE 432 Principles of Chemical Engineering Design. (3)

fall

Multicomponent distillation, engineering economics, equipment sizing and costs, plant operation economics, and simulation and optimization techniques. Prerequisites: CHE 332, 342.

CHE 442 Chemical Reactor Design. (3)

spring

Applies kinetics to chemical reactor design. Prerequisite: CHE 342. Pre- or corequisite: CHE 333.

CHE 451 Chemical Engineering Laboratory. (2)

fall

Operation, control, and design of experimental and industrial process equipment; independent research projects. 6 hours lab. Prerequisites: CHE 333, 352; ECE 384.

CHE 458 Semiconductor Material Processing. (3)

selected semesters

Introduces the processing and characterization of electronic materials for semiconductor applications. Prerequisites: CHE 333, 342.

CHE 461 Process Control. (4)

fall

Process dynamics, instrumentation, and feedback applied to automatic process control. Lecture, lab. Prerequisite: ECE 394 ST: Engineering Systems.

General Studies: CS

CHE 462 Process Design. (3)

spring

Applies economic principles to optimize equipment selection and design; development and design of process systems. Prerequisites: CHE 432, 442.

CHE 474 Chemical Engineering Design for the Environment. (3)

fall

Conflict of processing materials and preserving the natural resources. Teaches students to understand and value the environment and attempt to control our impact. Prerequisites: CHE 333, 342.

CHE 475 Biochemical Engineering. (3)

selected semesters

Applies chemical engineering methods, mass transfer, thermodynamics, and transport phenomena to industrial biotechnology. Prerequisite: instructor approval.

CHE 476 Bioreaction Engineering. (3)

selected semesters

Principles of analysis and design of reactors for processing with cells and other biologically active materials; applications of reaction engineering in biotechnology. Prerequisite: instructor approval.

CHE 477 Bioseparation Processes. (3)

selected semesters

Principles of separation of biologically active chemicals; the application, scale-up, and design of separation processes in biotechnology. Prerequisite: instructor approval.

CHE 478 Industrial Water Quality Engineering. (3)

fall

Chemical treatment processing, quality criteria and control, system design, and water pollutants. Prerequisites: CHE 331; senior standing.

CHE 479 Air Quality Control. (3)

fall

Air pollutant control, effects, and origins. Chemical and physical processes, including combustion, control equipment design, dispersion, and sampling. Prerequisites: CHE 331; senior standing.

CHE 490 Chemical Engineering Projects. (1–5)

fall, spring, summer

Individual projects in chemical engineering operations and design. Prerequisite: instructor approval.

CHE 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Advanced Process Control. (3)
- Biotechnology Techniques. (3)

CHE 496 Professional Seminar. (1–3)

fall and spring

Professional and ethical aspects with a discussion of responsibilities. Lecture, field trips. Prerequisite: instructor approval.

CHE 501 Introduction to Transport Phenomena. (3)

fall and spring

Transport phenomena, with emphasis on fluid systems. Prerequisite: transition student with instructor approval.

CHE 502 Introduction to Energy Transport. (3)

fall and spring

Continuation of transport principles, with emphasis on energy transport in stationary and fluid systems. Prerequisite: transition student with instructor approval.

CHE 503 Introduction to Mass Transport. (3)

fall and spring

Applies transport phenomena to mass transfer. Design of mass transfer equipment, including staged processes. Prerequisite: transition student with instructor approval.

CHE 504 Introduction to Chemical Thermodynamics. (3)

fall and spring

Energy relations and equilibrium conversions based on chemical potentials and phase equilibria. Prerequisite: transition student with instructor approval.

CHE 505 Introduction to Chemical Reactor Design. (3)

fall and spring

Applies kinetics to chemical reactor design. Prerequisite: transition student with instructor approval.

CHE 527 Advanced Applied Mathematical Analysis in Chemical Engineering. (3)

fall

Formulation and solution of complex mathematical relationships resulting from the description of physical problems in mass, energy, and momentum transfer and chemical kinetics.

CHE 528 Process Optimization Techniques. (3)

spring

Method for optimizing engineering processes. Experimental design and analysis; linear and nonlinear regression methods; classical, search, and dynamic programming algorithms.

CHE 533 Transport Processes I. (3)

fall

Unified treatment of momentum, heat, and mass transfer from molecular theory, and continuum points of view. Continuum equations of microscopic and macroscopic systems and multicomponent and multiphase systems. Cross-listed as BME 533. Credit is allowed for only BME 533 or CHE 533.

CHE 534 Transport Processes II. (3)

spring

Continuation of BME 533 or CHE 533, emphasizing mass transfer. Cross-listed as BME 534. Credit is allowed for only BME 534 or CHE 534. Prerequisite: BME 533 or CHE 533.

CHE 536 Convective Mass Transfer. (3)

selected semesters

Turbulent flow for multicomponent systems, including chemical reactions with applications in separations and air pollution. Prerequisite: CHE 533 or MAE 571.

CHE 543 Thermodynamics of Chemical Systems. (3)

fall

Classical and statistical thermodynamics of nonideal physicochemical systems and processes; prediction of optimum operating conditions. Cross-listed as BME 543. Credit is allowed for only BME 543 or CHE 543.

CHE 544 Chemical Reactor Engineering. (3)

spring

Reaction rates, thermodynamics, and transport principles applied to the design and operation of chemical reactors. Cross-listed as BME 544. Credit is allowed for only BME 544 or CHE 544. Prerequisite: BME 543 or CHE 543.

CHE 548 Topics in Catalysis. (3)

selected semesters

Engineering catalysis, emphasizing adsorption, kinetics, characterization, diffusional considerations, and reactor design. Other topics include mechanisms, surface analyses, and electronic structure.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

CHE 552 Industrial Water Quality Engineering. (3)

selected semesters

Water pollutants, quality criteria and control, chemical treatment processing, and system design. Case studies. Prerequisite: CHE 331 (or its equivalent).

CHE 553 Air Quality Control. (3)

selected semesters

Air pollutant origins, effects, and control. Physical and chemical processes, including dispersion, combustion, sampling, control equipment design, and special topics. Prerequisite: CHE 331 (or its equivalent).

CHE 554 New Energy Technology. (3)

selected semesters

Gasification, liquefaction pyrolysis, and combustion processes for coal, wastes, and other raw materials. In-situ processes for coal, oil, shale, and geothermal energy. Environmental quality issues.

CHE 556 Separation Processes. (3)

selected semesters

Topics in binary/multicomponent separation, rate governed and equilibrium processes, mass transfer criteria, energy requirements, separating agents and devices, and staged operations.

CHE 558 Electronic Materials. (3)

selected semesters

Processing and characterization of electronic materials for semiconductor-type uses. Thermodynamics and transport phenomena, phase equilibria and structure, mass transfer, and diffusion and thermal properties.

CHE 561 Advanced Process Control. (3)

spring

Dynamic process representation, linear optimal control, optimal state reconstruction, and parameter and state estimation techniques for continuous and discrete time systems.

CHE 563 Chemical Engineering Design. (3)

selected semesters

Computational methods; the design of chemical plants and processes.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

MATERIALS SCIENCE AND ENGINEERING (MSE)

MSE 194 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Challenges in Materials Engineering. (1)

MSE 353 Introduction to Materials Processing and Synthesis. (3)

fall

Principles of materials structure and properties with emphasis on applications in bulk and thin film materials processing and synthesis. Prerequisites: CHM 116 and PHY 131 (or their equivalents).

MSE 354 Experiments in Materials Synthesis and Processing. (2)

spring

Small groups of students complete three experiments selected from a list. Each is supervised by a selected faculty member. Lab. Prerequisite: MSE 353 (or its equivalent).

MSE 355 Introduction to Materials Science and Engineering. (3)

fall

Elements of the structure of metals and alloys, measurement of mechanical properties, and optical metallography. Lecture, lab, field trips. Prerequisite: CHM 114 or 116.

MSE 420 Physical Metallurgy. (3)

spring

Crystal structure and defects. Phase diagrams, metallography, solidification and casting, deformation, and annealing. Prerequisite: ECE 350.

MSE 421 Physical Metallurgy Laboratory. (1)

spring

Focuses on analysis of microstructure of metals and alloys and includes correlation with mechanical properties to some extent. Lab. Pre- or corequisite: MSE 420.

MSE 430 Thermodynamics of Materials. (3)

spring

Principles of statistical mechanics, statistical thermodynamics of single crystals, solutions, phase equilibrium, free energy of reactions, free electron theory, and thermodynamics of defects. Prerequisite: ECE 350.

MSE 431 Corrosion and Corrosion Control. (3)

spring in odd years

Introduces corrosion mechanisms and methods of preventing corrosion. Topics include: electrochemistry, polarization, corrosion rates, oxidation, coatings, and cathodic protection. Prerequisite: ECE 350.

MSE 440 Mechanical Properties of Solids. (3)

fall

Effects of environmental and microstructural variables of mechanical properties, including plastic deformation, fatigue, creep, brittle fracture, and internal friction. Prerequisite: ECE 350.

MSE 441 Analysis of Material Failures. (3)

spring in even years

Identifies types of failures. Analytical techniques. Fractography, SEM, nondestructive inspection, and metallography. Mechanical and electronic components. Prerequisite: ECE 350.

MSE 450 X-Ray and Electron Diffraction. (3)

spring

Fundamentals of x-ray diffraction, transmission electron microscopy, and scanning electron microscopy. Techniques for studying surfaces, internal microstructures, and fluorescence. Lecture, demonstrations. Prerequisite: ECE 350.

MSE 470 Polymers and Composites. (3)

fall

Relationship between chemistry, structure, and properties of engineering polymers. Design, properties, and behavior of fiber composite systems. Cross-listed as MAE 455. Credit is allowed for only MAE 455 or MSE 470. Prerequisites: ECE 313, 350.



Fireworks mark the end of the Lantern Walk, a traditional Homecoming activity.

Tim Trumble photo

MSE 471 Introduction to Ceramics. (3)*fall*

Principles of structure and property relations in ceramic materials. Processing techniques. Applications in mechanical, electronic, and superconducting systems. Prerequisite: ECE 350.

MSE 482 Materials Engineering Design. (3)*fall*

Principles of the design process. Feasibility and optimization. Manufacturing processes, materials selection, failure analysis, and economics. Prerequisites: ECE 313, 350.

MSE 490 Capstone Design Project. (1–3)*fall and spring*

For small groups in fundamental or applied aspects of engineering materials; emphasizes experimental problems and design. Prerequisites: MSE 430, 440, 450.

MSE 510 X-Ray and Electron Diffraction. (3)*spring*

Fundamentals of x-ray diffraction, transmission electron microscopy, and scanning electron microscopy. Techniques for studying surfaces, internal microstructures, and fluorescence. Lecture, demonstrations. Prerequisite: transition student with instructor approval.

MSE 511 Corrosion and Corrosion Control. (3)*spring in odd years*

Introduces corrosion mechanisms and methods of preventing corrosion. Topics include: electrochemistry, polarization, corrosion rates, oxidation, coatings, and cathodic protection. Prerequisite: transition student with instructor approval.

MSE 512 Analysis of Material Failures. (3)*spring in even years*

Identifies types of failures. Analytical techniques. Fractography, SEM, nondestructive inspection, and metallography. Mechanical and electronic components. Prerequisite: transition student with instructor approval.

MSE 513 Polymers and Composites. (3)*fall*

Relationship between chemistry, structure, and properties of engineering polymers. Design, properties, and behavior of fiber composite systems.

MSE 514 Physical Metallurgy. (3)*spring*

Crystal structure and defects. Phase diagrams, metallography, solidification and casting, and deformation and annealing. Prerequisite: transition student with instructor approval.

MSE 515 Thermodynamics of Materials. (3)*spring*

Principles of statistical mechanics, statistical thermodynamics of single crystals, solutions, phase equilibrium, free energy of reactions, free electron theory, and thermodynamics of defects. Prerequisite: transition student with instructor approval.

MSE 516 Mechanical Properties of Solids. (3)*fall*

Effects of environmental and microstructural variables of mechanical properties, including plastic deformation, fatigue, creep, brittle fracture, and internal friction. Prerequisite: transition student with instructor approval.

MSE 517 Introduction to Ceramics. (3)*fall*

Principles of structure, property relations in ceramic materials. Processing techniques. Applications in mechanical, electronic, and superconducting systems. Prerequisite: transition student with instructor approval.

MSE 519 Physical Metallurgy Laboratory. (1)*spring*

Analyzes microstructure of metals and alloys and includes some correlation with mechanical properties. Lab. Pre- or corequisite: MSE 514.

MSE 520 Theory of Crystalline Solids. (3)*selected semesters*

Anisotropic properties of crystals; tensor treatment of elastic, magnetic, electric and thermal properties, and crystallography of Martensitic transformations.

MSE 521 Defects in Crystalline Solids. (3)*spring*

Introduces the geometry, interaction, and equilibrium between dislocations and point defects. Discusses relations between defects and properties. Prerequisite: ECE 350 or instructor approval.

MSE 530 Materials Thermodynamics and Kinetics. (3)*spring*

Thermodynamics of alloy systems, diffusion in solids, kinetics of precipitation, and phase transformations in solids. Prerequisites: ECE 340, 350.

MSE 540 Fracture, Fatigue, and Creep. (3)*spring in odd years*

Relationship between microstructure and fracture; fatigue and creep properties of materials. Environmental effects and recent developments. Current theories and experimental results. Prerequisite: MSE 440 (or its equivalent).

MSE 550 Advanced Materials Characterization. (3)*fall*

Analytical instrumentation for characterization of materials; SEM, SIMS, Auger, analytical TEM, and other advanced research techniques.

MSE 556 Electron Microscopy Laboratory. (3)*fall*

Lab support for MSE 558. Cross-listed as SEM 556. Credit is allowed for only MSE 556 or SEM 556. Pre- or corequisite: MSE 558 or SEM 558.

MSE 557 Electron Microscopy Laboratory. (3)*spring*

Lab support for MSE 559. Cross-listed as SEM 557. Credit is allowed for only MSE 557 or SEM 557. Pre- or corequisite: MSE 559 or SEM 559.

MSE 558 Electron Microscopy I. (3)*fall*

Microanalysis of the structure and composition of materials using images, diffraction, x rays, and energy loss spectroscopy. Requires knowledge of elementary crystallography, reciprocal lattice, stereographic projections, and complex variables. Cross-listed as SEM 558. Credit is allowed for only MSE 558 or SEM 558. Prerequisite: instructor approval.

MSE 559 Electron Microscopy II. (3)*spring*

Microanalysis of the structure and composition of materials using images, diffraction, x rays, and energy loss spectroscopy. Requires knowledge of elementary crystallography, reciprocal lattice, stereographic projections, and complex variables. Cross-listed as SEM 559. Credit is allowed for only MSE 559 or SEM 559. Prerequisite: instructor approval.

MSE 560 Strengthening Mechanisms. (3)*selected semesters*

Deformation of crystalline materials. Properties of dislocations. Theories of strain hardening, solid solution, precipitation, and transformation strengthening. Prerequisite: ECE 350 (or its equivalent).

MSE 561 Phase Transformation in Solids. (3)*spring in even years*

Heterogeneous and homogeneous precipitation reactions, shear displacive reactions, and order-disorder transformation.

MSE 562 Ion Implantation. (3)*selected semesters*

Includes defect production and annealing. Generalized treatment, including ion implantation, neutron irradiation damage, and the interaction of other incident beams. Prerequisite: MSE 450.

MSE 570 Polymer Structure and Properties. (3)*spring in even years*

Relationships between structure and properties of synthetic polymers, including glass transition, molecular relaxations, crystalline state viscoelasticity, morphological characterization, and processing.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

MSE 571 Ceramics. (3)

selected semesters

Includes ceramic processing, casting, molding, firing, sintering, crystal defects, and mechanical, electronic, and physical properties. Prerequisites: MSE 521, 561.

MSE 573 Magnetic Materials. (3)

selected semesters

Emphasizes ferromagnetic and ferrimagnetic phenomena. Domains, magnetic anisotropy, and magnetostriction. Study of commercial magnetic materials. Prerequisite: MSE 520 (or its equivalent).

MSE 598 Special Topics. (1–4)

once a year

Topics may include the following:

- Growth and Processing of Semiconductor Devices. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Civil and Environmental Engineering

www.eas.asu.edu/~civil

480/965-3589

ECG 252

Sandra L. Houston, Chair

Professors: Fox, S. Houston, W. Houston, Mamlouk, Mays, Rajan, Singhal, Witczak

Associate Professors: Abbaszadegan, Fafitis, Hinks, Johnson, Mobasher, Westerhoff

Assistant Professors: Allen, Dillner, Kaloush, Muccino, Owusu-Antwi, Peccia, Zhu

The civil engineering profession includes analysis, planning, design, construction, and maintenance of many types of facilities for government, commerce, industry, and the public domain. These facilities include high-rise office towers, factories, schools, airports, tunnels and subway systems, dams, canals, and water purification and environmental protection facilities such as solid waste and wastewater treatment systems. Civil engineers are concerned with the impact of their projects on the public and the environment, and they attempt to coordinate the needs of society with technical and economic feasibility.

Career Opportunities in the Field. University graduates with the B.S.E. degree in Civil Engineering readily find employment. Civil engineers work in many different types of companies, from large corporations to small, private consulting firms, or in governmental agencies. A civil engineering background is an excellent foundation for jobs in management and public service. Civil engineering is one of the best engineering professions from the viewpoint of international travel opportunities or for eventually establishing one's own consulting business.

Uniqueness of the Program at ASU. The Department of Civil and Environmental Engineering offers a challenging

program of study designed to provide the student with the resources and background to pursue a career in a wide range of specialty areas. Some of these areas are structural, geotechnical, environmental and water resources, transportation and materials engineering. The Civil Engineering program is fully accredited by ABET. With the program, students will be prepared for the Fundamentals of Engineering examination and professional registration.

The Department of Civil and Environmental Engineering at ASU strongly believes in the development of programmatic objectives and outcomes, and a continuous quality improvement program. The four top-level learning objectives for the program deal with the ability of our graduates to

1. be technically competent,
2. be effective members of society,
3. communicate effectively, and
4. analyze and design civil engineering systems with due considerations to cost, environmental and construction factors.

Civil Engineering Areas of Study

Areas of study in the civil engineering curriculum are described below.

Environmental Engineering. This area of study includes the quality of air, water, and land resources; transport, use, and disposal of hazardous wastes; water and wastewater treatment; and water reuse.

Geotechnical/Geoenvironmental Engineering. This area of study includes the analysis and design of foundation systems, seepage control, earthdams and water resource structures, earthwork operations, fluid flow-through porous media, response of foundations and embankments to earthquakes, and solutions to environmental problems.

Structures/Materials Engineering. This area of study considers the planning, analysis and design of steel and concrete bridges, buildings, dams; special offshore and space structures; Portland cement concrete; composite materials; and structural retrofit of existing bridges.

Transportation/Materials Engineering. This area of study includes (1) transportation design and operation and (2) pavements and materials. Transportation design and operation cover geometric design of highways, traffic operations, and highway capacity and safety. Pavements and materials focus on pavement analysis and design, pavement maintenance and rehabilitation, pavement evaluation and management, characterization of highway materials, and durability of highway structures.

Water Resources Engineering. This area of study is concerned with surface and groundwater flow, planning and management of water supply, and water distribution system modeling.

The undergraduate program provides an excellent background for entry to graduate study in engineering.

UNDERGRADUATE OPPORTUNITIES IN CIVIL AND ENVIRONMENTAL ENGINEERING

Students majoring in Civil Engineering have three choices:

1. the major without a concentration;
2. the major with a concentration in construction engineering; and
3. the major with a concentration in environmental engineering.

Civil Engineering. The B.S.E. degree in Civil Engineering offers students a wide background on various areas of study within civil engineering. The degree provides basic principles of environmental, geotechnical/geoenvironmental, structural/materials, transportation/materials, and water resources engineering. Students have the option to select among a certain number of design and technical elective courses in their junior and senior years.

Civil Engineering with Construction Engineering Concentration. The B.S.E. degree in Civil Engineering with a construction engineering concentration offers students basic principles of civil engineering with the option to concentrate on construction engineering. The degree provides education based on the traditional engineering principles, construction materials and practice, quality control, and civil engineering project management.

Civil Engineering with Environmental Engineering Concentration. The B.S.E. degree in Civil Engineering with an environmental engineering concentration offers students basic principles of civil engineering with the option to concentrate on environmental engineering. The degree provides a multidisciplinary education based on the traditional engineering principles, chemistry, biology, and hydrogeology.

CIVIL ENGINEERING—B.S.E.

The B.S.E. degree in Civil Engineering requires a minimum of 128 semester hours of course work. A minimum of 50 upper-division semester hours is required. The minimum requirements are for a student who has successfully completed at least a year (each) of high school chemistry, physics, and computer programming along with precalculus, algebra, and trigonometry.

The B.S.E. degree program consists of the following categories:

First-Year Composition.....	6
General Studies/school requirements.....	55
Engineering core	18–19
Civil Engineering core	27
Design courses	6
Technical courses	15–16
Total	128

For information concerning First-Year Composition, General Studies/school requirements, and engineering core courses, see [“School of Engineering,” page 218](#). The Civil Engineering core and the design and the technical course requirements are shown below. The four-year sequences presented afterwards show the specific course requirements for the Civil Engineering degree without a concentration,

Civil Engineering with the construction engineering concentration, and the Civil Engineering degree with the environmental engineering concentration.

Civil Engineering Core

CEE 296 Civil Engineering Systems.....	4
CEE 321 Structural Analysis and Design.....	4
CEE 341 Fluid Mechanics for Civil Engineers	4
CEE 351 Geotechnical Engineering.....	4
CEE 361 Introduction to Environmental Engineering	4
CEE 372 Transportation Engineering.....	4
ECE 380 Probability and Statistics for Engineering Problem Solving CS	3
Total	27

Design Courses for the Degree Without a Concentration

Six semester hours from the following list are required.

CEE 423 Structural Design	3
CEE 441 Water Resources Engineering	3
CEE 452 Foundations.....	3
CEE 466 Sanitary Systems Design.....	3
CEE 475 Highway Geometric Design.....	3

Technical Courses for the Degree Without a Concentration

From 15 to 16 semester hours are required. The design elective courses that have not been selected to satisfy the design electives requirement may be used as technical electives.

A maximum of seven hours may be selected from outside civil engineering, with an advisor’s approval. Construction courses taken as technical electives may be selected from the following list: CON 341, 383, 495, and 496. Students must select technical and design electives from at least three different CEE areas of study.

Environmental Engineering

CEE 362 Unit Operations in Environmental Engineering.....	3
CEE 466 Sanitary Systems Design.....	3
CEE 467 Environmental Microbiology.....	4
CHM 231 Elementary Organic Chemistry <i>5Q</i>	3

Geotechnical/Geoenvironmental Engineering

CEE 452 Foundations.....	3
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Structures/Materials Engineering

CEE 322 Steel Structures	3
CEE 323 Concrete Structures.....	3
CEE 423 Structural Design	3
CEE 432 Matrix and Computer Applications in Structural Engineering	3

Transportation/Materials Engineering

CEE 412 Pavement Analysis and Design	3
CEE 475 Highway Geometric Design.....	3
CEE 481 Civil Engineering Project Management	3
CEE 483 Highway Materials, Construction, and Quality	3

Water Resources Engineering

CEE 440 Engineering Hydrology.....	3
CEE 441 Water Resources Engineering	3

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Design Courses for the Degree with the Construction Engineering Concentration

CEE 322 Steel Structures	3
CEE 452 Foundations.....	3
Total	6

Technical Courses for the Degree with the Construction Engineering Concentration

CEE 323 Concrete Structures.....	3
CEE 481 Civil Engineering Project Management.....	3
CEE 483 Highway Materials, Construction, and Quality	3
CON 341 Surveying	3
CON 496 Construction Contract Administration.....	3
Total	15

Design Courses for the Degree with the Environmental Engineering Concentration

CEE 441 Water Resources Engineering	3
CEE 466 Sanitary Systems Design.....	3
Total	6

Technical Courses for the Degree with the Environmental Engineering Concentration

BIO 320 Fundamentals of Ecology	3
or BCH 361 Principles of Biochemistry (3)	
or CHM 302 Environmental Chemistry (3)	
or CHM 341 Elementary Physical Chemistry (3)	
or PUP 442 Environmental Planning (3)	
or PUP 475 Environmental Impact Assessment (3)	
CEE 362 Unit Operations in Environmental Engineering.....	3
CEE 440 Engineering Hydrology.....	3
CEE 467 Environmental Microbiology	4
Technical elective*.....	3
Total	16

* This course is selected from the list of technical courses for the degree without a concentration.

**Civil Engineering Program of Study
A Four-Year Sequence**

First Year

First Semester

CHM 114 General Chemistry for Engineers <i>SQ</i>	4
or CHM 116 General Chemistry <i>SQ</i> (4)	
ECE 100 Introduction to Engineering Design <i>CS</i>	3
ENG 101 First-Year Composition.....	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
Total	14

Second Semester

CEE 296 Civil Engineering Systems.....	4
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
ENG 102 First-Year Composition.....	3
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122 University Physics Laboratory I <i>SQ</i> ¹	1
Total	18

Second Year

First Semester

ECE 210 Engineering Mechanics I: Statics.....	3
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
MAT 274 Elementary Differential Equations <i>MA</i>	3
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132 University Physics Laboratory II <i>SQ</i> ²	1
HU/SB and awareness area course ³	3
Total	17

Second Semester

ECE 212 Engineering Mechanics II: Dynamics.....	3
ECE 313 Introduction to Deformable Solids.....	3
ECE 340 Thermodynamics.....	3
or ECE 201 Electrical Networks I (4)	
ECE 380 Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
Basic science elective.....	3
Total	15-16

Third Year

First Semester

CEE 321 Structural Analysis and Design.....	4
CEE 341 Fluid Mechanics for Civil Engineers.....	4
ECE 300 Intermediate Engineering Design <i>L</i>	3
ECE 351 Civil Engineering Materials.....	3
ECE 384 Numerical Methods for Engineers.....	4
Total	18

Second Semester

CEE 351 Geotechnical Engineering.....	4
CEE 361 Introduction to Environmental Engineering	4
CEE 372 Transportation Engineering.....	4
HU/SB and awareness area course ³	3
Total	15

Fourth Year

First Semester

Design elective.....	3
HU/SB and awareness area course ³	3
Technical electives	9
Total	15

Second Semester

CEE 486 Integrated Civil Engineering Design <i>L</i>	3
Design elective.....	3
HU/SB and awareness area course ³	3
Technical electives	6-7
Total	15-16
Minimum total	128

¹ Both PHY 121 and 122 must be taken to secure *SQ* credit.

² Both PHY 131 and 132 must be taken to secure *SQ* credit.

³ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU or SB requirements. Students should consider the following list of electives to enhance communication and management skills: COM 100, 110, 320; CON 101; PUP 100, 200.

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**Construction Engineering Concentration
Program of Study
A Four-Year Sequence**

First Year

First Semester

CHM 114	General Chemistry for Engineers <i>SQ</i>.....4	
	or CHM 116 General Chemistry <i>SQ</i> (4)	
ECE 100	Introduction to Engineering Design <i>CS</i>.....3	
ENG 101	First-Year Composition.....3	
MAT 270	Calculus with Analytic Geometry I <i>MA</i>.....4	
Total	.....14	

Second Semester

CEE 296	Civil Engineering Systems.....4	
ECN 111	Macroeconomic Principles <i>SB</i>.....3	
	or ECN 112 Microeconomic Principles <i>SB</i> (3)	
ENG 102	First-Year Composition.....3	
MAT 271	Calculus with Analytic Geometry II <i>MA</i>.....4	
PHY 121	University Physics I: Mechanics <i>SQ</i> ¹.....3	
PHY 122	University Physics Laboratory I <i>SQ</i> ¹.....1	
Total	.....18	

Second Year

First Semester

ECE 210	Engineering Mechanics I: Statics.....3	
MAT 272	Calculus with Analytic Geometry III <i>MA</i>.....4	
MAT 274	Elementary Differential Equations <i>MA</i>.....3	
PHY 131	University Physics II: Electricity and Magnetism <i>SQ</i> ².....3	
PHY 132	University Physics Laboratory II <i>SQ</i> ².....1	
HU/SB and awareness area course ³	.....3	
Total	.....17	

Second Semester

ECE 201	Electrical Networks I.....4	
ECE 212	Engineering Mechanics II: Dynamics.....3	
ECE 313	Introduction to Deformable Solids.....3	
ECE 380	Probability and Statistics for Engineering Problem Solving <i>CS</i>.....3	
Basic science elective.....	3	
Total	.....16	

Third Year

First Semester

CEE 321	Structural Analysis and Design.....4	
CEE 341	Fluid Mechanics for Civil Engineers.....4	
ECE 300	Intermediate Engineering Design <i>L</i>.....3	
ECE 351	Civil Engineering Materials.....3	
ECE 384	Numerical Methods for Engineers.....4	
Total	.....18	

Second Semester

CEE 351	Geotechnical Engineering.....4	
CEE 361	Introduction to Environmental Engineering.....4	
CEE 372	Transportation Engineering.....4	
HU/SB and awareness area course ³	.....3	
Total	.....15	

Fourth Year

First Semester

CEE 322	Steel Structures.....3	
CEE 452	Foundations.....3	
CEE 481	Civil Engineering Project Management.....3	
CON 341	Surveying.....3	

HU/SB and awareness area course ³	3
Total.....	15

Second Semester

CEE 323	Concrete Structures.....3	
CEE 483	Highway Materials, Construction, and Quality.....3	
CEE 486	Integrated Civil Engineering Design <i>L</i>.....3	
CON 496	Construction Contract Administration <i>L</i>.....3	
HU/SB and awareness area course ³	3	
Total.....	15	
Graduation requirement total.....	128	

¹ Both PHY 121 and 122 must be taken to secure *SQ* credit.

² Both PHY 131 and 132 must be taken to secure *SQ* credit.

³ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU or SB requirements. Students should consider the following list of electives to enhance communication and management skills: COM 100, 110, 320; CON 101; PUP 100, 200.

**Environmental Engineering Concentration
Program of Study
A Four-Year Sequence**

First Year

First Semester

CHM 114	General Chemistry for Engineers <i>SQ</i>.....4	
	or CHM 116 General Chemistry <i>SQ</i> (4)	
ECE 100	Introduction to Engineering Design <i>CS</i>.....3	
ENG 101	First-Year Composition.....3	
MAT 270	Calculus with Analytic Geometry I <i>MA</i>.....4	
Total	.....14	

Second Semester

CEE 296	Civil Engineering Systems.....4	
ECN 111	Macroeconomic Principles <i>SB</i>.....3	
	or ECN 112 Microeconomic Principles <i>SB</i> (3)	
ENG 102	First-Year Composition.....3	
MAT 271	Calculus with Analytic Geometry II <i>MA</i>.....4	
PHY 121	University Physics I: Mechanics <i>SQ</i> ¹.....3	
PHY 122	University Physics Laboratory I <i>SQ</i> ¹.....1	
Total	.....18	

Second Year

First Semester

ECE 210	Engineering Mechanics I: Statics.....3	
MAT 272	Calculus with Analytic Geometry III <i>MA</i>.....4	
MAT 274	Elementary Differential Equations <i>MA</i>.....3	
PHY 131	University Physics II: Electricity and Magnetism <i>SQ</i> ².....3	
PHY 132	University Physics Laboratory II <i>SQ</i> ².....1	
HU/SB and awareness area course ³	.....3	
Total	.....17	

Second Semester

CHM 231	Elementary Organic Chemistry <i>SQ</i>.....3	
ECE 212	Engineering Mechanics II: Dynamics.....3	
ECE 313	Introduction to Deformable Solids.....3	
ECE 340	Thermodynamics.....3	

L literacy and critical inquiry / *MA* mathematics / *CS* computer/statistics/quantitative applications / *HU* humanities and fine arts / *SB* social and behavioral sciences / *SG* natural science—general core courses / *SQ* natural science—quantitative / *C* cultural diversity in the United States / *G* global / *H* historical / See "General Studies," page 83.

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ECE 380 Probability and Statistics for Engineering Problem Solving CS	3
Total	15

Third Year

First Semester

CEE 321 Structural Analysis and Design	4
CEE 341 Fluid Mechanics for Civil Engineers	4
ECE 300 Intermediate Engineering Design L	3
ECE 351 Civil Engineering Materials	3
ECE 384 Numerical Methods for Engineers	4
Total	18

Second Semester

CEE 351 Geotechnical Engineering	4
CEE 361 Introduction to Environmental Engineering	4
CEE 372 Transportation Engineering	4
BIO 320 Fundamentals of Ecology	3
or BCH 361 Principles of Biochemistry (3)	
or CHM 302 Environmental Chemistry (3)	
or CHM 341 Elementary Physical Chemistry (3)	
or PUP 442 Environmental Planning (3)	
or PUP 475 Environmental Impact Assessment (3)	
HU/SB and awareness area course ³	3
Total	18

Fourth Year

First Semester

CEE 362 Unit Operations in Environmental Engineering	3
CEE 440 Engineering Hydrology	3
CEE 466 Sanitary Systems Design	3
CEE 467 Environmental Microbiology	4
HU/SB and awareness area course ³	3
Total	16

Second Semester

CEE 441 Water Resources Engineering	3
CEE 486 Integrated Civil Engineering Design L	3
HU/SB and awareness area course ³	3
Technical elective ⁴	3
Total	12
Graduation requirement total	128

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

³ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU or SB requirements. Students should consider the following list of electives to enhance communication and management skills: COM 100, 110, 320; CON 101; PUP 100, 200.

⁴ This course is selected from the list of technical courses for the degree without a concentration.

GRADUATION REQUIREMENTS

Each Sequence of mathematics, engineering core, civil engineering core, and the combined design and technical courses must be completed with an average grade of “C” or higher. CEE courses, except CEE 296, may not be taken before the engineering core courses are completed. Design and technical courses may not be taken before the civil engineering core courses are completed.

A maximum of two graduate courses may be taken for undergraduate credit by students whose cumulative GPA is

3.00 or higher with the approval of the instructor, advisor, department chair, and the dean of the college.

In addition to fulfilling school and major requirements, majors must satisfy all university graduation requirements. See [“University Graduation Requirements,” page 79.](#)

Concurrent Studies in Architecture and Civil Engineering

Qualified lower-division students interested in combining undergraduate studies in architecture and civil engineering may prepare for upper-division and graduate courses in both programs by taking courses shown for option B under the Architectural Studies major. See [“Architectural Studies—B.S.D.,” page 129.](#)

GRADUATE STUDY

The Department of Civil and Environmental Engineering also offers graduate programs leading to the M.S., M.S.E., and Ph.D. degrees. These programs provide a blend of classroom instruction and research. Many topics and relevant research projects are available for thesis programs. Students interested in these programs should contact the department for up-to-date literature.

CIVIL AND ENVIRONMENTAL ENGINEERING (CEE)

CEE Note 1. Students enrolled in CEE 580, 590, 592, 599, 792, and 799 are required to attend graduate student seminars at the times shown in the *Schedule of Classes*.

CEE Note 2. Each semester, every graduate student enrolled for more than eight semester hours is to enroll for at least one semester hour of CEE 592, 599, 792, or 799.

CEE 296 Civil Engineering Systems. (4)

fall and spring

Introduces civil engineering. Problem solving, economics, description of civil engineering systems, design concepts, ethics, professional responsibilities, and computer graphics. Lecture, computer labs, field trips. Pre- or corequisite: ECE 100.

CEE 321 Structural Analysis and Design. (4)

fall and spring

Statically determinate and indeterminate structures (trusses, beams, and frames) by classical and matrix methods. Introduces structural design. Lecture, recitation. Prerequisites: ECE 212, 313. Pre- or corequisites: ECE 380, 384.

CEE 322 Steel Structures. (3)

fall

Behavior of structural components and systems. Design of steel members and connections. Load and resistance factor design methods. Lecture, recitation. Prerequisite: CEE 321.

CEE 323 Concrete Structures. (3)

spring

Behavior of concrete structures and the design of reinforced and pre-stressed concrete members, including footings. Partial design of concrete building system. Lecture, recitation. Prerequisite: CEE 321.

CEE 340 Hydraulics and Hydrology. (3)

fall and spring

Applies hydraulic engineering principles to flow of liquids in pipe systems and open channels; hydrostatics; characteristics of pumps and turbines. Introduces hydrology. Not open to engineering students. Lecture, lab. Prerequisite: CON 221.

CEE 341 Fluid Mechanics for Civil Engineers. (4)

fall and spring

Fundamental principles and methods of fluid mechanics forming the analytical basis for water resources engineering. Conduit and open channel flow. 3 hours lecture, 1 hour lab. Prerequisites: ECE 212, 313. Pre- or corequisites: ECE 380, 384.

CEE 351 Geotechnical Engineering. (4)

fall and spring

Index properties and engineering characteristics of soils. Compaction, permeability and seepage, compressibility and settlement, and shear strength. Lecture, lab. Prerequisites: ECE 212, 313. Pre- or corequisites: ECE 380, 384.

CEE 361 Introduction to Environmental Engineering. (4)

fall and spring

Concepts of air and water pollution; environmental regulation, risk assessment, chemistry, water quality modeling, water and wastewater treatment systems designs. Lecture, lab. Prerequisites: ECE 212, 313. Pre- or corequisites: ECE 380, 384.

CEE 362 Unit Operations in Environmental Engineering. (3)

spring

Design and operation of unit processes for water and wastewater treatment. Prerequisite: CEE 361.

CEE 372 Transportation Engineering. (4)

fall and spring

Highway, rail, water, and air transportation. Operational characteristics and traffic control devices of each transport mode. Impact on urban form. Prerequisites: ECE 212, 313. Pre- or corequisites: ECE 380, 384.

CEE 412 Pavement Analysis and Design. (3)

fall

Design of flexible and rigid pavements for highways and airports. Surface, base, and subgrade courses. Cost analysis and pavement selection. Prerequisites: CEE 351; ECE 351.

CEE 423 Structural Design. (3)

fall

Analysis and design of reinforced concrete steel, masonry, and timber structures. Lecture, lab. Prerequisite: CEE 323. Pre- or corequisite: CEE 322.

CEE 432 Matrix and Computer Applications in Structural Engineering. (3)

spring

Matrix and computer applications to structural engineering and structural mechanics. Stiffness and flexibility methods, finite elements, and differences. Prerequisite: CEE 321.

CEE 440 Engineering Hydrology. (3)

fall

Descriptive hydrology; hydrologic cycle, models, and systems. Rain-runoff models. Hydrologic design. Concepts, properties, and basic equations of groundwater flow. Prerequisite: CEE 341.

CEE 441 Water Resources Engineering. (3)

spring

Applies the principles of hydraulics and hydrology to the engineering of water resources projects; design and operation of water resources systems; water quality. Prerequisite: CEE 341.

CEE 452 Foundations. (3)

fall

Applies soil mechanics to foundation systems, bearing capacity, lateral earth pressure, and slope stability. Prerequisite: CEE 351.

CEE 466 Sanitary Systems Design. (3)

fall

Capacity, planning and design of water supply, domestic and storm drainage, and solid waste systems. Prerequisite: CEE 361.

CEE 467 Environmental Microbiology. (4)

fall

Overview of the microbiology of natural and human-impacted environment, microbial detection methodologies, waterborne disease outbreaks, risk assessment, and regulations. Lecture, lab. Prerequisite: CEE 361 or MIC 220.

CEE 471 Intelligent Transportation Systems. (3)

selected semesters

Applies advanced technology to the vehicle and the roadway to solve traffic congestion, safety, and air quality problems. Prerequisite: CEE 372 or instructor approval.

CEE 475 Highway Geometric Design. (3)

spring

Design of the visible elements of the roadway. Fundamental design controls with application to rural roads, at-grade intersections, freeways, and interchanges. Lecture, recitation. Prerequisite: CEE 372.

CEE 481 Civil Engineering Project Management. (3)

once a year

Civil engineering project management and administration, planning and scheduling, cost estimating and bidding strategies, financial management, quality control and safety, and computer applications. Lecture, field trip. Prerequisites: CEE 321, 351, 372.

CEE 483 Highway Materials, Construction, and Quality. (3)

once a year

Properties of highway materials including aggregates, asphalt concrete, and portland cement concrete; construction practice; material delivery, placement, and compaction; quality control. Lecture, field trip. Prerequisites: CEE 321, 351, 372; ECE 351, 380.

CEE 486 Integrated Civil Engineering Design. (3)

fall and spring

Requires completion of a civil engineering design in a simulated practicing engineering environment. Limited to undergraduates in their final semester. Lecture, team learning. Prerequisites: CEE 321, 341, 351, 361, 372.

General Studies: L

CEE 512 Pavement Performance and Management. (3)

selected semesters

Pavement management systems, including data collection, evaluation, optimization, economic analysis, and computer applications for highway and airport design. Prerequisite: instructor approval.

CEE 514 Bituminous Materials and Mixture. (3)

selected semesters

Types of bituminous materials used in pavement mixtures. Chemical composition, physical properties, desirable aggregate characteristics, optimum asphalt contents, superpave asphalt binder, mixture design. Lecture, lab. Prerequisite: ECE 351.

CEE 515 Properties of Concrete. (3)

selected semesters

Materials science of concrete. Cement chemistry, mechanisms of hydration, interrelationships among micro- and macro-properties of cement-based materials. Mechanical properties, failure theories, fracture mechanics of concrete materials. Cement-based composite materials and the durability aspects. Lecture, lab. Prerequisite: ECE 350 or 351.

CEE 521 Stress Analysis. (3)

fall

Advanced topics in the analytical determination of stress and strain. Prerequisite: CEE 321.

CEE 524 Advanced Steel Structures. (3)

fall

Strength properties of steel and their effects on structural behavior. Elastic design of steel structures. Plastic analysis and design of beams, frames, and bents. Plastic deflections. Plastic design requirements. Multistory buildings. Prerequisite: CEE 322.

CEE 526 Finite Element Methods in Civil Engineering. (3)

fall

Finite element formulation for solutions of structural, geotechnical, and hydraulic problems. Prerequisite: CEE 432.

CEE 527 Advanced Concrete Structures. (3)

selected semesters

Ultimate strength design. Combined shear and torsion. Serviceability. Plastic analysis. Special systems. Prerequisite: CEE 323.

CEE 530 Prestressed Concrete. (3)

selected semesters

Materials and methods of prestressing. Analysis and design for flexure, shear, and torsion. Prestress losses due to friction, creep, shrinkage, and anchorage set. Statically indeterminate structures. Design of flat slabs, bridges, and composite beams. Prerequisite: CEE 323.

CEE 533 Structural Optimization. (3)

selected semesters

Linear and nonlinear programming. Problem formulation. Constrained and unconstrained optimization. Sensitivity analysis. Approximate techniques. FEM-based optimal design of mechanical and aerospace

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

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structures. Cross-listed as MAE 521. Credit is allowed for only CEE 533 or MAE 521. Prerequisite: instructor approval.

CEE 536 Structural Dynamics. (3)

selected semesters

Structures and structural members subjected to dynamic loadings, response spectra theory applications to bridges and power plants, investigations of the responses of multidegree of freedom structures, and matrix and numerical methods of analysis. Lecture, recitation. Prerequisites: CEE 321; instructor approval.

CEE 537 Topics in Structural Engineering. (1–3)

selected semesters

Advanced topics, including nonlinear structural analysis, experimental stress analysis, advanced finite elements, plasticity and viscoelasticity, composites, and damage mechanics. Prerequisite: instructor approval.

CEE 540 Groundwater Hydrology. (3)

fall

Physical properties of aquifers, well pumping, subsurface flow modeling, unsaturated flow, numerical methods, land subsidence, and groundwater pollution. Prerequisite: CEE 440 or instructor approval.

CEE 541 Surface Water Hydrology. (3)

spring

Hydrologic cycle and mechanisms, including precipitation, evaporation, and transpiration; hydrograph analysis; flood routing; statistical methods in hydrology and hydrologic design. Prerequisite: CEE 440 or instructor approval.

CEE 543 Water Resources Systems. (3)

selected semesters

Theory and application of quantitative planning methodologies for the design and operation of water resources systems. Class projects using a computer, case studies. Prerequisite: instructor approval.

CEE 546 Free Surface Hydraulics. (3)

selected semesters

Derivation of 1-dimensional equations used in open channel flow analysis; computations for uniform and nonuniform flows, unsteady flow, and flood routing. Mathematical and physical models. Prerequisite: CEE 341.

CEE 547 Principles of River Engineering. (3)

selected semesters

Uses of rivers, study of watershed, and channel processes. Sediment sources, yield, and control; hydrologic analysis. Case studies. Prerequisite: CEE 341 or instructor approval.

CEE 548 Sedimentation Engineering. (3)

selected semesters

Introduces the transportation of granular sedimentary materials by moving fluids. Degradation, aggregation, and local scour in alluvial channels. Mathematical and physical models. Prerequisite: CEE 547 or instructor approval.

CEE 550 Soil Behavior. (3)

selected semesters

Physicochemical aspects of soil behavior, stabilization of soils, and engineering properties of soils. Prerequisite: CEE 351.

CEE 551 Advanced Geotechnical Testing. (3)

selected semesters

Odometer, triaxial (static and cyclic) back pressure saturated and unsaturated samples, pore pressure measurements, closed-loop computer-controlled testing, in-situ testing, and sampling. Lecture, lab. Prerequisite: CEE 351.

CEE 552 Geological Engineering. (3)

selected semesters

Geological investigations for engineering purposes, case histories, geologic structure, weathering, remote sensing, geophysics, and air photo interpretation for engineering site locations. Lecture, field trips. Prerequisite: CEE 351.

CEE 553 Advanced Soil Mechanics. (3)

selected semesters

Applies theories of elasticity and plasticity to soils, theories of consolidation, failure theories, and response to static and dynamic loading. Prerequisite: CEE 351.

CEE 554 Shear Strength and Slope Stability. (3)

selected semesters

Shear strength of saturated and unsaturated soils strength-deformation relationships, time-dependent strength parameters, effects of sampling, and advanced slope stability. Prerequisite: CEE 351.

CEE 555 Advanced Foundations. (3)

selected semesters

Deep foundations, braced excavations, anchored bulkheads, reinforced earth, and underpinning. Prerequisite: CEE 351.

CEE 557 Hazardous Waste: Site Assessment and Mitigation Measures. (3)

selected semesters

Techniques for hazardous waste site assessment and mitigation. Case histories presented by instructor and guest speakers. Prerequisites: graduate standing; instructor approval.

CEE 559 Earthquake Engineering. (3)

selected semesters

Characteristics of earthquake motions, selection of design earthquakes, site response analyses, seismic slope stability, and liquefaction. Prerequisite: CEE 351.

CEE 560 Soil and Groundwater Remediation. (3)

fall

Presents techniques for remediation of contaminated soils and groundwaters with basic engineering principles. Prerequisite: instructor approval.

CEE 561 Physical-Chemical Treatment of Water and Waste. (3)

fall

Theory and design of physical and chemical processes for the treatment of water and wastewaters. Prerequisite: CEE 361.

CEE 562 Environmental Biochemistry and Waste Treatment. (3)

spring

Theory and design of biological waste treatment systems. Pollution and environmental assimilation of wastes. Prerequisite: CEE 362.

CEE 563 Environmental Chemistry Laboratory. (3)

fall

Analyzes water, domestic and industrial wastes, laboratory procedures for pollution evaluation, and the control of water and waste treatment processes. Lecture, lab. Prerequisite: CEE 361.

CEE 565 Modeling and Assessment of Aquatic Systems. (3)

selected semesters

Development of predictive models of water quality; methods to assess environmental impacts; applications to water quality management. Prerequisite: CEE 361 or instructor approval.

CEE 566 Industrial/Hazardous Waste Treatment. (3)

selected semesters

Emphasizes treatment of local industrial/hazardous waste problems, including solvent recovery and metals. Lecture, project. Prerequisites: CEE 561, 563.

CEE 573 Traffic Engineering. (3)

selected semesters

Driver, vehicle, and roadway characteristics, laws and ordinances, traffic control devices, traffic engineering studies, and Transportation System Management measures. Prerequisite: CEE 372.

CEE 574 Highway Capacity. (3)

selected semesters

Highway capacity for all functional classes of highways. Traffic signalization, including traffic studies, warrants, cycle length, timing, phasing, and coordination. Prerequisite: CEE 372.

CEE 575 Traffic Flow Theory and Safety Analysis. (3)

selected semesters

Traffic flow theory; distributions, queuing, delay models, and car-following. Highway safety; accident records systems, accident analysis, identifying problem locations, and accident countermeasures. Prerequisite: CEE 573 or 574.

CEE 577 Urban Transportation Planning. (3)

selected semesters

Applies land use parameters traffic generation theory, traffic distribution and assignment models, transit analysis, and economic factors to the solution of the urban transportation problem. Prerequisite: CEE 372.

CEE 580 Practicum. (1–12)

selected semesters

See CEE Note 1.

CEE 590 Reading and Conference. (1–12)

selected semesters

See CEE Note 1.

CEE 591 Seminar. (1–12)

selected semesters

Topics may include the following:

- Transportation Systems Pro-Seminar

CEE 592 Research. (1–12)

selected semesters

See CEE Notes 1, 2.

CEE 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Intelligent Transportation Systems

CEE 599 Thesis. (1–12)

selected semesters

See CEE Notes 1, 2.

CEE 792 Research. (1–15)

selected semesters

See CEE Notes 1, 2.

CEE 799 Dissertation. (1–15)

selected semesters

See CEE Notes 1, 2.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

Department of Computer Science and Engineering

cse.asu.edu

480/965-3190

GWC 206

Charles J. Colbourn, Chair

Professors: Ashcroft, Colbourn, Collofello, Farin, Golshani, Kambhampati, Lee, Lewis, Nielson, Panchanathan, Tsai, J. Urban, S. Urban, Yau

Associate Professors: Baral, Bhattacharya, Dasgupta, Dietrich, Faltz, Gupta, Huey, Liu, Miller, O’Grady, Pheanis, Sen, Xue

Assistant Professors: Bazzi, Cam, Candan, Chatha, Gannod, Konjevod, Richa, Ryu, Sarjoughian, Wagner

Lecturers: Chen, DeLibero, Nakamura, Navabi

Computers have a significant impact on our daily lives, and this impact is likely to be even greater in the future as computer professionals continue to develop more powerful, smaller, faster, and less expensive computing systems. Computer science and computer engineering deal with the study, design, development, construction, and application of modern computing machinery. Other important topics include computing techniques and appropriate languages for general information processing; for scientific computation; for the recognition, storage, retrieval, and processing of data of all kinds; and for the automatic control and simulation of processes.

The curricula offered by the Department of Computer Science and Engineering prepare the student to be a participant in this rapidly changing area of technology by presenting in-depth treatments of the fundamentals of computer science and computer engineering. The department offers two undergraduate degrees: a B.S. degree in Computer Science and a B.S.E. degree in Computer Systems Engineering. The following are shared objectives of the degree programs:

1. Graduates will understand current trends in information technology and be able to apply their understanding in the distributed management of information.
2. Graduates can apply the underlying principles of computer science, including mathematical and physical sciences and engineering principles.
3. Graduates will know and be able to apply system development processes, using modern tools, from the component level to the system level.
4. Graduates also will have the skills required to communicate effectively in both technical and nontechnical settings, to work effectively in teams and in a multicultural environment, to work ethically and professionally, and continue to learn independently and grow intellectually.

The Computer Systems Engineering program has the specific objective that its graduates will have the technical expertise necessary to analyze requirements and to design and implement effective solutions to problems that require the integration of hardware and software. The Computer Science program has the specific objective that its graduates will have the technical expertise necessary to analyze requirements, design, and implement effective solutions using computer science for a broad range of problems. The department strives to maintain a modern learning environment that fosters excellence, cooperation, and scholarship for faculty, students, and staff.

ADMISSION REQUIREMENTS

The admission standards for the undergraduate Computer Science and Computer Systems Engineering degree programs are changing for spring 2002.

The Preprofessional Program. Each student admitted to the Department of Computer Science and Engineering is designated a preprofessional student in either Computer Science or Computer Systems Engineering. The student follows the first- and second-year sequence of courses listed in the curriculum outline for his or her particular major. Included in the first- and second-year schedules are 13 emphasis courses:

CSE 120	Digital Design Fundamentals.....	3
CSE 200	Concepts of Computer Science.....	3
CSE 210	Object Oriented Design and Data Structures.....	3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

CSE 225 Assembly Languages Programming and Microprocessors (Motorola)	4
or CSE 226 Assembly Languages Programming and Microprocessors (Intel) (4)	
CSE 240 Introduction to Programming Languages	3
Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
————— or—————	
ENG 105 Advanced First-Year Composition (3)	
HU/SB elective chosen with an advisor (3)	
————— or—————	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
MAT 243 Discrete Mathematical Structures	3
MAT 270 Calculus with Analytic Geometry I	4
MAT 271 Calculus with Analytic Geometry II	4
MAT 272 Calculus with Analytic Geometry III	4
PHY 121 University Physics I: Mechanics	3
PHY 122 University Physics I: Laboratory I	1
PHY 131 University Physics II: Electricity and Magnetism	3
PHY 132 University Physics II: Laboratory II	1

The Professional Program. Admission to the professional program is competitive and granted to those applicants demonstrating the highest promise for professional success in Computer Science and Engineering. The admissions committee considers overall transfer and ASU GPA numbers as well as the transfer and ASU GPA numbers in Computer Science and Engineering emphasis courses. All students seeking professional status must have completed or be in the process of completing all the emphasis courses and then follow the application procedure as described on the Computer Science and Engineering Web site. Completion of the specified courses does not guarantee admission to professional status. Only students who qualify for professional status in the College of Engineering and Applied Sciences and have been admitted to ASU are eligible to apply for the professional programs. Candidates are strongly encouraged to visit the Computer Science and Engineering Advising Center in GWC 302 before beginning the application process. All application materials can be found on the Web at cse.asu.edu.

DEGREE REQUIREMENTS

A minimum of 128 semester hours is required for the B.S. degree in Computer Science and the B.S.E. degree in Computer Systems Engineering. A minimum of 50 upper-division semester hours is required. In addition to the requirement for a cumulative GPA of 2.00 or higher, all computer science and computer systems engineering students must obtain a minimum grade of “C” in all CSE courses used for degree credit.

GRADUATION REQUIREMENTS

In addition to fulfilling school and major requirements, majors must satisfy all university graduation requirements. See “[University Graduation Requirements](#),” page 79.

DEGREES

Computer Science—B.S.

The faculty in the Department of Computer Science and Engineering offer a B.S. degree that prepares the student for

a career in computer science. A student pursuing a B.S. degree must complete the First-Year Composition requirement, the General Studies requirement, department degree requirements, the computer science core courses, a senior-level breadth requirement in the major, technical electives, and unrestricted electives. For more information, visit the department in GWC 206, call 480/965-3190, send e-mail to cse.graduate.office@asu.edu, or access the department’s Web site at cse.asu.edu.

Software Engineering Concentration. Students pursuing the B.S. degree in Computer Science may choose to concentrate their studies on software engineering. The B.S. Degree in Computer Science with a concentration in software engineering provides recognition that the student has acquired in-depth knowledge and hands-on experience in software development and related subjects. This concentration requires the student to complete CSE 445, 460, 461, and 462 with a grade of “C” or higher in each.

The following table specifies departmental requirements for the B.S. degree in Computer Science.

First-Year Composition

Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
————— or—————	
ENG 105 Advanced First-Year Composition (3)	
HU/SB elective chosen with an advisor (3)	
————— or—————	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
Total	6

General Studies/Department Requirements

<i>Humanities and Fine Arts/Social and Behavioral Sciences</i>	
HU/SB electives	18
<i>Literacy and Critical Inquiry</i>	
L elective	3
ECE 400 Engineering Communications L	3
or approved CSE L course (3)	
Total	6
<i>Natural Sciences/Basic Sciences</i>	
PHY 121 University Physics I: Mechanics SQ ¹	3
PHY 122 University Physics Laboratory I SQ ¹	1
PHY 131 University Physics II: Electricity and Magnetism SQ ²	3
PHY 132 University Physics Laboratory II SQ ²	1
Science elective ³	4
Total	12
<i>Mathematical Studies</i>	
ECE 380 Probability and Statistics for Engineering Problem Solving CS	3
MAT 243 Discrete Mathematical Structures	3
MAT 270 Calculus with Analytic Geometry I MA	4
MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 342 Linear Algebra	3
Total	21
General Studies/department requirement total	57

Computer Science Core

CSE 120 Digital Design Fundamentals	3
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CSE 200 Concepts of Computer Science <i>CS</i>	3
CSE 210 Object-Oriented Design and Data Structures <i>CS</i>	3
CSE 225 Assembly Language Programming and Microprocessors (Motorola).....	4
or CSE 226 Assembly Language Programming and Microprocessors (Intel) (4).....	4
CSE 240 Introduction to Programming Languages.....	3
CSE 310 Data Structures and Algorithms.....	3
CSE 330 Computer Organization and Architecture.....	3
CSE 340 Principles of Programming Languages.....	3
CSE 355 Introduction to Theoretical Computer Science.....	3
CSE 360 Introduction to Software Engineering.....	3
CSE 430 Operating Systems.....	3
<hr/>	
Total computer science core.....	34
400-level CSE computer science breadth requirement.....	18
Technical electives ⁴	6
Unrestricted electives.....	7
<hr/>	
Total.....	31
Total degree requirements.....	128

- ¹ Both PHY 121 and 122 must be taken to secure SQ credit.
- ² Both PHY 131 and 132 must be taken to secure SQ credit.
- ³ Each student must complete a four-credit laboratory science course that meets major requirements in the discipline of the course selected that satisfies the SQ portion of the General Studies requirement. See an advisor for the approved listing.
- ⁴ Each student must complete six hours of courses chosen from the computer science technical elective list and approved by the student's advisor. See an advisor for the approved listing.

**Computer Science
Program of Study
Typical Four-Year Sequence**

First Year

First Semester	
CSE 200 Concepts of Computer Science <i>CS</i>	3
ENG 101 First-Year Composition.....	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
HU/SB and awareness area course ¹	3
Unrestricted elective.....	3
<hr/>	
Total.....	16
Second Semester	
CSE 120 Digital Design Fundamentals.....	3
CSE 210 Object-Oriented Design and Data Structures <i>CS</i>	3
ENG 102 First-Year Composition.....	3
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
Unrestricted elective.....	4
<hr/>	
Total.....	17

Second Year

First Semester	
CSE 240 Introduction to Programming Languages.....	3
MAT 243 Discrete Mathematical Structures.....	3
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ²	3
PHY 122 University Physics Laboratory I <i>SQ</i> ²	1
HU/SB and awareness area course ¹	3
<hr/>	
Total.....	17

Second Semester	
CSE 225 Assembly Language Programming and Microprocessors (Motorola).....	4
or CSE 226 Assembly Language Programming and Microprocessors (Intel) (4).....	4
MAT 342 Linear Algebra.....	3
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ³	3
PHY 132 University Physics Laboratory II <i>SQ</i> ³	1
HU/SB and awareness area course ¹	3
L elective.....	3
<hr/>	
Total.....	17

Third Year

First Semester	
CSE 310 Data Structures and Algorithms.....	3
CSE 330 Computer Organization and Architecture.....	3
CSE 360 Introduction to Software Engineering.....	3
HU/SB and awareness area course ¹	3
Laboratory science <i>SQ</i> ⁴	4
<hr/>	
Total.....	16

Second Semester	
CSE 340 Principles of Programming Languages.....	3
CSE 355 Introduction to Theoretical Computer Science.....	3
ECE 380 Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
HU/SB and awareness area course ¹	3
Technical elective.....	3
<hr/>	
Total.....	15

Fourth Year

First Semester	
CSE 430 Operating Systems.....	3
ECE 400 Engineering Communications <i>L</i>	3
or approved CSE L course (3).....	3
400-level CSE computer science breadth electives.....	9
<hr/>	
Total.....	15

Second Semester	
400-level CSE computer science breadth electives.....	9
HU/SB and awareness area course ¹	3
Technical elective.....	3
<hr/>	
Total.....	15

- ¹ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU and SB requirements.
- ² Both PHY 121 and 122 must be taken to secure SQ credit.
- ³ Both PHY 131 and 132 must be taken to secure SQ credit.
- ⁴ Each student must complete a four-credit laboratory science course that meets major requirements in the discipline of the course selected that satisfies the SQ portion of the General Studies requirement. See an advisor for the approved listing.

Computer Systems Engineering—B.S.E.

The Department of Computer Science and Engineering offers a B.S.E. degree that prepares the student for a career in computer systems engineering. This degree program pro-

L literacy and critical inquiry / *MA* mathematics / *CS* computer/statistics/quantitative applications / *HU* humanities and fine arts / *SB* social and behavioral sciences / *SG* natural science—general core courses / *SQ* natural science—quantitative / *C* cultural diversity in the United States / *G* global / *H* historical / See "General Studies," page 83.

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vides training in both engineering and computer science. Qualified students in this program may apply to participate in an industrial internship program offered through the Embedded Systems and Internetworking Consortium. Students who participate in this internship program receive academic credit (CSE 484) that applies to the technical elective requirement of the B.S.E. degree in Computer Systems Engineering. The following table specifies departmental requirements for the B.S.E. degree in Computer Systems Engineering.

First-Year Composition

Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
-----or-----	
ENG 105 Advanced First-Year Composition (3)	
HU/SB elective chosen with an advisor (3)	
-----or-----	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
Total	6

General Studies/Department Requirements

Humanities and Fine Arts/Social and Behavioral Sciences

ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
HU and SB electives	12
Total	15

Literacy and Critical Inquiry

CSE 423 Microcomputer System Hardware <i>L</i>	3
or CSE 438 Systems Programming <i>L</i> (3)	
ECE 300 Intermediate Engineering Design <i>L</i>	3
Total	6

Natural Sciences/Basic Sciences

CHM 114 General Chemistry for Engineers <i>SQ</i>	4
or CHM 116 General Chemistry <i>SQ</i> (4)	
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122 University Physics Laboratory I <i>SQ</i> ¹	1
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132 University Physics Laboratory II <i>SQ</i> ²	1
PHY 361 Introductory Modern Physics	3
Total	15

Mathematical Studies

MAT 243 Discrete Mathematical Structures	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
MAT 274 Elementary Differential Equations <i>MA</i>	3
MAT 342 Linear Algebra	3
Total	21
General Studies/department requirement total.....	57

Engineering Core

CSE 200 Concepts of Computer Science <i>CS</i>	3
CSE 225 Assembly Language Programming and Microprocessors (Motorola)	4
ECE 100 Introduction to Engineering Design <i>CS</i>	3
ECE 201 Electrical Networks I	4
ECE 210 Engineering Mechanics I: Statics.....	3

ECE 334 Electronic Devices and Instrumentation	4
Total	21

Computer Science Core

CSE 120 Digital Design Fundamentals	3
CSE 210 Object-Oriented Design and Data Structures <i>CS</i>	3
CSE 240 Introduction to Programming Languages	3
CSE 310 Data Structures and Algorithms	3
CSE 330 Computer Organization and Architecture	3
CSE 340 Principles of Programming Languages	3
CSE 355 Introduction to Theoretical Computer Science	3
CSE 360 Introduction to Software Engineering.....	3
CSE 421 Microprocessor System Design I	4
CSE 422 Microprocessor System Design II.....	4
CSE 430 Operating Systems	3
ECE 380 Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
Technical electives ³	6
Total	44
Degree requirement total.....	128

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

³ Each student must complete six hours of courses chosen from the computer science technical elective list and approved by the student's advisor. See an advisor for the approved listing.

Computer Systems Engineering Program of Study Typical Four-Year Sequence

First Year

First Semester

CSE 200 Concepts of Computer Science <i>CS</i>	3
ECE 100 Introduction to Engineering Design <i>CS</i>	3
or CSE 120 Digital Design Fundamentals (3)	
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles (3)	
ENG 101 First-Year Composition	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
Total	16

Second Semester

CHM 114 General Chemistry for Engineers <i>SQ</i>	4
CSE 120 Digital Design Fundamentals	3
or ECE 100 Introduction to Engineering Design <i>CS</i> (3)	
CSE 210 Object-Oriented Design and Data Structures <i>CS</i>	3
ENG 102 First-Year Composition	3
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
Total	17

Second Year

First Semester

CSE 225 Assembly Language Programming and Microprocessors (Motorola)	4
MAT 243 Discrete Mathematical Structures	3
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122 University Physics Laboratory I <i>SQ</i> ¹	1
Total	15

Second Semester

CSE 240 Introduction to Programming Languages	3
ECE 210 Engineering Mechanics I: Statics.....	3
MAT 274 Elementary Differential Equations <i>MA</i>	3

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PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132 University Physics Laboratory II <i>SQ</i> ²	1
HU/SB and awareness area course ³	3
Total	16

Third Year

First Semester

CSE 310 Data Structures and Algorithms	3
CSE 330 Computer Organization and Architecture	3
CSE 360 Introduction to Software Engineering.....	3
ECE 300 Intermediate Engineering Design <i>L</i>	3
MAT 342 Linear Algebra	3
Total	15

Second Semester

CSE 340 Principles of Programming Languages.....	3
CSE 355 Introduction to Theoretical Computer Science.....	3
CSE 421 Microprocessor System Design I.....	4
ECE 380 Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
HU/SB and awareness area course ³	3
Total	16

Fourth Year

First Semester

CSE 422 Microprocessor System Design II.....	4
CSE 430 Operating Systems	3
ECE 201 Electrical Networks I.....	4
PHY 361 Introductory Modern Physics.....	3
HU/SB and awareness area course ³	3
Total	17

Second Semester

CSE 423 Microcomputer System Hardware <i>L</i>	3
or CSE 438 Systems Programming <i>L</i> (3)	
ECE 334 Electronic Devices and Instrumentation	4
HU/SB and awareness area course ³	3
Technical electives	6
Total	16

- ¹ Both PHY 121 and 122 must be taken to secure *SQ* credit.
- ² Both PHY 131 and 132 must be taken to secure *SQ* credit.
- ³ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU and SB requirements.

COMPUTER SCIENCE AND ENGINEERING (CSE)

CSE 100 Principles of Programming with C++. (3)

fall, spring, summer
Principles of problem solving using C++, algorithm design, structured programming, fundamental algorithms and techniques, and computer systems concepts. Social and ethical responsibility. Lecture, lab. Prerequisite: MAT 170.
General Studies: CS

CSE 110 Principles of Programming with Java. (3)

fall, spring, summer
Concepts of problem solving using Java, algorithm design, structured programming, fundamental algorithms and techniques, and computer systems concepts. Social and ethical responsibility. Lecture, lab. Prerequisite: MAT 170.

CSE 120 Digital Design Fundamentals. (3)

fall, spring, summer
Number systems, conversion methods, binary and complement arithmetic, Boolean algebra, circuit minimization, ROMs, PLAs, flipflops, synchronous sequential circuits. Lecture, lab. Cross-listed as EEE

120. Credit is allowed for only CSE 120 or EEE 120. Prerequisite: computer literacy.

CSE 180 Computer Literacy. (3)

fall, spring, summer
Introduces personal computer operations and their place in society. Problem-solving approaches using databases, spreadsheets, and word processing. May be taken for credit on either Windows or Macintosh, but not both. Lecture, demonstration. Prerequisite: nonmajor.
General Studies: CS

CSE 181 Applied Problem Solving with Visual BASIC. (3)

fall, spring, summer
Introduces systematic definition of problems, solution formulation, and method validation. Requires computer solution using Visual BASIC for projects. Lecture, lab. Prerequisites: MAT 117; nonmajor.
General Studies: CS

CSE 185 Internet and the World Wide Web. (3)

fall and spring
Fundamental Internet concepts, World Wide Web browsing, publishing, searching, advanced Internet productivity tools.

CSE 200 Concepts of Computer Science. (3)

fall, spring, summer
Overview of algorithms, languages, computing systems, theory. Problem solving by programming with a high-level language (Java or other). Lecture, lab. Prerequisite: CSE 100 or 110 or one year of high school programming with Java or C++ or PASCAL.
General Studies: CS

CSE 210 Object-Oriented Design and Data Structures. (3)

fall, spring, summer
Object-oriented design, static and dynamic data structures (strings, stacks, queues, binary trees), recursion, searching, and sorting. Professional responsibility. Prerequisite: CSE 200.
General Studies: CS

CSE 225 Assembly Language Programming and Microprocessors (Motorola). (4)

fall, spring, summer
Assembly language programming, including input/output programming and exception/interrupt handling. Register-level computer organization, I/O interfaces, assemblers, and linkers. Motorola-based assignments. Lecture, lab. Cross-listed as EEE 225. Credit is allowed for only CSE 225 or EEE 225. Prerequisites: CSE 100 (or 110 or 200); CSE 120 or EEE 120.

CSE 226 Assembly Language Programming and Microprocessors (Intel). (4)

fall and spring
CPU/memory/peripheral device interfaces and programming. System buses, interrupts, serial and parallel I/O, DMA, coprocessors. Intel-based assignments. Lecture, lab. Cross-listed as EEE 226. Credit is allowed for only CSE 226 or EEE 226. Prerequisites: CSE 100 (or 110 or 200); CSE 120 or EEE 120.

CSE 240 Introduction to Programming Languages. (3)

fall, spring, summer
Introduces the procedural (C++), applicative (LISP), and declarative (Prolog) languages. Lecture, lab. Prerequisite: CSE 210.

CSE 310 Data Structures and Algorithms. (3)

fall, spring, summer
Advanced data structures and algorithms, including stacks, queues, trees (B, B+, AVL), and graphs. Searching for graphs, hashing, external sorting. Lecture, lab. Prerequisites: CSE 210; MAT 243.

CSE 330 Computer Organization and Architecture. (3)

fall and spring
Instruction set architecture, processor performance and design; datapath, control (hardwired, microprogrammed), pipelining, input/output. Memory organization with cache, virtual memory. Prerequisite: CSE 225 (or 226) or EEE 225 (or 226).

CSE 340 Principles of Programming Languages. (3)

fall and spring
Introduces language design and implementation. Parallel, machine-dependent and declarative features; type theory; specification, recog-

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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dition, translation, run-time management. Prerequisites: CSE 225 (or 226) or EEE 225 (or 226); CSE 240, 310.

CSE 355 Introduction to Theoretical Computer Science. (3)

fall and spring

Introduces formal language theory and automata, Turing machines, decidability/undecidability, recursive function theory, and complexity theory. Prerequisite: CSE 310.

CSE 360 Introduction to Software Engineering. (3)

fall, spring, summer

Software life cycle models; project management, team development environments and methodologies; software architectures; quality assurance and standards; legal, ethical issues. Prerequisites: CSE 210, 240.

CSE 408 Multimedia Information Systems. (3)

fall

Design, use, and applications of multimedia systems. Introduces acquisition, compression, storage, retrieval, and presentation of data from different media such as images, text, voice, and alphanumeric. Prerequisite: CSE 310.

CSE 412 Database Management. (3)

fall and spring

Introduces DBMS concepts. Data models and languages. Relational database theory. Database security/integrity and concurrency. Prerequisite: CSE 310.

CSE 420 Computer Architecture I. (3)

once a year

Computer architecture. Performance versus cost tradeoffs. Instruction set design. Basic processor implementation and pipelining. Prerequisite: CSE 330.

CSE 421 Microprocessor System Design I. (4)

fall and spring

Assembly language programming and logical hardware design of systems using 8-bit microprocessors and microcontrollers. Fundamental concepts of digital system design. Reliability and social, legal implications. Lecture, lab. Prerequisite: CSE 225 or EEE 225.

CSE 422 Microprocessor System Design II. (4)

fall and spring

Design of microcomputer systems using contemporary logic and microcomputer system components. Requires assembly language programming. Prerequisite: CSE 421.

CSE 423 Microcomputer System Hardware. (3)

once a year

Information and techniques presented in CSE 422 are used to develop the hardware design of a multiprocessor, multiprogramming, microprocessor-based system. Prerequisite: CSE 422.

General Studies: L

CSE 428 Computer-Aided Processes. (3)

selected semesters

Hardware and software considerations for computerized manufacturing systems. Specific concentration on automatic inspection, numerical control, robotics, and integrated manufacturing systems. Prerequisite: CSE 330.

CSE 430 Operating Systems. (3)

fall and spring

Operating system structure and services, processor scheduling, concurrent processes, synchronization techniques, memory management, virtual memory, input/output, storage management, and file systems. Prerequisites: CSE 330, 340.

CSE 432 Operating System Internals. (3)

fall

IPC, exception and interrupt processing, memory and thread management, user-level device drivers, and OS servers in a modern microkernel-based OS. Prerequisite: CSE 430.

CSE 434 Computer Networks. (3)

fall and spring

Cryptography fundamentals; data compression; error handling; flow control; multihop routing; network protocol algorithms; network reliability, timing, security; physical layer basics. Prerequisite: CSE 330.

CSE 438 Systems Programming. (3)

once a year

Design and implementation of systems programs, including text editors, file utilities, monitors, assemblers, relocating linking loaders, I/O

handlers, and schedulers. Prerequisite: CSE 421 or instructor approval.

General Studies: L

CSE 440 Compiler Construction I. (3)

once a year

Introduces programming language implementation. Implementation strategies such as compilation, interpretation, and translation. Major compilation phases such as lexical analysis, semantic analysis, optimization, and code generation. Prerequisites: CSE 340, 355.

CSE 445 Distributed Computing with Java and CORBA. (3)

fall and spring

Frameworks for distributed software components. Foundations of client-server computing and architectures for distributed object systems. Dynamic discovery and invocation. Lecture, projects. Prerequisite: CSE 360 or instructor approval.

CSE 446 Client-Server User Interfaces. (3)

spring

Client-server model and its use in creating and managing window interfaces. Toolkits and libraries including X11, Microsoft Foundation Classes, and Java Abstract Window Toolkit. Lecture, projects. Prerequisite: CSE 310 or instructor approval.

CSE 450 Design and Analysis of Algorithms. (3)

fall and spring

Design and analysis of computer algorithms using analytical and empirical methods; complexity measures, design methodologies, and survey of important algorithms. Prerequisite: CSE 310.

CSE 457 Theory of Formal Languages. (3)

once a year

Theory of grammar, methods of syntactic analysis and specification, types of artificial languages, relationship between formal languages, and automata. Prerequisite: CSE 355.

CSE 459 Logic for Computing Scientists. (3)

selected semesters

Propositional logic, syntax and semantics, proof theory versus model theory, soundness, consistency and completeness, first order logic, logical theories, automated theorem proving, ground resolution, pattern matching unification and resolution, Dijkstras logic, proof obligations, and program proving. Prerequisite: CSE 355.

CSE 460 Software Analysis and Design. (3)

fall and spring

Requirements analysis and design; architecture and patterns; representations of software; formal methods; component-based development. Lecture, projects. Prerequisite: CSE 360.

CSE 461 Software Engineering Project I. (3)

fall and spring

First of two-course software team-development sequence. Planning, management, design, and implementation using object-oriented technology, CASE tools, CMM-level-5 guidelines. Lecture, lab, oral and written communications. Prerequisite: CSE 360.

CSE 462 Software Engineering Project II. (3)

fall and spring

Second of two-course software team-development sequence. Software evolution, maintenance, reengineering, reverse engineering, component-based development, and outsourcing. Lecture, lab, oral and written communications. Prerequisite: CSE 461.

CSE 470 Computer Graphics. (3)

fall and spring

Display devices, data structures, transformations, interactive graphics, 3-dimensional graphics, and hidden line problem. Prerequisites: CSE 310; MAT 342.

CSE 471 Introduction to Artificial Intelligence. (3)

fall and spring

State space search, heuristic search, games, knowledge representation techniques, expert systems, and automated reasoning. Prerequisites: CSE 240, 310.

CSE 473 Nonprocedural Programming Languages. (3)

selected semesters

Functional and logic programming using languages like Lucid and Prolog. Typical applications would be a Screen Editor and an Expert System. Prerequisite: CSE 355.

CSE 476 Introduction to Natural Language Processing. (3)

selected semesters

Principles of computational linguistics, formal syntax, and semantics, as applied to the design of software with natural (human) language I/O. Prerequisite: CSE 310 or instructor approval.

CSE 477 Introduction to Computer-Aided Geometric Design. (3)

once a year

Introduces parametric curves and surfaces, Bezier and B-spline interpolation, and approximation techniques. Prerequisites: CSE 210, 470; MAT 342.

CSE 484 Internship. (1–12)

selected semesters

CSE 507 Virtual Reality Systems. (3)

selected semesters

Computer generated 3D environments, simulation of reality, spatial presence of virtual objects, technologies of immersion, tracking systems. Lecture, lab. Prerequisite: CSE 408 or 470 or 508 or instructor approval.

CSE 508 Digital Image Processing. (3)

once a year

Digital image fundamentals, image transforms, image enhancement and restoration techniques, image encoding, and segmentation methods. Prerequisite: EEE 303 or instructor approval.

CSE 510 Database Management System Implementation. (3)

once a year

Implementation of database systems. Data storage, indexing, querying, and retrieval. Query optimization and execution, concurrency control, and transaction management. Prerequisite: CSE 412.

CSE 512 Distributed Database Systems. (3)

once a year

Distributed database design, query processing, and transaction processing. Distributed database architectures and interoperability. Emerging technology. Prerequisite: CSE 412.

CSE 513 Rules in Database Systems. (3)

selected semesters

Declarative and active rules. Logic as a data model. Evaluation and query optimization. Triggers and ECA rules. Current research topics. Prerequisite: CSE 412.

CSE 514 Object-Oriented Database Systems. (3)

selected semesters

Object-oriented data modeling, definition, manipulation. Identity and inheritance. Query languages. Schema evolution. Versioning. Distributed object management. Extended relational systems. Prerequisite: CSE 412.

CSE 515 Multimedia and Web Databases. (3)

spring

Data models for multimedia and Web data; query processing and optimization for inexact retrieval; advanced indexing, clustering, and search techniques. Prerequisites: CSE 408, 412.

CSE 517 Hardware Design Languages. (3)

once a year

Introduces hardware design languages. Modeling concepts for specification, simulation, and synthesis. Prerequisite: CSE 423 or EEE 425 or instructor approval.

CSE 518 Synthesis with Hardware Design Languages. (3)

selected semesters

Modeling VLSI design in hardware design languages for synthesis. Transformation of language-based designs to physical layout. Application of synthesis tools. Prerequisite: CSE 517.

CSE 520 Computer Architecture II. (3)

fall

Computer architecture description languages, computer arithmetic, memory-hierarchy design, parallel, vector, multiprocessors, and input/output. Prerequisites: CSE 420, 430.

CSE 521 Microprocessor Applications. (4)

selected semesters

Microprocessor technology and its application to the design of practical digital systems. Hardware, assembly language programming, and interfacing of microprocessor-based systems. Lecture, lab. Prerequisite: CSE 421.

CSE 523 Microcomputer Systems Software. (3)

selected semesters

Developing system software for a multiprocessor, multiprogramming, microprocessor-based system using information and techniques presented in CSE 421, 422. Prerequisite: CSE 422.

CSE 526 Parallel Processing. (3)

selected semesters

Real and apparent concurrency. Hardware organization of multiprocessors, multiple computer systems, scientific attached processors, and other parallel systems. Prerequisite: CSE 330 or 423.

CSE 531 Distributed and Multiprocessor Operating Systems. (3)

once a year

Distributed systems architecture, remote file access, message-based systems, object-based systems, client/server paradigms, distributed algorithms, replication and consistency, and multiprocessor operating systems. Prerequisite: CSE 432 or instructor approval.

CSE 532 Advanced Operating System Internals. (3)

selected semesters

Memory, processor, process and communication management, and concurrency control in the Windows NT multiprocessor and distributed operating system kernels and servers. Prerequisites: CSE 432, 531 (or 536).

CSE 534 Advanced Computer Networks. (3)

fall and spring

Advanced network protocols and infrastructure, applications of high-performance networks to distributed systems, high-performance computing and multimedia domains, special features of networks. Prerequisite: CSE 434.

CSE 536 Advanced Operating Systems. (3)

spring

Protection and file systems. Communication, processes, synchronization, naming, fault tolerance, security, data replication, and coherence in distributed systems. Real-time systems. Prerequisite: CSE 430.

CSE 539 Applied Cryptography. (3)

spring

Use of cryptography for secure protocols over networked systems, including signatures, certificates, timestamps, electrons, digital cash, and other multiparty coordination. Prerequisite: CSE 310 or instructor approval.

CSE 540 Compiler Construction II. (3)

selected semesters

Formal parsing strategies, optimization techniques, code generation, extensibility and transportability considerations, and recent developments. Prerequisite: CSE 440.

CSE 545 Programming Language Design. (3)

selected semesters

Language constructs, extensibility and abstractions, and runtime support. Language design process. Prerequisite: CSE 440.

CSE 550 Combinatorial Algorithms and Intractability. (3)

once a year

Combinatorial algorithms, nondeterministic algorithms, classes P and NP, NP-hard and NP-complete problems, and intractability. Design techniques for fast combinatorial algorithms. Prerequisite: CSE 450.

CSE 555 Theory of Computation. (3)

once a year

Rigorous treatment of regular languages, context-free languages, Turing machines and decidability, reducibility, and other advanced topics in computability theory. Prerequisite: CSE 355 or instructor approval.

CSE 562 Software Process Automation. (3)

once a year

Representing the software process; creating a measured and structured working environment; using, constructing, and adapting component-based tools. Prerequisite: CSE 360.

CSE 563 Software Requirements and Specification. (3)

selected semesters

Examines the definitional stage of software development; analysis of specification representations, formal methods, and techniques emphasizing important application issues. Prerequisite: CSE 460.

CSE 564 Software Design. (3)

once a year

Examines software design issues and techniques. Includes a survey of design representations and a comparison of design methods. Prerequisite: CSE 460.

CSE 565 Software Verification, Validation, and Testing. (3)

once a year

Test planning, requirements-based and code-based testing techniques, tools, reliability models, and statistical testing. Prerequisite: CSE 460.

CSE 566 Software Project, Process, and Quality Management. (3)

once a year

Project management, risk management, configuration management, quality management, and simulated project management experiences. Prerequisite: CSE 360.

CSE 570 Advanced Computer Graphics I. (3)

once a year

Hidden surface algorithms, lighting models, and shading techniques. User interface design. Animation techniques. Fractals and stochastic models. Raster algorithms. Prerequisite: CSE 470.

CSE 571 Artificial Intelligence. (3)

once a year

Definitions of intelligence, computer problem solving, game playing, pattern recognition, theorem proving, and semantic information processing; evolutionary systems; heuristic programming. Prerequisite: CSE 471.

CSE 573 Advanced Computer Graphics II. (3)

once a year

Modeling of natural phenomena: terrain, clouds, fire, water, and trees. Particle systems, deformation of solids, antialiasing, and volume visualization. Lecture, lab. Prerequisite: CSE 470.

CSE 574 Planning and Learning Methods in AI. (3)

once a year

Reasoning about time and action, plan synthesis and execution, improving planning performance, applications to manufacturing intelligent agents. Prerequisite: CSE 471 (or its equivalent).

CSE 576 Topics in Natural Language Processing. (3)

selected semesters

Comparative parsing strategies, scoping and reference problems, nonfirst-order logical semantic representations, and discourse structure. Prerequisite: CSE 476 or instructor approval.

CSE 577 Advanced Computer-Aided Geometric Design I. (3)

once a year

General interpolation; review of curve interpolation and approximation; spline curves; visual smoothness of curves; parameterization of curves; introduces surface interpolation and approximation. Prerequisites: both CSE 470 and 477 or only instructor approval.

CSE 578 Advanced Computer-Aided Geometric Design II. (3)

selected semesters

Coons patches and Bezier patches; triangular patches; arbitrarily located data methods; geometry processing of surfaces; higher dimensional surfaces. Prerequisites: both CSE 470 and 477 or only instructor approval.

CSE 579 NURBS: Nonuniform Rational B-Splines. (3)

selected semesters

Projective geometry, NURBS-based modeling, basic theory of conics and rational Bezier curves, rational B-splines, surfaces, rational surfaces, stereographic maps, quadrics, IGES data specification. Prerequisites: CSE 470, 477.

CSE 593 Applied Project. (1–12)

selected semesters

CSE 598 Special Topics. (1–4)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Electrical Engineering

www.eas.asu.edu/ee

480/965-3424

ENGRC 552

Stephen M. Goodnick, Chair

Regents' Professors: Balanis, Ferry, Heydt

Professors: Backus, Crouch, El-Ghazaly, Goodnick, Gorur, Higgins, Hoppensteadt, Hui, Karady, Kiaei, Kozicki, Lai, Palais, Pan, Roedel, Schroder, Shen, Si, Spanias, Tao, Thornton, Y. Zhang

Associate Professors: Aberle, Allee, Bird, Chakrabarti, Cochran, Diaz, El-Sharawy, Greeneich, Grondin, Holbert, Karam, Kim, Morrell, Rodriguez, Skromme, Tsakalis, Tylavsky

Assistant Professors: Ayyanar, Duman, Joo, Papandreou-Suppappola, Reisslein, Tepedelenioglu, Vasileska, Yazdi, J. Zhang

The professional activities of electrical engineers directly affect the everyday lives of most of the world's population. They are responsible for the design and development of radio and television transmitters and receivers, telephone networks and switching systems, computer systems, and electric power generation and distribution. Within the broad scope of these systems, the electrical engineer is concerned with a challenging and diverse array of design and development problems.

Electrical engineers design minuscule semiconductor integrated circuits that contain many thousands of elementary devices. These engineers design systems for automatically controlling mechanical devices and a variety of processes. These engineers are responsible for the design of satellite communication links as well as patient monitoring systems for hospitals. The development of the microprocessor has expanded the opportunities for electrical engineers to improve the design of familiar products since these devices are now incorporated in automobiles, consumer and office products, entertainment systems, and a vast variety of test and measurement instruments and machine tools.

Students who earn a B.S.E. degree in Electrical Engineering will be involved in a variety of electrical and electronic problems in the course of their careers. To ensure the necessary breadth of knowledge, the Electrical Engineering curriculum includes basic (core) engineering courses and courses in networks and electronic circuits, electromagnetic fields and waves, microprocessors, communication and control systems, solid-state electronics, electrical power systems, and other specialty courses.

ELECTRICAL ENGINEERING—B.S.E.

The goal of the Electrical Engineering undergraduate program is to prepare the graduates for entry-level positions as electrical engineers for the broad range of opportunities available in industrial, commercial, and governmental organizations, and to prepare the graduates for continued learning experiences either in a formal graduate program or in continuing education applications.

This goal is achieved through a curriculum designed to accomplish five objectives:

1. We will maintain a modern curriculum, which adapts to changes in technology and society.
2. Our program will foster a diverse student population entering and successfully graduating, and our graduates will function well in a diverse work force.
3. Our graduates will be self-motivated, creative people who can succeed in environments where technical innovation is important.
4. Our graduates will be sought after by our constituent industries and respected graduate programs.
5. Our graduates will be technically competent.

The curriculum in Electrical Engineering builds upon the base provided by the engineering core. Beyond the engineering core, the curriculum includes a number of required electrical engineering and technical elective courses. Approved technical elective courses serve to provide students with an opportunity either to broaden their background in electrical engineering or to study, in greater depth, technical subjects in which they have special interests. Successful completion of the curriculum leaves the student prepared to embark on a career in electrical engineering or to pursue advanced education in graduate school.

The engineering design experience is structured around four backbone courses employing engineering teams: ECE 100 Introduction to Engineering Design (freshman year), ECE 300 Intermediate Engineering Design (junior year), EEE 488 Senior Design Laboratory I, and EEE 489 Senior Design Laboratory II. The integrated experience is strengthened with required courses: EEE 120 Digital Design Fundamentals, EEE 225 Assembly Language Programming and Microprocessors (Motorola), EEE 226 Assembly Language Programming and Microprocessors (Intel), EEE 303 Signals and Systems, and EEE 360 Energy Conversion and Transport. Students focus on design pertaining to specific electrical engineering areas in their senior technical electives before the culminating, capstone design experience in EEE 488 and EEE 489.

DEGREE REQUIREMENTS

A minimum of 128 semester hours is necessary for the B.S.E. degree in Electrical Engineering. A minimum of 50 upper-division semester hours is required.

GRADUATION REQUIREMENTS

A student must earn a grade of “C” or higher in the mathematics and physics courses listed in the program of study. Each mathematics and physics course in the program of study must be completed with a “C” or higher before enroll-

ing in any course that requires that mathematics or physics course as a prerequisite. The student must also have an overall GPA of at least 2.00 for the following group of courses: CSE 100; ECE 201, 300, 334, 352; all courses with an EEE prefix; and all other courses used as technical electives.

In addition to fulfilling school and major requirements, students must satisfy all university graduation requirements. See [“University Graduation Requirements,” page 79.](#)

COURSE REQUIREMENTS

The specific course requirements for the B.S.E. degree in Electrical Engineering follow.

First-Year Composition¹

Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
_____or_____	
ENG 105 Advanced First-Year Composition (3)	
Elective (requires departmental approval) (3)	
_____or_____	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
Total	6

General Studies/School Requirements

<i>Humanities and Fine Arts/Social and Behavioral Sciences</i>	
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Macroeconomic Principles <i>SB</i> (3)	
HU courses.....	6-9
SB course(s).....	3-6
Minimum total	15

Literacy and Critical Inquiry

ECE 300 Intermediate Engineering Design <i>L</i>	3
EEE 488 Senior Design Laboratory I.....	2
EEE 489 Senior Design Laboratory II	2
Total	7

Natural Sciences/Basic Sciences

CHM 114 General Chemistry for Engineers <i>SQ</i>	4
or CHM 116 General Chemistry <i>SQ</i> (4)	
PHY 121 University Physics I: Mechanics <i>SQ</i> ^{1,2}	3
PHY 122 University Physics Laboratory I <i>SQ</i> ^{1,2}	1
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ^{1,3}	3
PHY 132 University Physics Laboratory II <i>SQ</i> ^{1,3}	1
PHY 241 University Physics III ¹	3
Total	15

Mathematical Studies

ECE 100 Introduction to Engineering Design <i>CS</i>	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i> ¹	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i> ¹	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i> ¹	4
MAT 274 Elementary Differential Equations <i>MA</i> ¹	3
MAT 342 Linear Algebra ¹	3

¹ L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See [“General Studies,” page 83.](#)

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

MAT 362 Advanced Mathematics for Engineers and Scientists I ¹	3
Total	24
General Studies/school requirements total.....	61

Engineering Core

ECE 201 Electrical Networks I	4
ECE 214 Engineering Mechanics.....	4
ECE 334 Electronic Devices and Instrumentation	4
ECE 352 Properties of Electronic Materials	4
EEE 225 Assembly Language Programming and Microprocessors (Motorola)	4
or EEE 226 Assembly Language Programming and Microprocessors (Intel) (4)	—
Total	20

¹ A minimum grade of “C” is required.

² Both PHY 121 and 122 must be taken to secure SQ credit.

³ Both PHY 131 and 132 must be taken to secure SQ credit.

Electrical Engineering Major

The following courses are required to fulfill the Electrical Engineering major:

CSE 100 Principles of Programming with C++ CS*	3
EEE 120 Digital Design Fundamentals.....	3
EEE 302 Electrical Networks II	3
EEE 303 Signals and Systems.....	3
EEE 340 Electromagnetic Engineering I	4
EEE 350 Random Signal Analysis.....	3
EEE 360 Energy Conversion and Transport.....	4
Total	23

* CSE 110 Principles of Programming with Java (3) can be substituted for CSE 100 with Department of Electrical Engineering approval.

The program in Electrical Engineering requires a total of 18 semester hours of technical electives. With department approval, a maximum of two technical electives may be taken outside electrical engineering. Qualified students may choose from approved courses in business, engineering, mathematics, and the sciences at or above the 300-level, including graduate courses. Students must have a GPA of not less than 3.00 and approval of the dean to enroll in EEE graduate-level courses. To ensure breadth of knowledge, students *must* select courses from at least three of the following seven areas. In addition, to ensure depth, two courses must be taken in one area.

Communications and Signal Processing

EEE 407 Digital Signal Processing	4
EEE 455 Communication Systems	4
EEE 459 Communication Networks	3

Computer Engineering

CSE 330 Computer Organization and Architecture	3
CSE 420 Computer Architecture I	3
CSE 421 Microprocessor System Design I.....	4
CSE 422 Microprocessor System Design II.....	4

Controls

EEE 480 Feedback Systems.....	4
EEE 482 Introduction to State Space Methods	3

Electromagnetics

EEE 440 Electromagnetic Engineering II	4
EEE 443 Antennas for Wireless Communications.....	3
EEE 445 Microwaves	4
EEE 448 Fiber Optics.....	4

Electronic Circuits

EEE 405 Filter Design.....	3
EEE 425 Digital Systems and Circuits.....	4
EEE 433 Analog Integrated Circuits.....	4

Power Systems

EEE 460 Nuclear Concepts for the 21st Century	3
EEE 463 Electrical Power Plant.....	3
EEE 470 Electric Power Devices	3
EEE 471 Power System Analysis.....	3
EEE 473 Electrical Machinery.....	3

Solid-State Electronics

EEE 434 Quantum Mechanics for Engineers.....	3
EEE 435 Microelectronics	3
EEE 436 Fundamentals of Solid-State Devices	3
EEE 437 Optoelectronics	3
EEE 439 Semiconductor Facilities and Cleanroom Practices.....	3

Electrical Engineering Program of Study Typical Four-Year Sequence First Year

First Semester

CHM 114 General Chemistry for Engineers SQ.....	4
or CHM 116 General Chemistry SQ (4)	
ECE 100 Introduction to Engineering Design ¹ CS	3
or EEE 120 Digital Design Fundamentals (3)	
ENG 101 First-Year Composition	3
MAT 270 Calculus with Analytic Geometry I MA	4
Total	14

Second Semester

EEE 120 Digital Design Fundamentals ¹	3
or ECE 100 Introduction to Engineering Design CS (3)	
ENG 102 First-Year Composition	3
MAT 271 Calculus with Analytic Geometry II MA	4
PHY 121 University Physics I: Mechanics SQ ²	3
PHY 122 University Physics Laboratory I SQ ²	1
Total	14

Second Year

First Semester

CSE 100 Principles of Programming with C++ CS ³	3
ECN 111 Macroeconomic Principles SB	3
or ECN 112 Macroeconomic Principles SB (3)	
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 274 Elementary Differential Equations MA	3
PHY 131 University Physics II: Electricity and Magnetism SQ ⁴	3
PHY 132 University Physics Laboratory II SQ ⁴	1
Total	17

Second Semester

ECE 201 Electrical Networks I	4
EEE 225 Assembly Language Programming and Microprocessors (Motorola)	4
or EEE 226 Assembly Language Programming and Microprocessors (Intel) (4)	
MAT 362 Advanced Mathematics for Engineers and Scientists I.....	3

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PHY 241 University Physics III.....	3
HU/SB and awareness area course ⁵	3
Total	17

Third Year

First Semester

ECE 334 Electronic Devices and Instrumentation	4
EEE 302 Electrical Networks II	3
EEE 340 Electromagnetic Engineering I	4
MAT 342 Linear Algebra	3
HU/SB and awareness area course ⁵	3
Total	17

Second Semester

ECE 300 Intermediate Engineering Design <i>L</i>	3
ECE 352 Properties of Electronic Materials	4
EEE 303 Signals and Systems.....	3
EEE 360 Energy Conversion and Transport.....	4
HU/SB and awareness area course ⁵	3
Total	17

Fourth Year

First Semester

ECE 214 Engineering Mechanics.....	4
EEE 350 Random Signal Analysis.....	3
EEE 488 Senior Design Laboratory I <i>L</i>	2
Technical electives	7
Total	16

Second Semester

EEE 489 Senior Design Laboratory II <i>L</i>	2
HU/SB and awareness area course ⁵	3
Technical electives	11
Total	16

- ¹ Both ECE 100 and EEE 120 are required.
- ² Both PHY 121 and 122 must be taken to secure SQ credit.
- ³ CSE 110 Principles of Programming with Java (3) can be substituted for CSE 100 with Department of Electrical Engineering approval.
- ⁴ Both PHY 131 and 132 must be taken to secure SQ credit.
- ⁵ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to satisfy HU or SB requirements.

ELECTRICAL ENGINEERING (EEE)

EEE 120 Digital Design Fundamentals. (3)

fall, spring, summer

Number systems, conversion methods, binary and complement arithmetic, Boolean algebra, circuit minimization, ROMs, PLAs, flipflops, synchronous sequential circuits. Lecture, lab. Cross-listed as CSE 120. Credit is allowed for only CSE 120 or EEE 120. Prerequisite: computer literacy.

EEE 225 Assembly Language Programming and Microprocessors (Motorola). (4)

fall, spring, summer

Assembly language programming, including input/output programming and exception/interrupt handling. Register-level computer organization, I/O interfaces, assemblers, and linkers. Motorola-based assignments. Lecture, lab. Cross-listed as CSE 225. Credit is allowed for only CSE 225 or EEE 225. Prerequisites: CSE 100 (or 110 or 200); CSE 120 or EEE 120.

EEE 226 Assembly Language Programming and Microprocessors (Intel). (4)

fall and spring

CPU/memory/peripheral device interfaces and programming. System buses, interrupts, serial and parallel I/O, DMA, coprocessors. Intel-

based assignments. Lecture, lab. Cross-listed as CSE 226. Credit is allowed for only CSE 226 or EEE 226. Prerequisites: CSE 100 (or 110 or 200); CSE 120 or EEE 120.

EEE 302 Electrical Networks II. (3)

fall, spring, summer

Analyzes linear and nonlinear networks. Analytical and numerical methods. Prerequisite: ECE 201. Pre- or corequisite: MAT 362.

EEE 303 Signals and Systems. (3)

fall, spring, summer

Introduces continuous and discrete time signal and system analysis, linear systems, Fourier, and z-transforms. Prerequisite: EEE 302. Pre- or corequisite: MAT 342.

EEE 340 Electromagnetic Engineering I. (4)

fall, spring, summer

Static and time varying vector fields; boundary value problems; dielectric and magnetic materials; Maxwell's equations; boundary conditions. Prerequisites: MAT 362; PHY 131, 132.

EEE 350 Random Signal Analysis. (3)

fall and spring

Probabilistic and statistical analysis as applied to electrical signals and systems. Pre- or corequisite: EEE 303.

EEE 360 Energy Conversion and Transport. (4)

fall and spring

Three-phase circuits. Energy supply systems. Magnetic circuit analysis, synchronous generators, transformers, induction and DC machines. Transmission line modeling and design. Lecture, lab. Prerequisite: EEE 302.

EEE 405 Filter Design. (3)

fall

Principles of active and passive analog filter design, frequency domain approximations, sensitivity and synthesis of filters. Prerequisite: EEE 303.

EEE 407 Digital Signal Processing. (4)

fall and spring

Time and frequency domain analysis, difference equations, z-transform, FIR and IIR digital filter design, discrete Fourier transform, FFT, and random sequences. Lecture, lab. Prerequisites: EEE 303; MAT 342.

EEE 425 Digital Systems and Circuits. (4)

fall and spring

Digital logic gate analysis and design. Propagation delay times, fan out, power dissipation, noise margins. Design of MOS and bipolar logic families, including NMOS, CMOS, standard and advanced TTL, ECL, and BiCMOS. Inverter, combinational and sequential logic circuit design, MOS memories, VLSI circuits. Computer simulations using PSPICE. Lecture, lab. Prerequisite: ECE 334.

EEE 433 Analog Integrated Circuits. (4)

spring

Analysis, design, and applications of modern analog circuits using integrated bipolar and field effect transistor technologies. Lecture, lab. Prerequisite: ECE 334.

EEE 434 Quantum Mechanics for Engineers. (3)

fall

Angular momentum, wave packets, Schroedinger wave equation, probability, problems in one dimension, principles of wave mechanics, scattering, tunneling, central forces, angular momentum, hydrogen atom, perturbation theory, variational techniques. Prerequisites: ECE 352; EEE 340.

EEE 435 Microelectronics. (3)

spring

Introduces basic CMOS processing and fabrication tools. Covers the fundamentals of thermal oxidation, CVD, implantation, diffusion, and process integration. Internet lecture, internet or on-campus lab. Fee. Pre- or corequisite: EEE 436.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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EEE 436 Fundamentals of Solid-State Devices. (3)

fall and spring

Semiconductor fundamentals, pn junctions, metal-semiconductor contacts, metal-oxide-semiconductor capacitors and field-effect transistors, bipolar junction transistors. Prerequisite: ECE 352.

EEE 437 Optoelectronics. (3)

selected semesters

Basic operating principles of various types of optoelectronic devices which play important roles in commercial and communication electronics; light-emitting diodes, injection lasers, and photodetectors. Prerequisite: EEE 436.

EEE 439 Semiconductor Facilities and Cleanroom Practices. (3)

fall

Microcontamination, controlled environments, cleanroom layout and systems, modeling, codes and legislation, ultrapure water, production materials, personnel and operations, hazard management, advanced concepts. Prerequisite: EEE 435 or instructor approval.

EEE 440 Electromagnetic Engineering II. (4)

spring

Second half of an introductory course in electromagnetic theory and its application in electrical engineering. Analytical and numerical solution of boundary value problems. Advanced transmission lines; waveguides; antennas; radiation and scattering. Lecture, lab. Prerequisite: EEE 340 (or its equivalent).

EEE 443 Antennas for Wireless Communications. (3)

spring

Fundamental parameters; radiation integrals; wireless systems; wire, loop, and microstrip antennas; antenna arrays; smart antennas; ground effects; multipath. Prerequisite: EEE 340.

EEE 445 Microwaves. (4)

fall

Waveguides; circuit theory for waveguiding systems; microwave devices, systems, and energy sources; striplines and microstrips; impedance matching transformers; measurements. Lecture, lab. Prerequisite: EEE 340.

EEE 448 Fiber Optics. (4)

fall

Principles of fiber-optic communications. Lecture, lab. Prerequisites: EEE 303, 340.

EEE 455 Communication Systems. (4)

fall and spring

Signal analysis techniques applied to the operation of electrical communication systems. Introduction to and overview of modern digital and analog communications. Lecture, lab. Prerequisite: EEE 350.

EEE 459 Communication Networks. (3)

spring

Fundamentals of communication networks. Study of Seven-Layer OSI model. Focus on functionality and performance of protocols used in communication networks. Prerequisite: EEE 350.

EEE 460 Nuclear Concepts for the 21st Century. (3)

spring

Radiation interactions, damage, dose, and instrumentation. Cosmic rays, satellite effects; soft errors; transmutation doping. Fission reactors, nuclear power. TMI, Chernobyl. Radioactive waste. Prerequisite: PHY 241 or 361.

EEE 463 Electrical Power Plant. (3)

fall

Nuclear, fossil, and solar energy sources. Analysis and design of steam supply systems, electrical generating systems, and auxiliary systems. Power plant efficiency and operation. Prerequisites: ECE 201, 340 (or PHY 241).

EEE 470 Electric Power Devices. (3)

fall

Analyzes devices used for short circuit protection, including circuit breakers, relays, and current and voltage transducers. Protection against switching and lightning over voltages. Insulation coordination. Prerequisite: EEE 360.

EEE 471 Power System Analysis. (3)

spring

Review of transmission line parameter calculation. Zero sequence impedance, symmetrical components for fault analysis, short circuit calculation, review of power flow analysis, power system stability, and power system control concepts. Prerequisite: EEE 360.

EEE 473 Electrical Machinery. (3)

fall

Operating principles, constructional details, and design aspects of conventional DC and AC machines, transformers and machines used in computer disc drives, printers, wrist watches, and automobiles. Prerequisite: EEE 360.

EEE 480 Feedback Systems. (4)

fall and spring

Analysis and design of linear feedback systems. Frequency response and root locus techniques, series compensation, and state variable feedback. Lecture, lab. Prerequisite: EEE 303.

EEE 482 Introduction to State Space Methods. (3)

fall

Discrete and continuous systems in state space form controllability, stability, and pole placement. Observability and observers. Pre- or corequisite: EEE 480.

EEE 488 Senior Design Laboratory I. (2)

fall and spring

Capstone senior project. Design process: research, concept, feasibility, simulation, specifications, benchmarking, and proposal generation. Technical communications and team skills enrichment. Lecture, lab. Prerequisites: ECE 300, 334; EEE 303, 340; senior status. Pre- or corequisite: ECE 352; EEE 360.

General Studies: L (if credit also earned in EEE 489)

EEE 489 Senior Design Laboratory II. (2)

fall and spring

Capstone senior project. Implement, evaluate, and document EEE 488 design. Social, economic, and safety considerations. Technical communications and team skills enrichment. Lecture, lab. Prerequisite: EEE 488 in the immediately preceding semester.

General Studies: L (if credit also earned in EEE 488)

EEE 506 Digital Spectral Analysis. (3)

spring

Principles and applications of digital spectral analysis, least squares, random sequences, parametric, and nonparametric methods for spectral estimation. Prerequisites: EEE 407, 554.

EEE 507 Multidimensional Signal Processing. (3)

fall

Processing and representation of multidimensional signals. Design of systems for processing multidimensional data. Introduces image and array processing issues. Prerequisite: EEE 407 or instructor approval.

EEE 508 Digital Image Processing and Compression. (3)

spring

Fundamentals of digital image perception, representation, processing, and compression. Emphasizes image coding techniques. Signals include still pictures and motion video. Prerequisites: EEE 350 and 407 (or their equivalents).

EEE 511 Artificial Neural Computation Systems. (3)

selected semesters

Networks for computation, learning function representations from data, learning algorithms and analysis, function approximation and information representation by networks, applications in control systems and signal analysis. Prerequisite: instructor approval.

EEE 523 Advanced Analog Integrated Circuits. (3)

fall

Analysis and design of analog integrated circuits: analog circuit blocks, reference circuits, operational-amplifier circuits, feedback, and nonlinear circuits. Prerequisite: EEE 433 (or its equivalent).

EEE 524 Communication Transceiver Circuits Design. (3)

selected semesters

Communication transceivers and radio frequency system design; fundamentals of transceivers circuits; RF, IF, mixers, filters, frequency synthesizers, receivers, CAD tools, and lab work on IC design stations. Lecture, lab. Prerequisites: EEE 433 and 455 (or their equivalents). Pre- or corequisite: EEE 523.

EEE 525 VLSI Design. (3)

fall and spring

Analysis and design of Very Large Scale Integrated (VLSI) circuits. Physics of small devices, fabrication, regular structures, and system timing. Open only to graduate students.

EEE 526 VLSI Architectures. (3)

fall

Special-purpose architectures for signal processing. Design of array processor systems at the system level and processor level. High-level synthesis. Prerequisites: both CSE 330 and EEE 407 or only instructor approval.

EEE 527 Analog to Digital Converters. (3)

fall

Detailed introduction to the design of Nyquist rate, CMOS analog to digital converters. Prerequisite: EEE 523.

EEE 530 Advanced Silicon Processing. (3)

spring

Thin films, CVD, oxidation, diffusion, ion-implantation for VLSI, metallization, silicides, advanced lithography, dry etching, rapid thermal processing. Pre- or corequisite: EEE 435.

EEE 531 Semiconductor Device Theory I. (3)

fall

Transport and recombination theory, pn and Schottky barrier diodes, bipolar and junction field-effect transistors, and MOS capacitors and transistors. Prerequisite: EEE 436 (or its equivalent).

EEE 532 Semiconductor Device Theory II. (3)

spring

Advanced MOSFETs, charge-coupled devices, solar cells, photodetectors, light-emitting diodes, microwave devices, and modulation-doped structures. Prerequisite: EEE 531.

EEE 533 Semiconductor Process/Device Simulation. (3)

fall

Process simulation concepts, oxidation, ion implantation, diffusion, device simulation concepts, pn junctions, MOS devices, bipolar transistors. Prerequisite: EEE 436 (or its equivalent).

EEE 534 Semiconductor Transport. (3)

spring

Carrier transport in semiconductors. Hall effect, high electric field, Boltzmann equation, correlation functions, and carrier-carrier interactions. Prerequisites: EEE 434, 436 (or 531).

EEE 535 Electron Transport in Nanostructures. (3)

spring

Nanostructure physics and applications. Two-dimensional electron systems, quantum wires and dots, ballistic transport, quantum interference, and single-electron tunneling. Prerequisites: EEE 434, 436.

EEE 536 Semiconductor Characterization. (3)

spring

Measurement techniques for semiconductor materials and devices. Electrical, optical, physical, and chemical characterization methods. Prerequisite: EEE 436 (or its equivalent).

EEE 537 Semiconductor Optoelectronics I. (3)

fall

Electronic states in semiconductors, quantum theory of radiation, absorption processes, radiative processes, nonradiative processes, photoluminescence, and photonic devices. Prerequisites: EEE 434, 436 (or 531).

EEE 538 Semiconductor Optoelectronics II. (3)

selected semesters

Material and device physics of semiconductor lasers, light-emitting diodes, and photodetectors. Emerging material and device technology in III-V semiconductors. Prerequisite: EEE 537.

EEE 539 Introduction to Solid-State Electronics. (3)

fall

Crystal lattices, reciprocal lattices, quantum statistics, lattice dynamics, equilibrium, and nonequilibrium processes in semiconductors. Prerequisite: EEE 434.

EEE 541 Electromagnetic Fields and Guided Waves. (3)

selected semesters

Polarization and magnetization; dielectric, conducting, anisotropic, and semiconducting media; duality, uniqueness, and image theory; plane wave functions, waveguides, resonators, and surface guided waves. Prerequisite: EEE 440 (or its equivalent).

EEE 543 Antenna Analysis and Design. (3)

fall

Impedances, broadband antennas, frequency independent antennas, miniaturization, aperture antennas, horns, reflectors, lens antennas, and continuous sources design techniques. Prerequisite: EEE 443 (or its equivalent).

EEE 544 High-Resolution Radar. (3)

selected semesters

Fundamentals; wideband coherent design, waveforms, and processing; stepped frequency; synthetic aperture radar (SAR); inverse synthetic aperture radar (ISAR); imaging. Prerequisites: EEE 303 and 340 (or their equivalents).

EEE 545 Microwave Circuit Design. (3)

spring

Analysis and design of microwave attenuators, in-phase and quadrature-phase power dividers, magic tee's, directional couplers, phase shifters, DC blocks, and equalizers. Prerequisite: EEE 445 or instructor approval.

EEE 546 Advanced Fiber Optics. (3)

selected semesters

Theory of propagation in fibers, couplers and connectors, distribution networks, modulation, noise and detection, system design, and fiber sensors. Prerequisite: EEE 448 or instructor approval.

EEE 547 Microwave Solid-State Circuit Design I. (3)

spring

Applies semiconductor characteristics to practical design of microwave mixers, detectors, limiters, switches, attenuators, multipliers, phase shifters, and amplifiers. Prerequisite: EEE 545 or instructor approval.

EEE 548 Coherent Optics. (3)

selected semesters

Diffraction, lenses, optical processing, holography, electro-optics, and lasers. Prerequisite: EEE 440 (or its equivalent).

EEE 549 Lasers. (3)

selected semesters

Theory and design of gas, solid, and semiconductor lasers. Prerequisite: EEE 448 or instructor approval.

EEE 550 Transform Theory and Applications. (3)

selected semesters

Introduces abstract integration, function spaces, and complex analysis in the context of integral transform theory. Applications to signal analysis, communication theory, and system theory. Prerequisite: EEE 303.

EEE 551 Information Theory. (3)

selected semesters

Entropy and mutual information, source and channel coding theorems, applications for communication and signal processing. Prerequisite: EEE 554.

EEE 552 Digital Communications. (3)

spring

Complex signal theory, digital modulation, optimal coherent and incoherent receivers, channel codes, coded modulation, Viterbi algorithm. Prerequisite: EEE 554.

EEE 553 Coding and Cryptography. (3)

selected semesters

Introduces algebra, block and convolutional codes, decoding algorithms, turbo codes, coded modulation, private and public key cryptography. Prerequisite: EEE 554.

EEE 554 Random Signal Theory. (3)

fall

Applies statistical techniques to the representation and analysis of electrical signals and to communications systems analysis. Prerequisite: EEE 350 or instructor approval.

EEE 555 Modeling and Performance Analysis. (3)

selected semesters

Modeling and performance analysis of stochastic systems and processes such as network traffic queueing systems and communication channels. Prerequisite: EEE 554.

EEE 556 Detection and Estimation Theory. (3)

selected semesters

Combines the classical techniques of statistical inference and the random process characterization of communication, radar, and other modern data processing systems. Prerequisites: EEE 455, 554.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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EEE 558 Wireless Communications. (3)

fall

Cellular systems, path loss, multipath fading channels, modulation and signaling for wireless, diversity, equalization coding, spread spectrum, TDMA/FDMA/CDMA. Prerequisite: EEE 552.

EEE 571 Power System Transients. (3)

spring

Simple switching transients. Transient analysis by deduction. Damping of transients. Capacitor and reactor switching. Transient recovery voltage. Travelling waves on transmission lines. Lightning. Protection of equipment against transient overvoltages. Introduces computer analysis of transients. Prerequisite: EEE 471.

EEE 572 Advanced Power Electronics. (3)

fall

Analyzes device operation, including thyristors, gate-turn-off thyristors, and transistors. Design of rectifier and inverter circuits. Applications such as variable speed drives, HVDC, motor control, and uninterruptible power supplies. Prerequisite: EEE 470.

EEE 573 Electric Power Quality. (3)

spring

Sinusoidal waveshape maintenance; study of momentary events, power system harmonics, instrumentation, filters, power conditioners, and other power quality enhancement methods. Prerequisite: EEE 360 (or its equivalent).

EEE 574 Computer Solution of Power Systems. (3)

selected semesters

Algorithms for digital computation for power flow, fault, and stability analysis. Sparse matrix and vector programming methods, numerical integration techniques, stochastic methods, solution of the least squares problem. Prerequisite: EEE 471.

EEE 577 Power Engineering Operations and Planning. (3)

fall

Economic dispatch, unit commitment, dynamic programming, power system planning and operation, control, generation modeling, AGC, and power production. Prerequisite: EEE 471 or graduate standing.

EEE 579 Power Transmission and Distribution. (3)

spring

High-voltage transmission line electric design; conductors, corona, RI and TV noise, insulators, clearances. DC characteristic, feeders voltage drop, and capacitors. Prerequisite: EEE 470.

EEE 581 Filtering of Stochastic Processes. (3)

selected semesters

Modeling, estimation, and filtering of stochastic processes, with emphasis on the Kalman filter and its applications in signal processing and control. Prerequisites: EEE 482, 550, 554.

EEE 582 Linear System Theory. (3)

selected semesters

Controllability, observability, and realization theory for multivariable continuous time systems. Stabilization and asymptotic state estimation. Disturbance decoupling, noninteracting control. Prerequisite: EEE 482.

EEE 584 Internship. (3)

fall, spring, summer

Work performed in an industrial setting that provides practical experience and adds value to the classroom and research learning processes.

EEE 585 Digital Control Systems. (3)

selected semesters

Analysis and design of digital and sampled data control systems, including sampling theory, z-transforms, the state transition method, stability, design, and synthesis. Prerequisites: EEE 482, 550.

EEE 586 Nonlinear Control Systems. (3)

selected semesters

Stability theory, including phase-plane, describing function, Liapunov's method, and frequency domain criteria for continuous and discrete, nonlinear, and time-varying systems. Prerequisite: EEE 482.

EEE 587 Optimal Control. (3)

selected semesters

Optimal control of systems. Calculus of variations, dynamic programming, linear quadratic regulator, numerical methods, and Pontryagin's principle. Cross-listed as MAE 507. Credit is allowed for only EEE 587 or MAE 507. Prerequisite: EEE 482 or MAE 506.

EEE 588 Design of Multivariable Control Systems. (3)

selected semesters

Practical tools for designing robust MIMO controllers. State feedback and estimation, model-based compensators, MIMO design methodologies, CAD, real-world applications. Prerequisite: EEE 480 (or its equivalent).

EEE 606 Adaptive Signal Processing. (3)

fall

Principles/applications of adaptive signal processing, adaptive linear combiner, Wiener least-squares solution, gradient search, performance surfaces, LMS/RLS algorithms, block time/frequency domain LMS. Prerequisites: EEE 506, 554.

EEE 607 Speech Coding for Multimedia Communications. (3)

spring

Speech and audio coding algorithms for applications in wireless communications and multimedia computing. Prerequisite: EEE 407. Pre- or corequisite: EEE 506.

EEE 631 Heterojunctions and Superlattices. (3)

fall

Principles of heterojunctions and quantum well structures, band line-ups, optical, and electrical properties. Introduces heterojunction devices. Prerequisites: EEE 436, 531.

EEE 632 Heterojunction Devices. (3)

selected semesters

Applies heterostructures, quantum wells, and superlattice to modulation-doped FETs, heterostructure bipolar transistors, lasers, detectors, and modulators. Prerequisites: EEE 434, 631 (or 537).

EEE 641 Advanced Electromagnetic Field Theory. (3)

selected semesters

Cylindrical wave functions, waveguides, and resonators; spherical wave functions and resonators; scattering from planar, cylindrical, and spherical surfaces; Green's functions. Prerequisite: EEE 541 (or its equivalent).

EEE 643 Advanced Topics in Electromagnetic Radiation. (3)

spring

High-frequency asymptotic techniques, geometrical and physical theories of diffraction (GTD and PTD), moment method (MM), radar cross section (RCS) prediction, Fourier transforms in radiation, and synthesis methods. Prerequisite: EEE 543.

EEE 647 Microwave Solid-State Circuit Design II. (3)

fall

Practical design of microwave free-running and voltage-controlled oscillators using Gunn and Impatt diodes and transistors; analysis of noise characteristics of the oscillator. Prerequisites: EEE 545, 547.

EEE 684 Internship. (1–2)

fall, spring, summer

Work performed in an industrial setting that provides practical experience and adds value to the classroom and research learning processes.

EEE 686 Adaptive Control. (3)

selected semesters

Main topics covered: adaptive identification, convergence, parametric models, performance and robustness properties of adaptive controllers, persistence of excitation, and stability. Prerequisites: both EEE 582 and 586 or only instructor approval.

EEE 731 Advanced MOS Devices. (3)

spring

Threshold voltage, subthreshold current, scaling, small geometry effects, hot electrons, and alternative structures. Prerequisite: EEE 531.

EEE 770 Advanced Topics in Power Systems. (3)

selected semesters

Power system problems of current interest, approached at an advanced technical level, for mature students. Prerequisites: EEE 577 and 579 (or their equivalents); instructor approval.

EEE 784 Internship. (3)

fall, spring, summer

Work performed in an industrial setting that provides practical experience and adds value to the classroom and research learning processes.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Industrial Engineering

www.eas.asu.edu/~imse

480/965-3185

GWC 502

Gary L. Hogg, Chair

Professors: Cochran, Dooley, Henderson, Hogg, Hubele, Montgomery, Runger, Wolfe

Associate Professors: Anderson-Rowland, Fowler, Mackulak, Moor, Mou, Roberts, Shunk, Villalobos, Ye

Assistant Professors: Carlyle, Gel, Kulahci, Wu

Lecturer: Borrer

The industrial engineer (IE) provides leadership for American organizations in reestablishing competitiveness in the global marketplace through system integration and productivity improvement. No challenge can be greater than improving productivity, which is the application of knowledge and skills to provide improved goods and services to enhance the quality of life, both on and off the job. This improvement must be achieved without waste of physical and human resources while maintaining environmental balance. Industrial engineers are the “productivity people” who provide the necessary leadership and skills to integrate technology. This gives IEs a wide range of interests and responsibilities.

As in other engineering fields, industrial engineering is concerned with solving problems through the application of scientific and practical knowledge. What sets industrial engineering apart from other engineering disciplines is its broader scope. An IE relates to the total picture of productivity. An IE looks at the “big picture” of what makes society perform best—the right combination of human resources, natural resources, synthetic structures, and equipment. An IE bridges the gap between management and operations, dealing with and motivating people as well as determining what tools should be used and how they should be used.

An IE deals with people as well as things. In fact, industrial engineering is often called the “people-oriented profession.” It is a primary function of the IE to integrate people and technology-oriented systems. Therefore, IEs are active in the fields of ergonomics and human factors.

To be competitive in this global economy, it is essential to emphasize and continually improve the quality of goods and services. Industrial engineering is the only engineering discipline offering course work in designing and implementing quality assurance systems.

The IE’s skills are applicable to every kind of organization. IEs learn how to approach, think about, and solve productivity and integration problems regardless of their settings. IEs work in manufacturing facilities, banks, hospitals,

government, transportation, construction, and social services. Within this wide variety of organizations, IEs get involved in projects such as designing and implementing quality control systems, independent work groups, the work flow in a medical laboratory, real-time production control systems, computer-based management information systems, and manufacturing operating systems, to name a few. A unique feature of most industrial engineering assignments is that they involve interdisciplinary teams. For example, the IE might be the leader of a team consisting of electrical and mechanical engineers, accountants, computer scientists, and planners. This IE program gives the student the skills necessary to direct these teams. These skills include team building, brainstorming, group dynamics, and interpersonal relationships.

IEs have a sound background in technology integration, management theory and application, engineering economics and cost analysis. IEs are well equipped to deal with problems never seen before, making them prime candidates for promotion through the management career path, especially in high-tech organizations. In fact, more than half of all practicing IEs are in management positions. This area of expertise has placed the IE in the leadership role in the establishment of a new field of activity called “management of technology.”

Industrial engineers are well trained in the development and use of analytical tools, and their most distinctive skill is in the area of model building. IEs must quickly learn and understand the problems of their clients. In this context, good people skills and good analytic skills are essential. This industrial engineering program offers both.

INDUSTRIAL ENGINEERING—B.S.E.

The curriculum in Industrial Engineering builds upon mathematics, computer programming, and the engineering core. Beyond this foundation, the curriculum includes a number of required IE core courses, IE electives, and study area electives, enabling students to focus on a specific career objective.

By successfully completing this curriculum, the student is prepared to embark on a career in industrial engineering or to pursue advanced education in graduate school.

The career-focused study-areas are as follows:

1. *Industrial and Management Systems.* For a broad traditional IE career in the design and analysis of manufacturing and service systems.
2. *Information and Telecommunication Systems.* For a career in the application of integrated computer and telecommunication systems to manufacturing and service systems analysis and design.
3. *Global Industrial Engineering Leadership.* For a career in global manufacturing and service organizations.
4. *High-Tech Manufacturing.* For a career in the design and analysis of integrated manufacturing systems.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

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5. *Preprofessional and Service Systems.* For a career in law, medicine or public service or careers in the design and analysis of health care, agribusiness, banking/financial, and government/public-administration systems.

DEGREE REQUIREMENTS

A minimum of 128 semester hours is necessary for the B.S.E. degree in Industrial Engineering. A minimum of 50 upper-division hours is required. Students must attain a GPA of at least 2.00 for the courses in the major field.

GRADUATION REQUIREMENTS

In addition to fulfilling school and major requirements, majors must satisfy all university graduation requirements. See "[University Graduation Requirements](#)," page 79. For information concerning admission, degree, course, and graduation requirements for the School of Engineering, see pages 218–221 of this catalog.

COURSE REQUIREMENTS

Students take 59 semester hours of university English proficiency and general studies course work, 19 hours of engineering core, 36 hours of industrial engineering courses, two hours of industrial engineering electives, and 12 hours of career-focused study area electives. Each study area has an associated list of recommended General Studies, IE electives, and study area courses. The course work for the undergraduate degree can be classified into the following categories:

First-Year Composition

Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
-----or-----	
ENG 105 Advanced First-Year Composition (3)	
Elective chosen with an advisor (3)	
-----or-----	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
Total	6

General Studies/School Requirements

<i>Humanities and Fine Arts/Social and Behavioral Sciences</i>	
ECN 112 Microeconomic Principles SB	3
HU courses	6–9
SB course(s)	3–6
Minimum total	15
<i>Literacy and Critical Inquiry</i>	
ECE 300 Intermediate Engineering Design L	3
IEE 490 Project in Design and Development L	3
Total	6
<i>Natural Sciences/Basic Sciences</i>	
CHM 114 General Chemistry for Engineers SQ	4
or CHM 116 General Chemistry SQ (4)	
PHY 121 University Physics I: Mechanics SQ ¹	3
PHY 122 University Physics Laboratory I SQ ¹	1
PHY 131 University Physics II: Electricity and Magnetism SQ ²	3

PHY 132 University Physics Laboratory II SQ ²	1
Basic science elective	3
Total	15

Mathematical Studies

MAT 242 Elementary Linear Algebra	2
MAT 270 Calculus with Analytic Geometry I MA	4
MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 274 Elementary Differential Equations MA	3
Total	17
General Studies/school requirements total	53

Engineering Core

ECE 100 Introduction to Engineering Design CS	3
ECE 201 Electrical Networks I	4
ECE 210 Engineering Mechanics I: Statics	3
ECE 212 Engineering Mechanics II: Dynamics	3
ECE 350 Structure and Properties of Materials	3
IEE 463 Computer-Aided Manufacturing and Control CS	3
Total	19

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

Industrial Engineering Major

The following courses are required:

ASE 485 Engineering Statistics CS	3
CSE 100 Principles of Programming with C++ CS	3
or CSE 110 Principles of Programming with Java (3)	
CSE 200 Concepts of Computer Science	3
ECE 380 Probability and Statistics for Engineering Problem Solving CS	3
IEE 294 ST: Industrial Engineering Applications Seminar	2
IEE 300 Economic Analysis for Engineers	3
IEE 360 Manufacturing Processes	3
IEE 368 Facilities Analysis and Design	3
IEE 374 Quality Control CS	3
IEE 461 Production Control	3
IEE 475 Simulating Stochastic Systems CS	3
IEE 476 Operations Research Techniques/Applications CS	4
Total	36

Industrial Engineering Electives Area

Students select two semester hours of industrial engineering electives. IEE 361 Manufacturing Processes Lab is highly recommended. For course information, see the list of recommended courses in the department advising office.

Career-Focused Study Area Electives

Students select a minimum of 12 semester hours from the following recommended electives in one of the five career-focused study areas.

Industrial and Management Systems

IEE 305 Information Systems Engineering CS	3
IEE 431 Engineering Administration	3
Any approved engineering or business elective	3
Any approved engineering elective	3

Information and Telecommunication Systems

CSE 210 Object-Oriented Design and Data Structure	3
CSE 240 Introduction to Programming Languages	3
IEE 305 Information Systems Engineering CS	3
IEE 494 ST: Information Systems Development Tools	3

Global Industrial Engineering Leadership

ECN 306 Survey of International Economics *SB, G*3
 IBS 300 Principles of International Business *G*.....3
 IBS 400 Cultural Factors in International Business *C, G*3
 Any approved international business electives3

High-Tech Manufacturing*

ECE 352 Properties of Electronic Materials4
 EEE 435 Microelectronics3
 EEE 436 Fundamentals of Solid-State Devices3
 MSE 355 Introduction to Materials Science and Engineering.....3
 MSE 441 Analysis of Materials Failures3
 MSE 470 Polymers and Composites.....3

Preprofessional and Service Systems*

Agribusiness Systems

AGB 340 Food Processing3
 AGB 341 Food Analysis.....3
 AGB 351 Management Science *CS*.....3
 AGB 364 Agribusiness Technologies I.....3
 AGB 414 Agribusiness Analysis *L*.....3
 AGB 440 Food Safety3
 AGB 442 Food and Industrial Microbiology4

Banking and Financial Systems

FIN 300 Fundamentals of Finance3
 FIN 331 Financial Markets and Institutions.....3
 FIN 361 Managerial Finance.....3
 FIN 431 Management of Financial Institutions3

Government and Public Administration Systems

POS 310 American National Government *SB*.....3
 POS 316 State and Local Government *SB*3
 POS 320 Public Administration *SB*.....3
 POS 333 Interest Groups *SB*3

Health Care Systems

HSA 498 PS: Health Care Finance3
 HSA 498 PS: Health Economics.....3
 HSA 498 PS: Health Service Administration and Policy3
 HSA 498 PS: Policy Issues in Health Care.....3

Prelaw Systems

AJS 360 Substantive Criminal Law (ASU West)3
 COM 422 Advanced Argumentation3
 GLB 300 Gateway to Global Business (ASU West).....3
 POL 470 Law and Political Order (ASU West).....3

Premedicine Systems

BIO 187 General Biology I *SG*.....4
 BIO 188 General Biology II *SG*4
 BIO 351 Developmental Anatomy.....3
 CHM 331 General Organic Chemistry3
 CHM 332 General Organic Chemistry3
 CHM 335 General Organic Chemistry Lab1
 CHM 336 General Organic Chemistry Lab1

* Certain focus study areas may require more than 12 semester hours due to class prerequisites.

**Industrial Engineering
 Program of Study
 Typical Four-Year Sequence**

First Year

First Semester

CHM 114 General Chemistry for Engineers *SQ*.....4
 or CHM 116 General Chemistry *SQ*¹
 ECE 100 Introduction to Engineering Design *CS*3
 ENG 101 First-Year Composition.....3
 MAT 270 Calculus with Analytic Geometry I *MA*4

HU/SB elective²3
 Total17

Second Semester

ECN 112 Microeconomic Principles *SB*.....3
 ENG 102 First-Year Composition.....3
 MAT 271 Calculus with Analytic Geometry II *MA*4
 PHY 121 University Physics I: Mechanics *SQ*³3
 PHY 122 University Physics Laboratory I *SQ*³1
 HU/SB elective²3
 Total17

Second Year

First Semester

CSE 100 Principles of Programming with C++ *CS*3
 or CSE 110 Principles of Programming with Java (3)
 IEE 300 Economic Analysis for Engineers.....3
 MAT 242 Elementary Linear Algebra2
 MAT 272 Calculus with Analytic Geometry III *MA*4
 PHY 131 University Physics II: Electricity and
 Magnetism *SQ*⁴3
 PHY 132 University Physics Laboratory II *SQ*⁴1
 Total16

Second Semester

CSE 200 Concepts of Computer Science3
 ECE 350 Structure and Properties of Materials3
 ECE 380 Probability and Statistics for Engineering Problem
 Solving *CS*3
 IEE 294 ST: Industrial Engineering Applications Seminar2
 MAT 274 Elementary Differential Equations *MA*3
 Basic science elective⁵3
 Total17

Third Year

First Semester

ASE 485 Engineering Statistics *CS*3
 ECE 210 Engineering Mechanics I: Statics.....3
 IEE 360 Manufacturing Processes3
 IEE 368 Facilities Analysis and Design3
 IEE 374 Quality Control *CS*.....3
 Industrial Engineering elective2
 Total17

Second Semester

ECE 300 Intermediate Engineering Design *L*3
 ECE 212 Engineering Mechanics II: Dynamics.....3
 IEE 463 Computer-Aided Manufacturing and Control *CS*3
 IEE 476 Operations Research Techniques/Applications *CS*4
 Study area elective3
 Total16

Fourth Year

First Semester

ECE 201 Electrical Networks I4
 IEE 461 Production Control.....3
 IEE 475 Simulating Stochastic Systems *CS*3
 HU/SB elective²3
 Study area elective3
 Total16

L literacy and critical inquiry / *MA* mathematics / *CS* computer/statistics/quantitative applications / *HU* humanities and fine arts / *SB* social and behavioral sciences / *SG* natural science—general core courses / *SQ* natural science—quantitative / *C* cultural diversity in the United States / *G* global / *H* historical / See "General Studies," page 83.

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Second Semester

IEE 490 Project in Design and Development.....	3
HU/SB elective ²	3
Study area electives.....	6
Total	12

¹ Students who have taken no high school chemistry should take CHM 113 and 116.

² Engineering students may not use aerospace studies (AES) or military science (MIS) courses to satisfy HU or SB requirements.

³ Both PHY 121 and 122 must be taken to secure SQ credit.

⁴ Both PHY 131 and 132 must be taken to secure SQ credit.

⁵ This elective must be an earth science or life science course; if physics or chemistry, the course must be of a more advanced level than CHM 114 or 116 or PHY 131.

INDUSTRIAL ENGINEERING (IEE)

IEE 294 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Industrial Engineering Applications Seminar. (2)

IEE 300 Economic Analysis for Engineers. (3)

fall and spring

Economic evaluation of alternatives for engineering decisions, emphasizing the time value of money. Prerequisites: ECE 100; MAT 270.

IEE 305 Information Systems Engineering. (3)

fall

Overview of computer and information systems applications. Topics include client/server; distributed computing; networks; process modeling; e-commerce; enterprise applications; internet. Prerequisite: CSE 200.

General Studies: CS

IEE 360 Manufacturing Processes. (3)

fall and spring

Production technique and equipment. Casting and molding, forming, machining, joining and assembly, computer-integrated manufacturing, rapid prototyping, and electronics manufacturing. Cross-listed as MAE 351. Credit is allowed for only IEE 360 or MAE 351. Prerequisite: ECE 350.

IEE 361 Manufacturing Processes Lab. (1)

fall and spring

Series of labs designed to illustrate concepts presented in IEE 360 on production technique and equipment. Corequisite: IEE 360 or MAE 351.

IEE 368 Facilities Analysis and Design. (3)

fall

Planning analysis and design of methods of the tangible physical assets of the firm. Emphasizes facilities location, materials handling, automation, computer integration, and utilization of financial resources. Applications in diverse fields. Lecture, lab. Prerequisite: IEE 300.

IEE 369 Work Analysis and Design. (3)

spring

Planning analysis and design of methods of accomplishing work. Emphasizes human factors, work planning, methods analysis and design, and work measurement. Applications in diverse fields. Lecture, lab.

IEE 374 Quality Control. (3)

fall

Control charting and other statistical process control techniques. Organization and managerial aspects of quality assurance, plus acceptance sampling plans. Prerequisite: ECE 380.

General Studies: CS

IEE 431 Engineering Administration. (3)

fall

Introduces quantitative and qualitative approaches to management functions, engineering administration, organizational analysis, decision making, and communication. Credit is allowed for only IEE 431 or 541. Prerequisite: senior standing.

IEE 437 Human Factors Engineering. (3)

fall

Study of the human psychological and physiological factors that underlie the design of equipment and the interaction between people and machines. Credit is allowed for only IEE 437 or 547.

IEE 461 Production Control. (3)

fall

Techniques for the planning, control, and evaluation of production systems. Project management, forecasting, inventory control, scheduling, enterprise requirements planning. Prerequisites: ASE 485; CSE 100; IEE 476.

IEE 463 Computer-Aided Manufacturing and Control. (3)

spring

Computer control in manufacturing, CIM, NC, logic controllers, group technology, process planning, and robotics. Credit is allowed for only IEE 463 or 543. Prerequisite: IEE 360 or MAE 351.

General Studies: CS

IEE 475 Simulating Stochastic Systems. (3)

fall and spring

Analyzes stochastic systems using basic queuing networks and discrete event simulation. Basic network modeling, shared resources, routing, assembly logic. Credit is allowed for only IEE 475 or 545. Prerequisite: CSE 200.

General Studies: CS

IEE 476 Operations Research Techniques/Applications. (4)

fall and spring

Industrial systems applications with operations research techniques. Resource allocation, product mix, production, shipping, task assignment, market share, machine repair, customer service. Credit is allowed for only IEE 476 or 546. Prerequisite: CSE 200.

General Studies: CS

IEE 490 Project in Design and Development. (3)

fall and spring

Individual or team capstone project in creative design and synthesis. Prerequisites: ECE 300; 475. Pre- or corequisite: IEE 461.

General Studies: L

IEE 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Information Systems Development Tools. (3)

IEE 505 Information Systems Engineering. (3)

fall and spring

Studies information systems application engineering. Topics include information technology, data modeling, data organization, process mapping, application and database engineering, and user interface development. Prerequisites: CSE 200; graduate standing.

IEE 511 Analysis of Decision Processes. (3)

spring

Methods of making decisions in complex environments and statistical decision theory; effects of risk, uncertainty, and strategy on engineering and managerial decisions. Prerequisites: ECE 380; graduate standing.

IEE 520 Ergonomics Design. (3)

spring

Human physiological and psychological factors in the design of work environments and in the employment of people in man-machine systems. Open-shop lab assignments in addition to class work. Prerequisite: IEE 437 or graduate standing.

IEE 530 Enterprise Modeling. (3)

spring

Focuses on social, economic, and technical models of the enterprise with emphasis on the management of technological resources. Includes organization, econometric, financial, and large-scale mathematical models. Prerequisite: graduate standing.

IEE 531 Topics in Engineering Administration. (3)

spring in even years

Consideration given to philosophical, psychological, political, and social implications of administrative decisions. Prerequisite: graduate standing.

IEE 532 Management of Technology. (3)

fall

Topics include designing a technical strategy; technological forecasting; interfacing marketing engineering and manufacturing; designing

and managing innovation systems; creativity; application of basic management principles to technology management. Prerequisite: IEE 431 or 541.

IEE 533 Scheduling and Network Analysis Models. (3)

spring

Applies scheduling and sequencing algorithms, deterministic and stochastic network analysis, and flow algorithms. Prerequisites: ECE 380; IEE 476 (or 546).

IEE 541 Engineering Administration. (3)

fall

Introduces quantitative and qualitative approaches to management functions, engineering administration, organizational analysis, decision making, and communication. Credit is allowed for only IEE 541 or 431. Prerequisite: graduate standing.

IEE 543 Computer-Aided Manufacturing and Control. (3)

spring

Computer control in manufacturing, CIM, NC, logic controllers, group technology, process planning and robotics. Credit is allowed for only IEE 543 or 463. Prerequisite: graduate standing.

IEE 545 Simulating Stochastic Systems. (3)

fall and spring

Analyzes stochastic systems using basic queuing networks and discrete event simulation. Basic network modeling, shared resources, routing, assembly logic. Credit is allowed for only IEE 545 or 475. Prerequisites: CSE 200; IEE 476 (or 546). Pre- or corequisite: ASE 485 or 500.

IEE 546 Operations Research Techniques/Applications. (4)

fall and spring

Models and analyzes industrial systems applications with operations research techniques. Resource allocation, product mix, production, shipping, task assignment, market share, machine repair, customer service. Credit is allowed for only IEE 546 or 476. Prerequisites: ECE 380; graduate standing.

IEE 547 Human Factors Engineering. (3)

fall and spring

Study of people at work; designing for human performance effectiveness and productivity. Considerations of human physiological and psychological factors. Credit is allowed for only IEE 547 or 437. Prerequisite: graduate standing.

IEE 552 Strategic Technological Planning. (3)

spring

Studies concepts of strategy, strategy formulation process, and strategic planning methodologies with emphasis on engineering design and manufacturing strategy, complemented with case studies. Presents and uses an analytical executive planning decision support system throughout course. Prerequisite: graduate standing. Pre- or corequisites: IEE 545, 561, 572, 574.

IEE 560 Object-Oriented Information Systems. (3)

spring

Applies object-oriented technology and concepts to enterprise information systems. Topics include requirement analysis, object-oriented design and programming, rapid application development, object data management, and development of object-oriented distributed applications. Prerequisite: IEE 505.

IEE 561 Production Systems. (3)

spring

Understanding how factories operate, how performance is measured, and how operational changes impact performance metrics. Operational philosophies, increasing production efficiency through quantitative methods. Prerequisites: ASE 485; IEE 476.

IEE 562 Computer-Aided Manufacturing (CAM) Tools. (3)

spring

Current topics in automation, distributed control, control code generation, control logic validation, CAM integration, CAD/CAM data structures, planning for control systems. Topics vary by semester. Prerequisite: IEE 463 or 543.

IEE 563 Distributed Information Systems. (3)

fall and spring

Introduction to concepts and technologies that form the core of distributed enterprise information systems. Topics include client-server architectures, distributed objects and paradigms, internet, World Wide Web, distributed information sharing, network programming, and e-commerce and enterprise applications. Prerequisite: IEE 505.

IEE 564 Planning for Computer-Integrated Manufacturing. (3)

fall

Theory and use of IDEF methodology in planning for flexible manufacturing, robotics, and real-time control. Simulation concepts applied to computer-integrated manufacturing planning. Prerequisite: graduate standing.

IEE 565 Computer-Integrated Manufacturing Research. (3)

spring

Determination and evaluation of research areas in computer-integrated manufacturing, including real-time software, manufacturing information systems, flexible and integrated manufacturing systems, robotics, and computer graphics. Prerequisite: IEE 564.

IEE 566 Simulation in Manufacturing. (3)

spring in even years

Uses simulation in computer-integrated manufacturing with an emphasis on modeling material handling systems. Programming, declarative, and intelligence-based simulation environments. Prerequisite: IEE 475 or 545.

IEE 567 Simulation System Analysis. (3)

fall

Simulation modeling of processes involving discrete and continuous system components. Topics include random number generators, output analysis, variance reduction, and statistical issues related to simulation. Prerequisite: IEE 475 or 545.

IEE 569 Advanced Statistical Methods. (3)

fall in even years

Applies statistical modelling and inference techniques to problems in engineering and science. Topics may include multivariate methods, spatial modeling, and nonparametric methods. Prerequisite: ASE 485 or 500.

IEE 570 Advanced Quality Control. (3)

spring

Process monitoring with control charts (Shewhart, cusum, EWMA), feedback adjustment and engineering process control, process capability, autocorrelation, selected topics from current literature. Prerequisite: ASE 485 or 500.

IEE 571 Quality Management. (3)

fall

Total quality concepts, quality strategies, quality and competitive position, quality costs, vendor relations, the quality manual, and quality in the services. Prerequisite: graduate standing.

IEE 572 Design of Engineering Experiments. (3)

fall and spring

Analyzes variance and experimental design. Topics include general design methodology, incomplete blocks, confounding, fractional replication, and response surface methodology. Prerequisite: ASE 485.

IEE 573 Reliability Engineering. (3)

spring

Nature of reliability, time to failure densities, series/parallel/standby systems, complex system reliability, Bayesian reliability, and sequential reliability tests. Prerequisite: ECE 380.

IEE 574 Applied Deterministic Operations Research Models. (3)

fall and spring

Develops advanced techniques in operations research for the solution of complex industrial systems problems. Goal programming, integer programming, heuristic methods, dynamic and nonlinear programming. Prerequisite: IEE 476 or 546.

IEE 575 Applied Stochastic Operations Research Models. (3)

spring

Formulate and solve industrial systems problems with stochastic components using analytical techniques. Convolution, continuous-time Markov chains, queues with batching, priorities, balking, open/closed queuing networks. Prerequisites: ASE 485 (or 500); IEE 476 (or 546).

IEE 577 Applied Intelligent Systems. (3)

fall

Intelligent system technologies and their applications in industrial engineering. Topics include artificial neural networks, genetic algorithms, data mining, Bayesian decision making, knowledge-based

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

decision support, and their engineering applications. Prerequisite: IEE 505.

IEE 578 Regression Analysis. (3)

fall

Regression model building oriented toward engineers and physical scientists. Topics include linear regression, diagnostics, biased and robust fitting, nonlinear regression. Prerequisite: ASE 485 or 500.

IEE 579 Time Series Analysis and Forecasting. (3)

fall in odd years

Forecasting time series by regression-based, exponential smoothing, and ARIMA model techniques; uses digital computer programs to augment the theory. Prerequisite: ASE 485 or 500.

IEE 582 Response Surfaces and Process Optimization. (3)

spring

Classical response surface analysis and designs including steepest ascent, canonical analysis, and multiple responses. Other topics include process robustness studies, robust design, and mixture experiments. Prerequisite: IEE 572.

IEE 593 Applied Project. (1–12)

selected semesters

IEE 594 Conference and Workshop. (1)

fall and spring

Orientation to the developing work in the field with an emphasis on what the IE faculty are doing.

IEE 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Advanced Topics in Deterministic Operations Research. (3)
- Advanced Topics in Scheduling. (3)
- Analysis of Massive Data Sets. (3)
- Computer and Human Vision. (3)
- DOE/SPC for Semiconductor Processes. (3)
- Enterprise Internet/Intranet. (3)
- Introduction to Rapid Prototyping. (3)
- Mechatronics. (3)
- Product Modeling. (3)
- Strategic Design of Manufacturing Systems. (3)
- Strategic Issues in Manufacturing. (3)

IEE 599 Thesis. (1–12)

selected semesters

IEE 672 Advanced Topics in Experimental Design. (3)

spring in even years

Multilevel and mixed-level factorials and fractions, design optimality, incomplete blocks, unbalanced designs, random effects and variance components, analysis of covariance. Prerequisite: IEE 572.

IEE 677 Regression and Generalized Linear Models. (3)

spring in odd years

Theory of linear models including least squares, maximum likelihood, likelihood-based inference. Generalized linear models including Poisson and logistic regression, generalized estimating equations. Prerequisite: IEE 578.

IEE 679 Time Series Analysis and Control. (3)

fall in even years

Identification, estimation, diagnostic checking techniques for ARIMA models, transfer functions, multiple time series models for feedback and feedforward control schemes. Prerequisite: IEE 579.

IEE 681 Reliability, Availability, and Serviceability. (3)

fall in even years

Organizing hardware and software, integrity and fault-tolerant design, maintenance design and strategy, Markov models, fault-free analysis, and military standards. Prerequisite: IEE 573.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Mechanical and Aerospace Engineering

www.eas.asu.edu/~mae

480/965-3291

ECG 346

Robert E. Peck, Chair

Professors: Boyer, Chattopadhyay, Davidson, Evans, Fernando, Jankowski, Krajcinovic, Laananen, Liu, Mignolet, Peck, Reed, Roy, Saric, Shah, Sieradzki, Tseng, Wie, Yao

Associate Professors: Chen, Kuo, Lee, Phelan, Rankin, Squires, Wells

Assistant Professors: Calhoun, Chapsky, McNeill, Mikellides, Peralta, Sugar

The Department of Mechanical and Aerospace Engineering is the administrative home for two undergraduate majors: Aerospace Engineering and Mechanical Engineering. Consistent with the department's mission to provide the best possible education to its students, a department goal is to attract and retain—from the metropolitan community, the state, and the country—outstanding and diverse students and to give each the opportunity to become competent in contemporary subjects that bear on an engineering career. This goal is achieved through a curriculum designed to accomplish the following four objectives:

1. *Technical Competency.* Graduates are able to model and predict the behavior of engineering systems by applying the fundamental principles from mathematics, physics, and chemistry and by using modern computational and experimental tools.
2. *Product Realization Ability.* Graduates are able to design components or systems at the conceptual and embodiment design level including the issues of production, manufacturability, and cost.
3. *Communication Skills.* Graduates can present and document effectively, using both oral and written communication, their work and ideas to a diverse audience.
4. *Professionalism.* Graduates are prepared for modern engineering practice by working in teams, keeping technologically abreast, and having an understanding of related ethical, environmental, and societal issues.

The Aerospace Engineering major provides students an education in technological areas critical to the design and development of aerospace vehicles and systems. Aerospace Engineering graduates are typically employed in aerospace industries or at government laboratories (e.g., NASA). The Mechanical Engineering major is perhaps one of the most

broadly applicable programs in engineering, providing education for a wide variety of employment opportunities.

The two majors can serve as entry points to immediate professional employment or to graduate study. The emphasis in all fields is on the development of fundamental knowledge that will have long-lasting utility in a rapidly changing technical society.

DEGREE REQUIREMENTS

All degree programs in the department require that students attain a minimum GPA of 2.00 in the engineering core and in the major and take a minimum of 50 upper-division semester hours to be eligible for graduation. Also, the department may require additional or remedial course work for those students who have demonstrated a trend toward academic difficulties.

GRADUATION REQUIREMENTS

In addition to fulfilling school and major requirements, majors must satisfy all university graduation requirements. See [“University Graduation Requirements,” page 79.](#)

COURSE REQUIREMENTS

General Studies

See [“Course Requirements,” page 220,](#) for General Studies, school, and engineering core course requirements.

Engineering Core

Students in the Department of Mechanical and Aerospace Engineering are required to take the following from among the choices shown under [“Engineering Core Requirement,” page 221,](#) as part of the engineering core requirements:

ECE 100 Introduction to Engineering Design CS	3
ECE 201 Electrical Networks I	4
ECE 210 Engineering Mechanics I: Statics.....	3
ECE 212 Engineering Mechanics II: Dynamics.....	3
ECE 300 Intermediate Engineering Design L	3
ECE 313 Introduction to Deformable Solids.....	3
ECE 340 Thermodynamics.....	3
ECE 350 Structure and Properties of Materials	3
Total	25

AEROSPACE ENGINEERING—B.S.E.

The goal of the Aerospace Engineering program is to provide students with an education in technological areas critical to the design and development of aerospace vehicles and systems. The program emphasizes aeronautical engineering with topics in required courses covering aerodynamics, aerospace materials, aerospace structures, propulsion, flight mechanics, aircraft performance, and stability and control. Astronautic topics such as orbital mechanics, attitude dynamics, spacecraft control, and rocket propulsion are also covered in required courses.

Design is integrated throughout the curriculum beginning with ECE 100 Introduction to Engineering Design and followed later by ECE 300 Intermediate Engineering Design, both of which focus on basic design theory as well as professional practice. These required courses are followed by topic-specific design content in aerospace engineering courses in the junior and senior years. The senior capstone

design course integrates design and analysis topics from the earlier courses and completes the required design sequence. This sequence includes a minimum of one-half year of required design. In addition, many of the aerospace technical electives have design content.

Laboratory experience is provided in the areas of aerodynamics, aerospace structures, and vibrations. Laboratory facilities include four major wind tunnels, an integrated mechanical-testing laboratory, a controls laboratory, and a vibrations laboratory.

Aerospace Engineering Major

Aerospace Engineering students are required to take the following two courses in addition to those required for the major:

MAT 242 Elementary Linear Algebra.....	2
PHY 361 Introductory Modern Physics.....	3

The Aerospace Engineering major consists of the following courses:

ECE 384 Numerical Methods for Engineers.....	4
MAE 101 Introduction to Aerospace Engineering	2
MAE 317 Dynamic Systems and Control.....	3
MAE 319 Measurements and Data Analysis	3
MAE 361 Aerodynamics I.....	3
MAE 413 Aircraft Performance, Stability, and Control	3
MAE 415 Vibration Analysis.....	4
MAE 425 Aerospace Structures	4
MAE 444 Fundamentals of Aerospace Design.....	3
MAE 460 Gas Dynamics	3
MAE 462 Space Vehicle Dynamics and Control.....	3
MAE 463 Propulsion	3
MAE 464 Aerospace Laboratory.....	3
MAE 468 Aerospace Systems Design L.....	3
Area of study (technical electives).....	6
Total	50

Aerospace Engineering Areas of Study

To further the design experience, all Aerospace Engineering students must choose at least one technical elective from the following list of courses:

MAE 426 Design of Aerospace Structures.....	3
MAE 465 Rocket Propulsion.....	3
MAE 466 Rotary Wing Aerodynamics and Performance.....	3
MAE 467 Aircraft Performance	3
MAE 469 Projects in Astronautics or Aeronautics	3

The remaining technical elective(s) may be selected from among any of the courses listed in the following course tables or from courses listed under the Mechanical Engineering areas of study. The courses are grouped so that the student may select an elective package of closely related courses. A student may, with prior approval of the advisor and department, select a general area and a corresponding set of courses not listed that would support a career objective not covered by the categories shown below. *Note:* MAE 371 may *not* be substituted for MAE 361, MAE 422 may

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

not be substituted for MAE 425, and MAE 441 may not be substituted for MAE 444.

Aerodynamics

MAE 372 Fluid Mechanics.....	3
MAE 435 Turbomachinery.....	3
MAE 461 Aerodynamics II.....	3
MAE 463 Propulsion.....	3
MAE 466 Rotary Wing Aerodynamics and Performance.....	3
MAE 471 Computational Fluid Dynamics.....	3
MAE 490 Projects in Design and Development <i>L</i>	3
MAT 421 Applied Computational Methods <i>CS</i>	3

Aerospace Materials

MAE 455 Polymers and Composites.....	3
MSE 355 Introduction to Materials Science and Engineering.....	3
MSE 420 Physical Metallurgy.....	3
MSE 440 Mechanical Properties of Solids.....	3
MSE 441 Analysis of Material Failures.....	3
MSE 450 X-ray and Electron Diffraction.....	3
MSE 471 Introduction to Ceramics.....	3

Aerospace Structures

MAE 404 Finite Elements in Engineering.....	3
MAE 426 Design of Aerospace Structures.....	3
MAE 455 Polymers and Composites.....	3
MAE 490 Projects in Design and Development <i>L</i>	3

Computer Methods

ASE 485 Engineering Statistics <i>CS</i>	3
CSE 310 Data Structures and Algorithms.....	3
CSE 422 Microprocessor System Design II.....	4
CSE 428 Computer-Aided Processes.....	3
IEE 463 Computer-Aided Manufacturing and Control <i>CS</i>	3
IEE 475 Simulating Stochastic Systems <i>CS</i>	3
MAE 404 Finite Elements in Engineering.....	3
MAE 406 CAD/CAM Applications in MAE.....	4
MAE 471 Computational Fluid Dynamics.....	3
MAE 541 CAD Tools for Engineers.....	3
MAT 421 Applied Computational Methods <i>CS</i>	3
MAT 423 Numerical Analysis I <i>CS</i>	3
MAT 425 Numerical Analysis II <i>CS</i>	3

Design

MAE 341 Mechanism Analysis and Design.....	3
MAE 404 Finite Elements in Engineering.....	3
MAE 406 CAD/CAM Applications in MAE.....	4
MAE 426 Design of Aerospace Structures.....	3
MAE 435 Turbomachinery.....	3
MAE 442 Mechanical Systems Design.....	3
MAE 446 Thermal Systems Design.....	3
MAE 455 Polymers and Composites.....	3
MAE 466 Rotary Wing Aerodynamics and Performance.....	3
MAE 467 Aircraft Performance.....	3
MAE 490 Projects in Design and Development <i>L</i>	3
MSE 440 Mechanical Properties of Solids.....	3
MSE 441 Analysis of Material Failures.....	3

Mechanical

Any course listed under the Mechanical Engineering concentrations except MAE 371, 422, and 441.....3

Propulsion

MAE 382 Thermodynamics.....	3
MAE 388 Heat Transfer.....	3
MAE 434 Internal Combustion Engines.....	3
MAE 435 Turbomachinery.....	3
MAE 436 Combustion.....	3
MAE 461 Aerodynamics II.....	3
MAE 465 Rocket Propulsion.....	3

MAE 466 Rotary Wing Aerodynamics and Performance.....	3
MAE 471 Computational Fluid Dynamics.....	3
MAE 490 Projects in Design and Development <i>L</i>	3

System Dynamics and Control

CSE 428 Computer-Aided Processes.....	3
EEE 480 Feedback Systems.....	4
EEE 482 Introduction to State Space Methods.....	3
MAE 417 Control System Design.....	3
MAE 447 Robotics and Its Influence on Design.....	3
MAE 469 Projects in Astronautics or Aeronautics.....	3
MAE 490 Projects in Design and Development <i>L</i>	3

TYPICAL FOUR-YEAR SEQUENCE

The first two years are usually devoted to the General Studies and engineering core requirements. Thus, the degree programs in the department share essentially the same course schedule for that period of time. A typical schedule is given below.

Aerospace Engineering Program of Study Typical Four-Year Sequence

First Year

First Semester

CHM 114 General Chemistry for Engineers <i>SQ</i>	4
or CHM 116 General Chemistry <i>SQ</i> (4)	
ECE 100 Introduction to Engineering Design <i>CS</i>	3
or HU/SB elective ¹	
ENG 101 First-Year Composition.....	3
MAE 101 Introduction to Aerospace Engineering.....	2
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
Total.....	16

Second Semester

ENG 102 First-Year Composition.....	3
MAT 242 Elementary Linear Algebra.....	2
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ²	3
PHY 122 University Physics Laboratory I <i>SQ</i> ²	1
HU/SB and awareness area course ¹	3
or ECE 100 Introduction to Engineering Design <i>CS</i> (3)	
Total.....	16

Second Year

First Semester

ECE 210 Engineering Mechanics I: Statics.....	3
ECE 350 Structure and Properties of Materials.....	3
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
MAT 274 Elementary Differential Equations <i>MA</i>	3
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ³	3
PHY 132 University Physics Laboratory II <i>SQ</i> ³	1
Total.....	17

Second Semester

ECE 201 Electrical Networks I.....	4
ECE 212 Engineering Mechanics II: Dynamics.....	3
ECE 313 Introduction to Deformable Solids.....	3
ECE 340 Thermodynamics.....	3
ECE 384 Numerical Methods for Engineers.....	4
Total.....	17

Third Year

First Semester

ECE 300 Intermediate Engineering Design <i>L</i>	3
MAE 317 Dynamic Systems and Control.....	3
MAE 319 Measurements and Data Analysis	3
MAE 361 Aerodynamics I.....	3
MAE 425 Aerospace Structures	4
<hr/>	
Total	16

Second Semester

MAE 413 Aircraft Performance, Stability, and Control	3
MAE 444 Fundamentals of Aerospace Design.....	3
MAE 460 Gas Dynamics	3
PHY 361 Introductory Modern Physics.....	3
HU/SB and awareness area course ¹	3
<hr/>	
Total	15

Fourth Year

First Semester

MAE 415 Vibration Analysis.....	4
MAE 462 Space Vehicle Dynamics and Control	3
MAE 463 Propulsion	3
MAE 464 Aerospace Laboratory	3
HU/SB and awareness area course ¹	3
<hr/>	
Total	16

Second Semester

MAE 468 Aerospace Systems Design <i>L</i>	3
HU/SB and awareness area courses ¹	6
Required design technical elective.....	3
Technical elective.....	3
<hr/>	
Total	15

- ¹ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to satisfy HU or SB requirements.
- ² Both PHY 121 and 122 must be taken to secure SQ credit.
- ³ Both PHY 131 and 132 must be taken to secure SQ credit.

MECHANICAL ENGINEERING —B.S.E.

Mechanical engineering is a creative discipline that draws upon a number of basic sciences to design the devices, machines, processes, and systems that involve mechanical work and its conversion from and into other forms. It includes the conversion of thermal, chemical, and nuclear energy into mechanical energy through various engines and power plants; the transport of energy via devices such as heat exchangers, pipelines, gears, and linkages; and the use of energy to perform a variety of tasks for the benefit of society, such as in transportation vehicles of all types, manufacturing tools and equipment, and household appliances. Furthermore, since all hardware products must be constructed of solid materials and because most products contain parts that transmit forces, mechanical engineering is involved in the structural integrity and materials selection for almost every product on the market.

Mechanical engineers are employed in virtually every kind of industry. They are involved in seeking new knowledge through research, in generating creative design and development, and in the production, control, management, and sales of the devices and systems needed by society. Therefore, a major strength of a mechanical engineering

education is the flexibility it provides in future employment opportunities for its graduates.

The undergraduate curriculum includes the study of the principles governing the use of energy; the principles of design, instruments and control devices; and the application of these studies to the creative solution of practical, modern problems.

Design is integrated throughout the curriculum, beginning with ECE 100 Introduction to Engineering Design and followed later by ECE 300 Intermediate Engineering Design, both of which focus on basic design theory as well as professional practice. These required courses are followed by topic specific design content in mechanical engineering courses in the junior and senior years. The senior capstone design course combines the design topics from the earlier courses and completes the required design sequence. In addition, many of the mechanical technical electives have design content.

Laboratory experience is provided in the areas of thermo-fluid systems, mechanics of materials, and controls. Laboratory facilities include a thermal systems laboratory, an integrated mechanical-testing laboratory, a controls laboratory, and a manufacturing laboratory.

Mechanical Engineering Major

Mechanical Engineering students are required to select the following supplemental courses:

ECE 384 Numerical Methods for Engineers	4
MAT 242 Elementary Linear Algebra	2
PHY 361 Introductory Modern Physics.....	3

The Mechanical Engineering major requires the following departmental courses:

MAE 317 Dynamic Systems and Control.....	3
MAE 319 Measurements and Data Analysis	3
MAE 371 Fluid Mechanics.....	3
MAE 388 Heat Transfer.....	3
MAE 422 Mechanics of Materials.....	4
MAE 441 Principles of Design.....	3
MAE 443 Engineering Design.....	3
MAE 490 Projects in Design and Development <i>L</i>	3
MAE 491 Experimental Mechanical Engineering.....	3
Area of study (technical electives).....	18
<hr/>	
Total	46

Mechanical Engineering Areas of Study

Technical electives may be selected from among any of the following courses or from courses listed under the Aerospace Engineering areas of study. The courses are grouped to assist a student in identifying areas of specialization. Students preferring a broader technical background may choose courses from different areas. Generally, no more than two technical elective courses from outside the department are allowed. Credit for courses not on the list requires prior approval of the advisor and department. Mechanical Engineering students may not use MAE 361, 425, or 444 to fulfill degree requirements.

L literacy and critical inquiry / *MA* mathematics / *CS* computer/statistics/ quantitative applications / *HU* humanities and fine arts / *SB* social and behavioral sciences / *SG* natural science—general core courses / *SQ* natural science—quantitative / *C* cultural diversity in the United States / *G* global / *H* historical / See "General Studies," page 83.

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Aerospace

Any course listed under the Aerospace Engineering areas of study except MAE 361, 425, and 444.....3

Biomechanical

BME 411 Biomedical Engineering I.....	3
BME 412 Biomedical Engineering II.....	3
BME 416 Biomechanics.....	3
BME 419 Biocontrol Systems.....	3
EEE 302 Electrical Networks II.....	3
EEE 434 Quantum Mechanics for Engineers.....	3

Computer Methods

ASE 485 Engineering Statistics CS.....	3
CSE 310 Data Structures and Algorithms.....	3
CSE 422 Microprocessor System Design II.....	4
CSE 428 Computer-Aided Processes.....	3
IEE 463 Computer-Aided Manufacturing and Control CS.....	3
IEE 475 Simulating Stochastic Systems CS.....	3
MAE 404 Finite Elements in Engineering.....	3
MAE 406 CAD/CAM Applications in MAE.....	4
MAE 471 Computational Fluid Dynamics.....	3
MAE 541 CAD Tools for Engineers.....	3
MAT 421 Applied Computational Methods CS.....	3
MAT 423 Numerical Analysis I CS.....	3
MAT 425 Numerical Analysis II CS.....	3

Control and Dynamic Systems

CSE 428 Computer-Aided Processes.....	3
EEE 360 Energy Conversion and Transport.....	4
EEE 480 Feedback Systems.....	4
EEE 482 Introduction to State Space Methods.....	3
IEE 463 Computer-Aided Manufacturing and Control CS.....	3
MAE 413 Aircraft Performance, Stability, and Control.....	3
MAE 417 Control System Design.....	3
MAE 462 Space Vehicle Dynamics and Control.....	3
MAE 467 Aircraft Performance.....	3

Design

MAE 341 Mechanism Analysis and Design.....	3
MAE 351 Manufacturing Processes.....	3
MAE 404 Finite Elements in Engineering.....	3
MAE 406 CAD/CAM Applications in MAE.....	4
MAE 413 Aircraft Performance, Stability, and Control.....	3
MAE 417 Control System Design.....	3
MAE 434 Internal Combustion Engines.....	3
MAE 435 Turbomachinery.....	3
MAE 442 Mechanical Systems Design.....	4
MAE 446 Thermal Systems Design.....	3
MAE 447 Robotics and Its Influence on Design.....	3
MAE 462 Space Vehicle Dynamics and Control.....	3
MAE 467 Aircraft Performance.....	3

Energy Systems

EEE 360 Energy Conversion and Transport.....	4
MAE 372 Fluid Mechanics.....	3
MAE 382 Thermodynamics.....	3
MAE 434 Internal Combustion Engines.....	3
MAE 435 Turbomachinery.....	3
MAE 436 Combustion.....	3
MAE 446 Thermal Systems Design.....	3

Engineering Mechanics

MAE 341 Mechanism Analysis and Design.....	3
MAE 402 Introduction to Continuum Mechanics.....	3
MAE 404 Finite Elements in Engineering.....	3
MAE 413 Aircraft Performance, Stability, and Control.....	3
MAE 415 Vibration Analysis.....	4
MAE 426 Design of Aerospace Structures.....	3
MAE 442 Mechanical Systems Design.....	4

MAE 460 Gas Dynamics.....	3
MAE 461 Aerodynamics II.....	3
MAE 471 Computational Fluid Dynamics.....	3
MAT 421 Applied Computational Methods CS.....	3
MAT 423 Numerical Analysis I CS.....	3
MSE 440 Mechanical Properties of Solids.....	3

Manufacturing

CSE 428 Computer-Aided Processes.....	3
IEE 300 Economic Analysis for Engineers.....	3
IEE 374 Quality Control CS.....	3
IEE 461 Production Control.....	3
IEE 463 Computer-Aided Manufacturing and Control CS.....	3
MAE 341 Mechanism Analysis and Design.....	3
MAE 351 Manufacturing Processes.....	3
MAE 404 Finite Elements in Engineering.....	3
MAE 442 Mechanical Systems Design.....	4
MAE 447 Robotics and Its Influence on Design.....	3
MAE 455 Polymers and Composites.....	3
MSE 355 Introduction to Materials Science and Engineering.....	3
MSE 420 Physical Metallurgy.....	3
MSE 431 Corrosion and Corrosion Control.....	3
MSE 440 Mechanical Properties of Solids.....	3

Stress Analysis, Failure Prevention, and Materials

MAE 341 Mechanism Analysis and Design.....	3
MAE 404 Finite Elements in Engineering.....	3
MAE 426 Design of Aerospace Structures.....	3
MAE 447 Robotics and Its Influence on Design.....	3
MAE 455 Polymers and Composites.....	3
MSE 355 Introduction to Materials Science and Engineering.....	3
MSE 420 Physical Metallurgy.....	3
MSE 431 Corrosion and Corrosion Control.....	3
MSE 440 Mechanical Properties of Solids.....	3
MSE 450 X-ray and Electron Diffraction.....	3

Thermosciences

MAE 372 Fluid Mechanics.....	3
MAE 382 Thermodynamics.....	3
MAE 433 Air Conditioning and Refrigeration.....	3
MAE 434 Internal Combustion Engines.....	3
MAE 435 Turbomachinery.....	3
MAE 436 Combustion.....	3
MAE 446 Thermal Systems Design.....	3
MAE 460 Gas Dynamics.....	3
MAE 463 Propulsion.....	3
MAE 471 Computational Fluid Dynamics.....	3

Mechanical Engineering Program of Study Typical Four-Year Sequence

First Year

First Semester

CHM 114 General Chemistry for Engineers SQ.....	4
or CHM 116 General Chemistry SQ (4)	
ECE 100 Introduction to Engineering Design CS.....	3
or HU/SB elective ¹	
ENG 101 First-Year Composition.....	3
MAT 270 Calculus with Analytic Geometry I MA.....	4
HU/SB and awareness area course ¹	3
Total.....	17

Second Semester

ENG 102 First-Year Composition.....	3
MAT 242 Elementary Linear Algebra.....	2
MAT 271 Calculus with Analytic Geometry II MA.....	4
PHY 121 University Physics I: Mechanics SQ ²	3
PHY 122 University Physics Laboratory I SQ ²	1

DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

HU/SB and awareness area course ¹	3
or ECE 100 Introduction to Engineering Design CS (3)	—
Total	16

Second Year

First Semester

ECE 210 Engineering Mechanics I: Statics.....	3
ECE 350 Structure and Properties of Materials	3
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 274 Elementary Differential Equations MA.....	3
PHY 131 University Physics II: Electricity and Magnetism SQ ³	3
PHY 132 University Physics Laboratory II SQ ³	1
Total	17

Second Semester

ECE 201 Electrical Networks I	4
ECE 212 Engineering Mechanics II: Dynamics.....	3
ECE 313 Introduction to Deformable Solids.....	3
ECE 340 Thermodynamics.....	3
ECE 384 Numerical Methods for Engineers	4
Total	17

Third Year

First Semester

ECE 300 Intermediate Engineering Design L	3
MAE 317 Dynamic Systems and Control.....	3
MAE 319 Measurements and Data Analysis	3
MAE 371 Fluid Mechanics.....	3
MAE 422 Mechanics of Materials.....	4
Total	16

Second Semester

MAE 388 Heat Transfer.....	3
MAE 441 Principles of Design.....	3
HU/SB and awareness area courses ¹	3
Technical elective.....	6
Total	15

Fourth Year

First Semester

MAE 491 Experimental Mechanical Engineering.....	3
PHY 361 Introductory Modern Physics.....	3
HU/SB and awareness area course ¹	3
Technical electives	6
Total	15

Second Semester

MAE 443 Engineering Design.....	3
MAE 490 Projects in Design and Development L.....	3
HU/SB and awareness area course ¹	3
Technical electives	6
Total	15

¹ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to satisfy HU or SB requirements.

² Both PHY 121 and 122 must be taken to secure SQ credit.

³ Both PHY 131 and 132 must be taken to secure SQ credit.

MECHANICAL AND AEROSPACE ENGINEERING (MAE)

MAE 101 Introduction to Aerospace Engineering. (2)

fall and spring

Careers in aerospace engineering, problem solving, computer usage in aerospace engineering, contemporary issues of the aerospace industry, the aerospace engineering curriculum. Pre- or corequisite: ECE 100.

MAE 317 Dynamic Systems and Control. (3)

fall and spring

Modeling and representations of dynamic physical systems, including transfer functions, block diagrams, and state equations. Transient response. Principles of feedback control and linear system analysis, including root locus and frequency response. Prerequisite: ECE 212.

MAE 319 Measurements and Data Analysis. (3)

fall and spring

Theory of measurement systems, sensors, digital data acquisition, signal processing and statistical analysis. Computer simulations and real-time experiments designed to illustrate these topics. Lecture, lab. Prerequisite: ECE 201. Pre- or corequisite: MAE 317.

MAE 341 Mechanism Analysis and Design. (3)

once a year

Positions, velocities, and accelerations of machine parts; cams, gears, flexible connectors, and rolling contact; introduces synthesis. Prerequisite: ECE 212.

MAE 351 Manufacturing Processes. (3)

fall and spring

Production technique and equipment. Casting and molding, forming, machining, joining and assembly, computer-integrated manufacturing, rapid prototyping, and electronics manufacturing. Cross-listed as IEE 360. Credit is allowed for only IEE 360 or MAE 351. Prerequisite: ECE 350.

MAE 361 Aerodynamics I. (3)

once a year

Fluid statics, conservation principles, stream function, velocity potential, vorticity, inviscid flow, Kutta-Joukowski, thin-airfoil theory, and panel methods. Prerequisites: ECE 212, 340.

MAE 371 Fluid Mechanics. (3)

fall and spring

Introductory concepts of fluid motions; fluid statics; control volume forms of basic principles; viscous internal flows. Prerequisites: ECE 212, 340.

MAE 372 Fluid Mechanics. (3)

once a year

Applies basic principles of fluid mechanics to problems in viscous and compressible flow. Prerequisites: ECE 384; MAE 361 (or 371).

MAE 382 Thermodynamics. (3)

once a year

Applied thermodynamics; gas mixtures, psychrometrics, property relationships, power and refrigeration cycles, and reactive systems. Prerequisite: ECE 340.

MAE 388 Heat Transfer. (3)

fall and spring

Steady and unsteady heat conduction, including numerical solutions; thermal boundary layer concepts and applications to free and forced convection. Thermal radiation concepts. Prerequisites: ECE 384; MAE 361 (or 371).

MAE 402 Introduction to Continuum Mechanics. (3)

once a year

Applies the principles of continuum mechanics to such fields as flow-in porous media, biomechanics, electromagnetic continua, and magneto-fluid mechanics. Prerequisites: ECE 313; MAE 361 (or 371); MAT 242 (or 342).

MAE 404 Finite Elements in Engineering. (3)

once a year

Introduces ideas and methodology of finite element analysis. Applications to solid mechanics, heat transfer, fluid mechanics, and vibrations. Prerequisites: ECE 313; MAT 242 (or 342).

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

MAE 406 CAD/CAM Applications in MAE. (4)

once a year

Solution of engineering problems with the aid of state-of-the-art software tools in solid modeling, engineering analysis, and manufacturing; selection of modeling parameters; reliability tests on software. 3 hours lecture, 3 hours lab. Prerequisites: ECE 384; MAE 422, 441 (or 444).

MAE 413 Aircraft Performance, Stability, and Control. (3)

spring

Aircraft performance, cruise, climbing and turning flights, energy maneuverability, 6 DOF equations for aircraft, aerodynamic stability derivatives, flight stability/control. Prerequisites: MAE 317, 361.

MAE 415 Vibration Analysis. (4)

fall

Free and forced response of single and multiple degree of freedom systems, continuous systems; applications in mechanical and aerospace systems numerical methods. Lecture, lab. Prerequisites: ECE 212; MAE 319, 422 (or 425); MAT 242 (or 342).

MAE 417 Control System Design. (3)

once a year

Tools and methods of control system design and compensation, including simulation, response optimization, frequency domain techniques, state variable feedback, and sensitivity analysis. Introduces nonlinear and discrete time systems. Prerequisite: MAE 317.

MAE 422 Mechanics of Materials. (4)

fall and spring

Failure theories, energy methods, finite element methods, plates, torsion of noncircular members, unsymmetrical bending, shear center, and beam column. Lecture, lab. Prerequisites: ECE 313; MAT 242 (or 342). Pre- or corequisite: ECE 384.

MAE 425 Aerospace Structures. (4)

fall

Stability, energy methods, finite element methods, torsion, unsymmetrical bending and torsion of multicelled structures, design of aerospace structures. Lecture, lab. Prerequisites: ECE 313; MAT 242 (or 342).

MAE 426 Design of Aerospace Structures. (3)

once a year

Flight vehicle loads, design of semimonocoque structures, local buckling and crippling, fatigue, aerospace materials, composites, joints, and finite element applications. Prerequisite: MAE 422 or 425.

MAE 433 Air Conditioning and Refrigeration. (3)

once a year

Air conditioning processes; environmental control; heating and cooling loads; psychrometry; refrigeration cycles. Prerequisite: MAE 388 or MET 432 or instructor approval.

MAE 434 Internal Combustion Engines. (3)

once a year

Performance characteristics, combustion, carburetion and fuel-injection, and the cooling and control of internal combustion engines. Computer modeling. Lab. Prerequisite: MAE 388.

MAE 435 Turbomachinery. (3)

once a year

Design and performance of turbomachines, including steam, gas and hydraulic turbines, centrifugal pumps, compressors, fans, and blowers. Pre- or corequisite: MAE 361 or 371.

MAE 436 Combustion. (3)

once a year

Thermochemical and reaction rate processes; combustion of gaseous and condensed-phase fuels. Applications to propulsion and heating systems. Pollutant formation. Prerequisite: MAE 388.

MAE 441 Principles of Design. (3)

fall and spring

Conceptual and embodiment design of mechanical elements; form synthesis; material selection, failure modes, manufacturability tolerances, common mechanisms, and machine elements. Lecture, lab (project). Prerequisites: ECE 300, 350. Pre- or corequisites: MAE 319, 422 (or 425).

MAE 442 Mechanical Systems Design. (4)

spring

Applies design principles and techniques to the synthesis, modeling, and optimization of mechanical, electromechanical, and hydraulic systems. Prerequisites: MAE 317, 441 (or 444).

MAE 443 Engineering Design. (3)

fall and spring

Group projects to design engineering components and systems. Problem definition ideation, modeling, and analysis; emphasizes decision making and documentation activities. 6 hours lab. Prerequisite: MAE 441.

MAE 444 Fundamentals of Aerospace Design. (3)

spring

Design theory and design tools applied to aerospace engineering. Engineering drawings, solid modeling, RFP's, Federal Aviation Regulations and military specifications, aircraft sizing, rapid prototyping. Lab, projects. Prerequisites: ECE 300, 350; MAE 319, 361, 425. Pre- or corequisite: MAE 413.

MAE 446 Thermal Systems Design. (3)

once a year

Applies engineering principles and techniques to the modeling and analysis of thermal systems and components. Presents and demonstrates optimization techniques and their use. Prerequisite: ECE 300; MAE 388.

MAE 447 Robotics and Its Influence on Design. (3)

once a year

Robot applications, configurations, singular positions, and work space; modes of control; vision; programming exercises; design of parts for assembly. Prerequisite: MAE 317.

MAE 455 Polymers and Composites. (3)

fall

Relationship between chemistry, structure, and properties of engineering polymers. Design, properties, and behavior of fiber composite systems. Cross-listed as MSE 470. Credit is allowed for only MAE 455 or MSE 470. Prerequisites: ECE 313, 350.

MAE 460 Gas Dynamics. (3)

spring

Compressible flow at subsonic and supersonic speeds; duct flow; normal and oblique shocks, perturbation theory, and wind tunnel design. Prerequisites: ECE 384; MAE 361 (or 371).

MAE 461 Aerodynamics II. (3)

once a year

Transonic/hypersonic flows, wing theory, Navier-Stokes, laminar/turbulent shear flows, pressure drop in tubes, separation, drag, viscous/inviscid interaction, and wing design. Prerequisite: MAE 460.

MAE 462 Space Vehicle Dynamics and Control. (3)

fall

Attitude dynamics and control, launch vehicles, orbital mechanics, orbital transfer/rendezvous, space mission design, space structures, spacecraft control systems design. Prerequisite: MAE 317.

MAE 463 Propulsion. (3)

fall

Fundamentals of gas-turbine engines and design of components. Principles and design of rocket propulsion and alternative devices. Lecture, design projects. Prerequisites: ECE 384; MAE 382 (or 460).

MAE 464 Aerospace Laboratory. (3)

fall

Aerodynamic flow parameters; flow over airfoils and bodies of revolution; flow visualization; computer-aided data acquisition and processing; boundary layer theory. 1 hour lecture, 4 hours lab. Prerequisites: ECE 384; MAE 319, 460.

MAE 465 Rocket Propulsion. (3)

once a year

Rocket flight performance; nozzle design; combustion of liquid and solid propellants; component design; advanced propulsion systems; interplanetary missions; testing. Prerequisite: MAE 382 or 460.

MAE 466 Rotary Wing Aerodynamics and Performance. (3)

once a year

Introduces helicopter and propeller analysis techniques. Momentum, blade-element, and vortex methods. Hover and forward flight. Ground effect, autorotation, and compressibility effects. Prerequisites: both ECE 384 and MAE 361 or only instructor approval.

MAE 467 Aircraft Performance. (3)

once a year

Integrates aerodynamic and propulsive forces into aircraft performance design. Estimation of drag parameters for design. Engine, airfoil selection. Conceptual design methodology. Lecture, design projects. Prerequisite: MAE 361 or 371. Pre- or corequisite: MAE 444.

MAE 468 Aerospace Systems Design. (3)

fall and spring

Group projects related to aerospace vehicle design, working from mission definition and continuing through preliminary design. Prerequisites: MAE 413, 444. Pre- or corequisite: MAE 463.

General Studies: L

MAE 469 Projects in Astronautics or Aeronautics. (3)

fall and spring

Various multidisciplinary team projects available each semester. Projects include design of high-speed rotocraft autonomous vehicles, liquid-fueled rockets, microaerial vehicles, satellites. Prerequisite: instructor approval.

MAE 471 Computational Fluid Dynamics. (3)

once a year

Numerical solutions for selected problems in fluid mechanics. Prerequisites: ECE 384; MAE 361 (or 371).

MAE 490 Projects in Design and Development. (3)

fall and spring

Capstone projects in fundamental or applied aspects of engineering. Prerequisites: MAE 441, 491.

General Studies: L

MAE 491 Experimental Mechanical Engineering. (3)

fall and spring

Experimental and analytical studies of phenomena and performance of fluid flow, heat transfer, thermodynamics, refrigeration, and mechanical power systems. 6 hours lab. Prerequisites: MAE 319, 388.

MAE 498 Pro-Seminar. (1–3)

selected semesters

Special topics for advanced students. Applies the engineering disciplines to design and analysis of modern technical devices and systems. Prerequisite: instructor approval.

MAE 504 Laser Diagnostics. (3)

spring

Fundamentals of optics and the interaction of light with matter. Laser sources, laser spectroscopy, velocimetry, particle sizing, and surface characterization.

MAE 505 Perturbation Methods. (3)

selected semesters

Nonlinear oscillations, strained coordinates, renormalization, multiple scales, boundary layers, matched asymptotic expansions, turning point problems, and WKBJ method. Cross-listed as MAT 505. Credit is allowed for only MAE 505 or MAT 505.

MAE 506 Advanced System Modeling, Dynamics, and Control. (3)

spring

Lumped-parameter modeling of physical systems with examples. State variable representations and dynamic response. Introduces modern control. Prerequisite: ASE 582 or MAT 442.

MAE 507 Optimal Control. (3)

fall

Optimal control of systems. Calculus of variations, dynamic programming, linear quadratic regulator, numerical methods, and Pontryagin's principle. Cross-listed as EEE 587. Credit is allowed for only EEE 587 or MAE 507. Prerequisite: EEE 482 or MAE 506.

MAE 509 Robust Multivariable Control. (3)

spring

Characterization of uncertainty in feedback systems, robustness analysis, synthesis techniques, multivariable Nyquist criteria, computer-aided analysis and design. Prerequisites: MAE 417, 506.

MAE 510 Dynamics and Vibrations. (3)

fall

Lagrange's and Hamilton's equations, rigid body dynamics, gyroscopic motion, and small oscillation theory.

MAE 511 Acoustics. (3)

fall

Principles underlying the generation, transmission, and reception of acoustic waves. Applications to noise control, architectural acoustics, random vibrations, and acoustic fatigue.

MAE 512 Random Vibrations. (3)

spring

Reviews probability theory, random processes, stationarity, power spectrum, white noise process, random response of single and multiple DOF systems, and Markov processes simulation. Prerequisite: MAE 510 or instructor approval.

MAE 515 Structural Dynamics. (3)

spring

Free vibration and forced response of discrete and continuous systems, exact and approximate methods of solution, finite element modeling, and computational techniques. Prerequisite: MAE 510 or instructor approval.

MAE 518 Dynamics of Rotor-Bearing Systems. (3)

spring

Natural whirl frequency, critical speed, and response analysis of rigid and flexible rotor systems. Bearing influence and representation. Stability analysis. Methods of balancing.

MAE 520 Solid Mechanics. (3)

fall

Introduces tensors: kinematics, kinetics, and constitutive assumptions leading to elastic, plastic, and viscoelastic behavior. Applications.

MAE 521 Structural Optimization. (3)

selected semesters

Linear and nonlinear programming. Problem formulation. Constrained and unconstrained optimization. Sensitivity analysis. Approximate techniques. FEM-based optimal design of mechanical and aerospace structures. Cross-listed as CEE 533. Credit is allowed for only CEE 533 or MAE 521. Prerequisite: instructor approval.

MAE 523 Theory of Plates and Shells. (3)

fall

Linear and nonlinear theories of plates. Membrane and bending theories of shells. Shells of revolution. Prerequisite: MAE 520.

MAE 524 Theory of Elasticity. (3)

spring

Elastic behavior in two and three dimensions. Airy stress functions and displacement potentials. Elements of fracture. Prerequisite: MAE 520.

MAE 527 Finite Element Methods in Engineering Science. (3)

fall

Discretization, interpolation, elemental matrices, assembly, and computer implementation. Application to solid and fluid mechanics, heat transfer, and time-dependent problems. Prerequisite: ASE 582.

MAE 536 Combustion. (3)

selected semesters

Thermodynamics; chemical kinetics of combustion. Explosion and ignition theories. Reactive gas dynamics. Structure, propagation, and stability of flames. Experimental methods. Prerequisite: MAE 436 or instructor approval.

MAE 540 Advances in Engineering Design Theory. (3)

fall

Survey of research in engineering design process, artifact and design, knowledge, formal and informal logic, heuristic and numerical searches, theory of structure and complexity. Prerequisite: graduate standing.

MAE 541 CAD Tools for Engineers. (3)

fall

Elements of computer techniques required to develop CAD software. Data structures, including lists, trees, and graphs. Computer graphics, including 2- and 3-dimensional algorithms and user interface techniques.

MAE 544 Mechanical Design and Failure Prevention. (3)

fall

Modes of mechanical failure; applies principles of elasticity and plasticity in multiaxial state of stress to design synthesis; failure theories; fatigue; creep; impact. Prerequisite: MAE 443.

MAE 546 CAD/CAM Applications in MAE. (4)

once a year

Solution of engineering problems with the aid of state-of-the-art software tools in solid modeling, engineering analysis, and manufacturing; selection of modeling parameters; reliability tests on software. Open only to students without previous credit for MAE 406. 3 hours lecture, 3 hours lab. Prerequisites: ECE 384; MAE 422, 441 (or 444).

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

MAE 547 Mechanical Design and Control of Robots. (3)

selected semesters

Homogeneous transformations, 3-dimensional kinematics, geometry of motion, forward and inverse kinematics, workspace and motion trajectories, dynamics, control, and static forces.

MAE 548 Mechanism Synthesis and Analysis. (3)

spring

Algebraic and graphical methods for exact and approximate synthesis of cam, gear, and linkage mechanisms; design optimization; methods of planar motion analysis; characteristics of plane motion; spatial kinematics.

MAE 557 Mechanics of Composite Materials. (3)

spring

Analyzes composite materials and applications. Micromechanical and macromechanical behavior. Classical lamination theory developed with investigation of bending-extension coupling.

MAE 560 Propulsion Systems. (3)

selected semesters

Design of air-breathing gas turbine engines for aircraft propulsion; mission analysis; cycle analysis; engine sizing; component design.

MAE 561 Computational Fluid Dynamics. (3)

spring

Finite-difference and finite-volume techniques for solving the subsonic, transonic, and supersonic flow equations. Method of characteristics. Numerical grid-generation techniques. Prerequisite: MAE 571 or instructor approval.

MAE 563 Unsteady Aerodynamics. (3)

spring

Unsteady incompressible and compressible flow. Wings and bodies in oscillatory and transient motions. Kernel function approach and panel methods. Aeroelastic applications. Prerequisite: MAE 460 or 461.

MAE 564 Advanced Aerodynamics. (3)

fall

Perturbation method. Linearized subsonic and supersonic flows. Thin wing/slender body theories. Lifting surface theory. Panel method computation. Prerequisite: MAE 460 or 461.

MAE 566 Rotary-Wing Aerodynamics. (3)

fall

Introduces helicopter and propeller analysis techniques. Momentum, blade-element, and vortex methods. Hover and forward flight. Ground effect, autorotation, and compressibility effects. Prerequisite: MAE 361.

MAE 571 Fluid Mechanics. (3)

fall

Basic kinematic, dynamic, and thermodynamic equations of the fluid continuum and their application to basic fluid models.

MAE 572 Inviscid Fluid Flow. (3)

spring

Mechanics of fluids for flows in which the effects of viscosity may be ignored. Potential flow theory, waves, and inviscid compressible flows. Prerequisite: MAE 571.

MAE 573 Viscous Fluid Flow. (3)

fall

Mechanics of fluids for flows in which the effects of viscosity are significant. Exact and approximate solutions of the Navier-Stokes system, laminar flow at low and high Reynolds number. Prerequisite: MAE 571.

MAE 575 Turbulent Shear Flows. (3)

fall

Homogeneous, isotropic, and wall turbulence. Experimental results. Introduces turbulent-flow calculations. Prerequisite: MAE 571.

MAE 577 Turbulent Flow Modeling. (3)

spring

Reynolds equations and their closure. Modeling of simple and complex turbulent flows, calculations of internal and external flows, and application to engineering problems. Prerequisite: MAE 571.

MAE 581 Thermodynamics. (3)

fall

Basic concepts and laws of classical equilibrium thermodynamics; applications to engineering systems. Introduces statistical thermodynamics.

MAE 582 Statistical Thermodynamics. (3)

once a year

Kinetic and quantum theory. Statistical mechanics; ensemble theory. Structure and thermodynamics of noninteracting and interacting particles. Boltzmann integro-differential equation. Prerequisite: graduate standing.

MAE 585 Conduction Heat Transfer. (3)

fall

Basic equations and concepts of conduction heat transfer. Mathematical formulation and solution (analytical and numerical) of steady and unsteady, one- and multidimensional heat conduction and phase change problems. Prerequisites: ECE 384; MAE 388.

MAE 586 Convection Heat Transfer. (3)

spring

Basic concepts and governing equations. Analyzes laminar and turbulent heat transfer for internal and external flows. Natural and mixed convection. Prerequisite: MAE 388.

MAE 587 Radiation Heat Transfer. (3)

fall

Advanced concepts and solution methodologies for radiation heat transfer, including exchange of thermal radiation between surfaces, radiation in absorbing, emitting, and scattering media and radiation combined with conduction and convection. Prerequisite: MAE 388.

MAE 588 Two-Phase Flows and Boiling Heat Transfer. (3)

spring

Pool and flow boiling heat transfer, condensation heat transfer, various models of vapor-liquid mixture flows, gas-solid mixture flows, and experimental measurement techniques.

MAE 589 Heat Transfer. (3)

fall

Basic concepts; physical and mathematical models for heat transfer. Applications to conductive, convective, radiative, and combined mode heat transfer. Prerequisite: MAE 388.

MAE 594 Graduate Research Conference. (1)

fall and spring

Topics in contemporary research. Required every semester of all departmental graduate students registered for 9 or more semester hours. Not for degree credit.

MAE 598 Special Topics. (1-4)

fall and spring

Special topics courses, including the following, which are regularly offered, are open to qualified students. Topics may include the following:

- Advanced Spacecraft Control. (1-3)
- Aeroelasticity. (1-3)
- Aerospace Vehicle Guidance and Control. (1-3)
- Boundary Layer Stability. (1-3)
- Hydrodynamic Stability. (1-3)
- Plasticity. (1-3)
- Polymers and Composites. (1-3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Programs in Engineering Special Studies

480/965-1726

ECG 104

Ronald J. Roedel, Director

The major of Engineering Special Studies accommodates students whose educational objectives require more intensity of concentration on a particular subject or more curricu-

PROGRAMS IN ENGINEERING SPECIAL STUDIES

lar flexibility within an engineering discipline than the traditional departmental majors generally permit. The major is a School of Engineering program. Unlike the departmental major areas, however, there is not a separate faculty. The faculty teaching and advising in these programs are from the various departments within the School of Engineering.

For many students, engineering studies form the basis of preparation for professional engineering work where proficiency in the application of science and the physical and social technologies is brought to bear on problems of a large scope. The necessary breadth that these students seek often is not obtainable in traditional engineering fields. Rather, specially designed programs of course work that merge the required principles and approaches drawn from all fields of engineering and other pertinent disciplines are desired.

The B.S.E. degree in Engineering Special Studies is designed primarily for students intending to pursue engineering careers at a professional level in industry or graduate studies.

ENGINEERING SPECIAL STUDIES—B.S.E.

Premedical Engineering. In recent decades, the interrelation between engineering and medicine has become vigorous and exciting. Rapidly expanding technology dictates that engineering will continue to become increasingly involved in all branches of medicine. As this develops, so will the need for physicians trained in the engineering sciences—medical men and women with a knowledge of computer technology, transport phenomena, biomechanics, bioelectric phenomena, operations research, and cybernetics. This concentration is of special interest to students who desire entry into a medical college and who have medical interests in research, aerospace and undersea medicine, artificial organs, prostheses, biomedical engineering, or biophysics. Since both engineering and medicine have as their goal the well-being of humans, this program is compatible with any field of medical endeavor. This program is administered with the Department of Bioengineering.

DEGREE REQUIREMENTS

A minimum of 128 semester hours is necessary for the B.S.E. degree in Engineering Special Studies with a concentration in Premedical Engineering. A minimum of 50 upper-division hours is required. Students must attain a GPA of at least 2.00 for the courses in the major field.

GRADUATION REQUIREMENTS

In addition to fulfilling school and major requirements, majors must satisfy all university graduation requirements. See "[University Graduation Requirements](#)," page 79.

Note: To fulfill medical school admission requirements, BIO 187 General Biology is required in addition to the degree requirements and is best taken in summer session before the Medical College Admission Test.

COURSE REQUIREMENTS

The course work for the undergraduate degree can be classified into the following categories (in semester hours):

First-Year Composition

Choose among the course combinations below	6
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
— or —	
ENG 105 Advanced First-Year Composition (3)	
Elective chosen with an advisor (3)	
— or —	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
Total	6

General Studies/School Requirements

<i>Humanities and Fine Arts/Social and Behavioral Sciences</i>	
ECN 111 Macroeconomic Principles <i>SB</i> ¹	3
or ECN 112 Microeconomic Principles <i>SB</i> ¹ (3)	
HU/SB and awareness area courses ²	12
Total	15

Literacy and Critical Inquiry

BME 413 Biomedical Instrumentation <i>L</i>	3
BME 423 Biomedical Instrumentation Laboratory <i>L</i>	1
ECE 300 Intermediate Engineering Design <i>L</i>	3
Total	7

Natural Sciences

PHY 121 University Physics I: Mechanics <i>SQ</i> ³	3
PHY 122 University Physics Laboratory I <i>SQ</i> ³	1
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ⁴	3
PHY 132 University Physics Laboratory II <i>SQ</i> ⁴	1
Total	8

Mathematical Studies

ECE 100 Introduction to Engineering Design <i>CS</i>	3
ECE 384 Numerical Methods for Engineers	4
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
MAT 274 Elementary Differential Equations <i>MA</i>	3
Total	22
General Studies/school requirements total	52

Engineering Core

ECE 201 Electrical Networks I	4
ECE 210 Engineering Mechanics I: Statics	3
ECE 334 Electronic Devices and Instrumentation	4
ECE 340 Thermodynamics	3
ECE 350 Structure and Properties of Materials	3
Total	17

Engineering Special Studies Program Major—

Premedical Engineering Concentration

BIO 188 General Biology II <i>SQ</i>	4
BME 201 Introduction to Bioengineering <i>L</i>	3
BME 318 Biomaterials	3
BME 331 Biomedical Engineering Transport: Fluids	3
BME 334 Bioengineering Heat and Mass Transfer	3
BME 416 Biomechanics	3
BME 417 Biomedical Engineering Capstone Design I	3
BME 435 Physiology for Engineers	4

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See "[General Studies](#)," page 83.

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

BME 470 Microcomputer Applications in Bioengineering.....	4
BME 490 Biomedical Engineering Capstone Design II.....	3
CHM 113 General Chemistry <i>SQ</i>	4
CHM 116 General Chemistry <i>SQ</i>	4
CHM 331 General Organic Chemistry.....	3
CHM 332 General Organic Chemistry.....	3
CHM 335 General Organic Chemistry Laboratory.....	1
CHM 336 General Organic Chemistry Laboratory.....	1
ECE 380 Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
Technical elective.....	1
Total.....	53

¹ ECN 111 or 112 must be included to fulfill the HU and SB requirements.

² Engineering students may not use aerospace studies (AES) or military science (MIS) courses to fulfill HU and SB requirements.

³ Both PHY 121 and 122 must be taken to secure SQ credit.

⁴ Both PHY 131 and 132 must be taken to secure SQ credit.

Premedical Engineering Program of Study Typical Four-Year Sequence

First Year

First Semester	
CHM 113 General Chemistry <i>SQ</i>	4
ECE 100 Introduction to Engineering Design <i>CS</i>	3
ENG 101 First-Year Composition.....	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
Total.....	14

Second Semester

CHM 116 General Chemistry <i>SQ</i>	4
ENG 102 First-Year Composition.....	3
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122 University Physics Laboratory I <i>SQ</i> ¹	1
Total.....	15

Second Year

First Semester

BIO 188 General Biology II <i>SQ</i>	4
BME 201 Introduction to Bioengineering <i>L</i>	3
ECE 210 Engineering Mechanics I: Statics.....	3
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132 University Physics Laboratory II <i>SQ</i> ²	1
Total.....	18

Second Semester

CHM 331 General Organic Chemistry.....	3
CHM 335 General Organic Chemistry Laboratory.....	1
ECE 201 Electrical Networks I.....	4
ECE 350 Structure and Properties of Materials.....	3
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Macroeconomic Principles <i>SB</i> (3)	
MAT 274 Elementary Differential Equations <i>MA</i>	3
Total.....	17

Third Year

First Semester

BME 331 Biomedical Engineering Transport: Fluids.....	3
BME 435 Physiology for Engineers.....	4
ECE 300 Intermediate Engineering Design <i>L</i>	3
ECE 340 Thermodynamics.....	3
ECE 384 Numerical Methods for Engineers.....	4
Total.....	17

Second Semester

BME 318 Biomaterials.....	3
BME 334 Bioengineering Heat and Mass Transfer.....	3
CHM 332 General Organic Chemistry.....	3
CHM 336 General Organic Chemistry Laboratory.....	1
ECE 334 Electronic Devices and Instrumentation.....	4
HU/SB and awareness area course ³	3
Total.....	17

Fourth Year

First Semester

BME 413 Biomedical Instrumentation <i>L</i>	3
BME 416 Biomechanics.....	3
BME 417 Biomedical Engineering Capstone Design I.....	3
BME 423 Biomedical Instrumentation Laboratory <i>L</i>	1
HU/SB and awareness area courses ³	6
Total.....	16

Second Semester

BME 470 Microcomputer Applications in Bioengineering.....	4
BME 490 Biomedical Engineering Capstone Design II.....	3
ECE 380 Probability and Statistics for Engineering Problem Solving <i>CS</i>	3
HU/SB and awareness area course ³	3
Technical elective.....	1
Total.....	14
Total degree requirements.....	128

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

³ Engineering students may not use aerospace studies (AES) or military science (MIS) courses to satisfy HU or SB requirements.

The Katherine K. Herberger College of Fine Arts

herbergercollege.asu.edu

J. Robert Wills, Ph.D., Dean

School of Art	279
Department of Dance	296
School of Music	301
Department of Theatre	317

PURPOSE

The Katherine K. Herberger College of Fine Arts at ASU provides both preprofessional and professional education in the arts disciplines and an opportunity for nonmajors to become culturally literate through participation and involvement in the creative and performing arts.

The college, through its programs in art, dance, music, and theatre, reflects a wide range of challenges facing the contemporary artist and scholar. The arts, as an integral part of the curriculum, offer the student a rewarding educational experience balanced and strengthened by studies in related fine arts areas, the humanities, social sciences, and the natural sciences.

In addition to professional curricula offered in each department and school, the college provides courses designed to meet the specific educational needs of students pursuing majors in other colleges throughout the university. The cultural life of the university community is further enriched by study opportunities offered at off-campus sites. The Herberger College of Fine Arts also offers community audiences many hours of cultural enjoyment through a myriad of concerts, art exhibitions, music and dance concerts, dramatic productions, operas, lectures, and seminars.

ORGANIZATION

The college houses the School of Art, the Department of Dance, the School of Music, and the Department of Theatre. An average of 2,600 students per semester enroll as majors in various degree programs offered through these units. The college also includes the ASU Art Museum and the Institute for Studies in the Arts.

ADMISSION

Students meeting the university requirements for admission may matriculate in the Herberger College of Fine Arts. Separate admission procedures and approvals are required for some programs within the college. Students must contact specific departments or schools for details.

Transfer of Community College Credits. The university standards for evaluation of transfer credit are listed under

“Transfer Credit,” page 61. Transfer students are encouraged to contact their department or school or the Herberger College of Fine Arts Undergraduate Student Academic Services (GHALL 127) to ensure a smooth transition to the Herberger College of Fine Arts. Credits transferred from any accredited junior or community college may be accepted up to a maximum of 64 semester hours. (A community college student planning to transfer at the end of his or her first or second year should plan to take community college courses that meet the requirements of the ASU curriculum selected. Students attending Arizona community colleges are permitted to follow the degree requirements specified in the ASU *General Catalog* in effect at the time they began their community college work, providing their college attendance has been continuous.)

Courses transferred from community colleges are not accepted as upper-division credit at ASU. Arizona students are urged to refer to the *Course Applicability System* for transferability of specific courses from Arizona community colleges. In choosing courses at a community college, students should be aware that a minimum of 45 hours of work taken at the university must be upper-division credits. While attending a community college, it is suggested that students select courses similar to ASU General Studies lower-division courses in the major field.

For optimal course selection, access the ASU Transfer Guides on the Web at www.asu.edu/provost/articulation.

General Transfer Credit. Direct transfer of courses from other accredited institutions to the Herberger College of Fine Arts are subject to (1) the existence of parallel and equal courses in the college’s curriculum and (2) departmental or school evaluation of studio courses with respect to performance standards. Every candidate for the bachelor’s degree must earn a minimum of 30 semester hours in resident credit at ASU. Transfer students enrolled in the college must complete a minimum of 15 semester hours of resident credit in the major as approved by the faculty.

ADVISING

Advising is handled as a decentralized activity within the college. To offer personalized attention, each academic unit establishes its own graduation advising procedures. Students are encouraged to make appointments through the central office of their department or school.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See **“General Studies,”** page 83.

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

Herberger College of Fine Arts Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Art	B.A.	Art history, digital art, museum studies, studio art	School of Art
	B.F.A.	Art education, ceramics, drawing, fibers, intermedia, metals, painting, photography, printmaking, sculpture	School of Art
Dance	B.F.A.	Choreography, dance education, dance studies, performance	Department of Dance
Music	B.A.	—	School of Music
Music Education*	B.M.	Choral-general, instrumental, string	School of Music
Music Therapy*	B.M.	—	School of Music
Performance	B.M.	Guitar, jazz, keyboard, music theatre, orchestral instrument, piano accompanying, voice	School of Music
Theatre	B.A.	—	Department of Theatre
Theory and Composition	B.M.	Composition, theory	School of Music

* This major requires more than 120 semester hours to complete.

Baccalaureate Degrees

The three baccalaureate degrees differ in curricula with respect to the amount of specialization permitted in the major field. The B.A. degree provides a broad, scholarly, humanistic program, while the other two programs place greater emphasis upon the major field. See the [“Herberger College of Fine Arts Baccalaureate Degrees and Majors” table, on this page](#), for more information.

The university General Studies curriculum plays an integral role within the educational mission of the university and as such constitutes an important component of all undergraduate degrees in the Herberger College of Fine Arts. See [“General Studies,” page 83](#), for more information.

In cooperation with the College of Education a K–12 endorsement for teacher certification is available in the disciplines of art, dance, and music for students preparing for a teaching career in the public schools. Students should, with the advice and counsel of their arts education advisors, fulfill the requirements for the appropriate area of specialization under the Bachelor of Fine Arts or Bachelor of Music degrees. In addition, a student wishing to be admitted to the Initial Teacher Certification (ITC) program in the College of Education (leading to teaching certification) must consult with an advisor from the Office of Student Services in the College of Education before making application for the ITC. Students must have completed 56 hours with a minimum GPA of 2.50 and also have submitted scores from either the Pre-Professional Skills Test (PPST) or the ACT. Further details on admission requirements and procedures for the ITC can be found under [“Teacher Education,” page 186](#).

Minors

The Herberger College of Fine Arts provides an opportunity for students majoring in other disciplines to sustain their interest in the arts through a structured program of required courses and electives leading to a minor. The minor is not intended as a substitute for professional work in the arts, but as a complement to various liberal arts and pre-professional curricula.

Minors are offered in Art History, Dance, Music, and Theatre. The total number of semester hours required for a minor ranges from 18 to 22. Students should contact the relevant academic unit for specific requirements and guidelines regarding the minor.

Graduate Degrees

Master’s programs range from 30 to 60 semester hours, depending upon the degree chosen. Doctoral programs vary in scope and curricula. See the [“Herberger College of Fine Arts Graduate Degrees and Majors” table, page 278](#), for more information. See the *Graduate Catalog* for specific requirements.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements. For more information, see [“University Graduation Requirements,” page 79](#).

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35 semester hours of approved course work in General Studies, as described under [“General Studies,” page 83](#). Note that all three General Studies awareness areas are required. Consult with an advisor for an approved list of courses. General Studies courses are listed in the [“General Studies” table, page 86](#), in the course descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*.

Courses in the major or in a related field area may not be used to satisfy both the major and core area portions of the General Studies requirement. Concurrent listings in the literacy areas, numeracy (computer applications) areas, and awareness areas are an exception. Students are encouraged to consult with an academic advisor to ensure that they comply with all necessary requirements.

COLLEGE DEGREE REQUIREMENTS

The Herberger College of Fine Arts degree requirements supplement the General Studies requirement. Descriptions

of additional required courses follow. Students are encouraged to consult with an academic advisor to ensure that they comply with all necessary requirements.

Fine arts majors must take at least six semester hours of fine arts course work in areas outside of the major school or department. These courses may be in art, dance, music, or theatre. A student may concurrently fulfill this requirement and the humanities and fine arts portion of the General Studies requirement by selecting approved courses as indicated in the *Schedule of Classes*. This requirement may also be met by taking any Herberger College of Fine Arts course outside of the student's major.

All B.A. degrees require the equivalent of 16 semester hours in one foreign language except for the B.A. degrees in Theatre and Art with a concentration in studio art. Foreign language study is strongly recommended but not required for these degree programs. Course work may be selected in any language and must follow the sequence of language courses 101, 102, 201, and 202. This requirement may be fulfilled at the secondary school level or by examination. If acquired in secondary school, two years of instruction in one foreign language is considered the equivalent of one year of college instruction. Transfer students are placed in language study at the level above completed work.

Candidates for the B.M. degree in Performance with a concentration in voice have specific foreign language requirements, which are stated with each of the degree requirements. There is no foreign language requirement for other concentrations of the B.F.A. or B.M. degrees.

MAJOR REQUIREMENTS

The minimum requirement for a baccalaureate degree is the completion of 120 semester hours with a minimum cumulative GPA of 2.00. Of these 120 semester hours, at least 45 must be selected from upper-division courses.

Several professional programs within the college require additional semester hours for graduation and a higher cumulative GPA of their majors. To be acceptable as degree credit, all course work in the major discipline must show an earned grade of "C" (2.00) or higher.

In addition to the general information given below, consult the school and departmental sections that follow for specific degree requirements.

Bachelor of Arts (B.A.) Degree. The B.A. degree requires from 45 to 69 semester hours for the major. Depending on the major, 18 to 24 hours must be selected from upper-division (300- or 400-level) courses. The semester-hour requirements in the major are distributed between a field of specialization (30 to 53 hours) and one or more related fields (an additional 15 hours). The exact content of the major is selected by a student in consultation with an advisor under rules and regulations of the department or school concerned. A successful entrance audition is also required for admission to the B.A. degree in Music program.

Bachelor of Fine Arts (B.F.A.) Degree. The B.F.A. degree requires 52 to 79 semester hours for the major. At least 30 of these hours, depending on the major, must be selected from upper-division (300- or 400-level) courses. The curriculum for the major is designed as preprofessional study in art or

dance education. Auditions and/or interviews are required for admission to the B.F.A. degree program in Dance. Consult these departments for specific information.

Bachelor of Music (B.M.) Degree. The B.M. degree requires 79 semester hours for the major. The required number of upper-division (300- or 400-level) courses is dependent upon the area of specialization. The curriculum is designed to provide a broad yet concentrated preparation with a choice of specialization among various areas. See the ["Herberger College of Fine Arts Baccalaureate Degrees and Majors" table, page 276](#), for available majors and concentrations. An entering undergraduate music student, regardless of the area of specialization, must pass an entrance audition in his or her primary performing medium (voice or instrument).

Academic Standards. The terms of disqualification, reinstatement, and appeals are consistent with those set forth by the university under ["Retention and Academic Standards," page 75](#). In addition, a student disqualified in any program is normally not eligible for reinstatement for two semesters.

SPECIAL PROGRAMS

Working closely with faculty, visiting scholars, and artists-in-residence, students in all fields of the college participate in dynamic, innovative programs. Students receive a great deal of individual attention to their creative work and artistic development.

School of Art. The School of Art is one of the largest programs of its kind in the country and offers students a wide range of specialties in art media, art history, and art education. The faculty are nationally recognized and provide excellent instruction in curricula with many different educational opportunities. Some of the unique offerings are in bookmaking and papermaking, digital art, film, neon, video, computer animation, and foundry. In addition, internships are available in galleries and museums throughout the Phoenix area. The Children's Art Workshop is an on-campus program taught by students in art education for school-age children in the metropolitan area. Northlight, Harry Wood, and Step galleries host exhibitions organized and curated by students. Visiting artists and guest lecturers enrich the basic curriculum. Graduates of the School of Art have been accepted to top graduate schools and many are in leadership positions in art, education, and industry.

Department of Dance. The department's strengths include choreography and performance, dance science and somatic, educational outreach and methodology, media and technology, as well as contemporary directions. Prominent and renowned faculty and guest artists create repertory for dance majors and for the Dance Arizona Repertory Theatre (DART), a student performing outreach company. Through instructional curriculum, workshop intensives, guest residencies, strong performance programs, professional internships and apprenticeships, students are exposed and trained

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

Herberger College of Fine Arts Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Art	M.A.	Art education, art history	School of Art
	M.F.A.	Ceramics, drawing, fibers, intermedia, metals, painting, photographic studies, photography, printmaking, sculpture, wood	School of Art
Composition	M.M.	—	School of Music
Creative Writing	M.F.A. ²	—	Creative Writing Committee
Curriculum and Instruction	Ph.D. ¹	Art education	School of Art
Dance	M.F.A.	—	Department of Dance
History and Theory of Art ³	Ph.D.	—	School of Art
Music	M.A.	Ethnomusicology, music history and literature, music theory	School of Music
	D.M.A.	Conducting, music composition, music education, performance	School of Music
Music Education	M.M.	Choral music, general music, instrumental music, jazz studies	School of Music
Performance	M.M.	Music theatre/opera musical direction, music theatre/opera performance, performance, performance pedagogy, piano accompanying	School of Music
Theatre	M.A.	—	Department of Theatre
	M.F.A.	Performance, scenography, theatre for youth	Department of Theatre
	Ph.D.	Theatre for youth	Department of Theatre

¹ This program is administered in collaboration with the College of Education and the Graduate College.

² This program is administered by the Graduate College.

³ This major is jointly offered with the University of Arizona.

to meet the demands of professional preparations. An environment that encourages creative collaboration, interdisciplinary views, and community awareness is central to the mission of the department.

School of Music. Ranked among the top programs in the United States, the School of Music offers a broad scope of degree options for the study of performance, music education, music therapy, composition, theory, history and literature, jazz, music theatre, ethnomusicology, pedagogy, accompanying, and conducting. This wide spectrum of areas is supported by special programs and facilities that enrich the opportunities for professional training and musical growth. Music education and pedagogy are supplemented by the Piano and Guitar Preparatory Programs, the Music for Tots series, special classes for certification in Orff and Kodály methods, and the publication on campus of a major research journal. Performance opportunities are enhanced by a wide variety of ensembles, including such groups as Mexican marimba, African drumming, and mariachi. Voice students may pursue training in opera or in Broadway musicals. Composition students work in the Electronic Music Studio, and all benefit from the Electronic Classroom, a state-of-the-art computer facility. A variety of community partnerships, including a gang intervention program, stem from the music therapy area. The scope and variety of the School of Music's programs are made possible by the wide range of expertise of the faculty, who are performers, teachers, conductors, composers, and scholars recognized both nationally and internationally.

Department of Theatre. The Department of Theatre's B.A. degree features a broad liberal arts education, which cultivates in the student the ability to understand human behavior and values in societies of the past and present, an essential element in the creation of and response to the theatre. Special strengths of the department include internationally acclaimed programs in theatre for youth; an outstanding playwriting area that infuses each specialization with new script work; multiethnic courses; programs in acting and directing; an acting program that allows work with nationally acclaimed directors and acting coaches; and a nationally recognized scenography area that provides for further specialization in costume, lighting, or scene design as well as theatre technology.

Production is at the core of ASU theatre and the quality of the faculty, student body, and facilities often attracts professionals to ASU. The department recently premiered productions by three Pulitzer prize-winning playwrights. Four to six subscription series plays are produced annually in the 496-seat Galvin Playhouse and the smaller Lyceum Theatre. An additional eight to 14 student-directed shows are presented.

Theatre-for-youth artists, students, and scholars are attracted to ASU by the opportunities to work on national K-12 theatre curricula and research projects, theatre tours to area schools, and opportunities to teach on and off campus. The Child Drama Special Collection in Hayden Library, which includes rare books, plays, and personal and national

association archives, is the most complete and extensive collection of its kind in the English-speaking world and also contributes to the international recognition of the theatre-for-youth faculty.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges, and the Katherine K. Herberger College of Fine Arts to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning.

For more information, see "[ASU Extended Campus](#)," [page 703](#), or access the Web site at www.asu.edu/xed.

GENERAL INFORMATION

Undergraduate Credit for Graduate Courses. To enable interested students to benefit as much as possible from their undergraduate studies, the Graduate College and the Herberger College of Fine Arts extend to seniors with a GPA of at least 2.50 the privilege of taking 500-level graduate courses for undergraduate credit. Students requesting to take 500-level graduate courses must have the approval of the instructor of the class and their academic advisor.

Preprofessional Programs. Students preparing for admission to professional graduate schools should obtain information regarding admission requirements by writing directly to the schools in which they are interested.

Courses. The academic units within the Herberger College of Fine Arts may use the CFA prefix for course offerings that cross disciplinary boundaries.

COLLEGE OF FINE ARTS (CFA)

CFA 194 Special Topics. (1–4)

fall

Topics may include the following:

- Academic Balance for the Fine Arts Major. (1)

CFA 422 Concepts in Collaborative Multimedia. (3)

spring

Designed to bring students from different disciplines throughout the Herberger College of Fine Arts to experience the collaboration process in creating art. Lab, studio.

CFA 484 Internship. (1–12)

fall and spring

CFA 494 Special Topics. (3)

fall and spring

CFA 498 Pro-Seminar. (1–7)

fall and spring

CFA 522 Concepts in Collaborative Multimedia. (3)

spring

Designed to bring students from different disciplines throughout the Herberger College of Fine Arts to experience the collaboration process in creating art. Lab, studio.

CFA 584 Internship. (1–12)

fall and spring

CFA 598 Special Topics. (1–4)

fall and spring

CFA 684 Internship. (1–12)

fall and spring

CFA 784 Internship. (1–12)

fall and spring

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," [page 56](#).

School of Art

herbergercollege.asu.edu/art

480/965-3468

ART 102

Jon W. Sharer, Interim Director

Regents' Professor: Weiser

Professors: Alquist, Bates, Britton, Cocke, Codell, Eckert, Erickson, Fahlman, Fronske, Gasowski, Gillingwater, Hajicek, Kaida, Klett, Magenta, Marc, Maxwell, Meissinger, Pile, Pimentel, Risseeuw, Schmidt, Sharer, Stokrocki, Sweeney, Verstegen, White, Young

Associate Professors: Collins, Duncan, Gully, Jenkins, Pessler, Pittsley, Schleif, Schoebel, Schutte, Segura, Serwint, Umberger, Wolfthal

Assistant Professors: Brown, Mclver, Mesch, Newport

Senior Lecturer: Hokin

All students registering in a School of Art degree program enroll through the Herberger College of Fine Arts. Each degree program and area of specialization has its own check sheet, which describes the particulars of course sequence and special requirements. Check sheets are available in the School of Art Undergraduate Advising Center.

Art majors seeking a second B.A. or B.F.A. degree in art must petition the Herberger College of Fine Arts after completing 12 semester hours in the specialization of the second degree. The second degree in art requires at least 30 semester hours of courses which meet art requirements in the major. These 30 semester hours should not duplicate any of the courses taken for the first degree.

ART—B.A.

The faculty in the School of Art offer four concentrations for students in the B.A. degree in Art program: art history, digital art, museum studies, and studio art. These concentrations are intended to give the student a broadly based

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," [page 83](#).

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

general education in the field with specialized work at the upper-division level.

The major in Art consists of 45 to 79 semester hours, depending on the concentration, and includes the requirements listed on this page for each concentration. B.A. degree programs are especially suited for individuals pursuing interdisciplinary studies or a minor in another discipline. All courses in the major must be completed with a “C” or higher.

Graduation Requirements. In addition to fulfilling the major requirements, students must meet all university graduation requirements and college degree requirements. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 276](#).

Art History

This concentration consists of a minimum of 45 to 61 semester hours. It requires 33 semester hours of art history, 12 semester hours of related study, and 16 semester hours of foreign language (101, 102, 201, and 202) or a demonstrated proficiency in one foreign language which is equivalent to the completion of two years of language at the college level. At least 27 of the 45 semester hours must be upper-division credit. Satisfactory completion of ARS 480 Research Methods is required before the senior year.

Art History Requirements

ARS 101 Art of the Western World I <i>HU, H</i>	3
ARS 102 Art of the Western World II <i>HU, H</i>	3
ARS 480 Research Methods <i>L</i>	3
ARS 498 PS: Art History.....	3
Total	12

Also required is at least one 300- or 400-level art history (ARS) course from each of the following areas:

Ancient.....	3
Medieval.....	3
Modern/Contemporary.....	3
Non-Western.....	3
Renaissance/Baroque.....	3
Any ARS courses.....	6

Related Subject Field. Select three courses (nine semester hours) from those with the prefix APH, ARA, ARE, or from the following:

ART 111 Drawing I.....	3
ART 112 Two-Dimensional Design.....	3
ART 113 Color.....	3
ART 115 Three-Dimensional Design.....	3
ART 201 Photography I.....	3
ART 274 Wood I.....	3
ART 294 Special Topics.....	3

Also required is an approved upper-division elective. Six semester hours of ART courses are recommended.

Foreign Language. Sixteen semester hours of 101, 102, 201, and 202 language courses; or a demonstrated proficiency in at least one foreign language equivalent to the level attained through the completion of two years of study at the college level is required. For specific courses, see the [“Department of Languages and Literatures,” page 403](#). (SHS courses are not acceptable.)

Digital Art

Sixty-nine semester hours are required for the concentration in digital art. It requires 18 semester hours of core curriculum, 18 semester hours of course work with a digital art emphasis, nine semester hours of art history, and 24 semester hours of related study. The faculty in the student’s declared emphasis must approve course work in the digital art concentration and the related subject field. A senior exhibition is also required.

Portfolio Review. Admission to digital art courses require both a portfolio review and a minimum GPA of 2.70. Students must also declare an emphasis in 3D imaging and animation, digital photography, or video. The portfolio deadlines are October 15 for spring classes and March 15 for fall classes.

Core Curriculum. See [“Studio Art,” page 281](#), for courses that make up the core curriculum.

Specialization. Select 18 semester hours (including 12 semester hours of upper-division study) from the following:

ART 294 ST: Digital Art.....	3
or ART 394 ST: Digital Art (3).....	
ART 308 Digital Photographic Images.....	3
ART 345 Visualization and Prototyping I.....	3
ART 346 3D Computer Imaging and Animation <i>CS</i>	3
ART 348 Computer Animation I.....	3
ART 440 New Media Concepts.....	3
ART 441 Video Art.....	1
ART 449 Computer Animation and Video.....	3
ART 450 Computer Animation and Audio.....	3
ART 470 Computer Animation Portfolio <i>CS</i>	3
ART 494 ST: Digital Photographic Images II.....	3
or ART 494 ST: Visualization and Prototyping II (3)	
or any ART 494 digital art course (3)	

Related Subject Area. Select 24 semester hours of course work outside of the specialization. This may include courses in the School of Art, Herberger College of Fine Arts, and throughout the university that further students’ fine arts goals in digital media and aid them in preparation for the senior exhibition.

Museum Studies

A minimum of 67 hours is required for the museum studies concentration. This concentration is an interdisciplinary program, which involves courses in the School of Art, Department of Anthropology, College of Business, American Humanics/Department of Recreation Management, and the Department of Languages and Literatures.

Specialization

ARS 101 Art of the Western World I <i>HU, H</i>	3
ARS 102 Art of the Western World II <i>HU, H</i>	3
ARS 201 Art of Asia <i>HU, G, H</i>	3
ARS 202 Art of Africa, Oceania, and the Americas <i>HU, G, H</i>	3
ARS 480 Research Methods <i>L</i>	3
ARS 484 Internship (Museum).....	3

Also required is at least one 300- or 400-level art history (ARS) course from each of the following areas:

ART 409 Photographic Exhibition	3
or ARA 460 Gallery Exhibitions (3)	
ASB 471 Introduction to Museums	3
or ARS 494 ST: Introduction to Museums (3)	
Ancient.....	3
Any ARS courses	6
Medieval.....	3
Modern/contemporary.....	3
Non-Western	3
Renaissance/baroque.....	3

Related Study

COB 380 Small Business Leadership	3
COB 381 Small Business Accounting and Finance	3
COB 382 Small Business Sales and Marketing Development.....	3

Free Electives. Students must select a minimum of 12 semester hours of free electives. Recommended courses include REC 300 or 310; art history, anthropology, history, and/or business courses.

Foreign Language. Sixteen semester hours of 101, 102, 201, and 202 language courses are required or a demonstrated proficiency in at least one foreign language equivalent to the level attained through the completion of two years of study at the college level. For specific courses, see the [“Department of Languages and Literatures,” page 403](#). (SHS courses are not acceptable.)

Studio Art

Core Curriculum. The following courses make up the core curriculum:

ARS 101 Art of the Western World I <i>HU, H</i>	3
ARS 102 Art of the Western World II <i>HU, H</i>	3
ART 111 Drawing I	3
ART 112 Two-Dimensional Design	3
ART 113 Color	3
ART 115 Three-Dimensional Design	3
Total	18

Specialization. Eighteen semester hours (including 12 hours of upper-division study) of ART focus courses must be selected from the following areas: ceramics, drawing, fibers, intermedia, metals, painting, photography, printmaking, and sculpture.

Art History. Nine semester hours of ARS courses are required, which must include three semester hours of non-Western art. At least six semester hours must be upper-division ARS courses.

Related Subject Area. Related subject area includes courses outside the area of specialization in the School of Art, Herberger College of Fine Arts, and the university. Course selection must be related to student’s professional goals in art and approved by area of specialization faculty and an academic advisor. A minimum of 24 hours is required, of which 18 hours must be of upper-division study.

Art History Minor

The School of Art offers a minor in Art History consisting of 18 semester hours of course work, including 12 upper-division electives. A minimum grade of “C” is required of all classes in the minor and for those pursuing a minor, a

minimum overall GPA of 2.00 is required. Courses may not be double counted in a major and the minor, and a minimum of 12 hours of resident credit at ASU Main is required.

ARS 100 or 300 may be used toward a minor. ARS 100 and 300 may not be used toward an Art History minor if the student is an Art major or has credit in ARS 101 and 102.

Required Courses. Select two of the following four required courses:

ARS 101 Art of the Western World I <i>HU, H</i>	3
ARS 102 Art of the Western World II <i>HU, H</i>	3
ARS 201 Art of Asia <i>HU, G, H</i>	3
ARS 202 Art of Africa, Oceania, and the Americas <i>HU, G, H</i>	3

Elective Courses. Students pursuing an art history minor select four three-semester-hour upper-division courses. A seminar is strongly recommended for those considering graduate study. Students need to be aware of lower-division prerequisites for all upper-division courses. Interested students should contact the School of Art for specific requirements and admission procedures.

ART—B.F.A.

The major in Art consists of 75 semester hours, with a concentration in one area selected on the basis of the student’s interests. The following concentrations are available to the student: art education, ceramics, drawing, fibers, intermedia, metals, painting, photography, printmaking, and sculpture.

B.F.A. Core Curriculum. All students in this degree program follow the same core curriculum in art for the first two semesters:

ARS 101 Art of the Western World I <i>HU, H</i>	3
ARS 102 Art of the Western World II <i>HU, H</i>	3
ART 111 Drawing I	3
ART 112 Two-Dimensional Design	3
ART 113 Color	3
ART 115 Three-Dimensional Design	3
Total	18

At least 30 upper-division semester hours must be earned within the major, with a minimum of 12 semester hours within the concentration.

All course work counted in the major must be completed with a “C” or higher. The specific requirements for each concentration are recommended by the faculty advisors of the area and are listed on School of Art check sheets.

Courses from other departments, when approved by the advisor and the School of Art, may be applied to the major if deemed appropriate to the student’s program of study. Art courses that do not have the same title and description as ASU catalog courses must have the approval of the School of Art Standards Committee.

Graduation Requirements. In addition to fulfilling the major requirements, students must meet all university

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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graduation requirements and college degree requirements. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 276](#).

Art Education

Core Curriculum. See [“B.F.A. Core Curriculum,” page 281](#), for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ARE 440 Disciplines of Art Education.....	3
ARE 450 Teaching Inquiry in Art.....	3
ARE 470 Art Criticism: Aesthetics.....	3
ARE 482 Teaching Art Processes.....	3
ARE 486 Art Education: Strategies and Applications.....	3
ARE 494 Special Topics.....	3
ARE 496 Methods and Assessment of Learning in Art.....	3
Total	21

Area of Proficiency. Twenty-one semester hours are required with a minimum of 15 semester hours in a specific area of studio art or art history. Twelve of these semester hours must be upper-division credits.

Art History. Six semester hours of ARS upper-division courses are required. One course must be a 20th-century ARS course. Non-Western art is recommended for the second course.

Additional Requirements. The following courses are additional requirements:

ART 201 Photography I.....	3
ART 223 Painting I.....	3
ART 231 Sculpture I.....	3
or ART 261 Ceramic Survey (3)	
or ART 272 Jewelry I (3)	
or ART 274 Wood I (3)	
or ART 276 Fibers I (3)	
Total	9

The concentration in art education consists of 75 semester hours with 21 semester hours in art education and 21 semester hours in an art proficiency approved by an art education advisor. The art proficiency courses must include a minimum of 15 semester hours in a specific area of studio art or art history. Twelve of these semester hours must be upper-division credits. The art proficiency can be in art history, ceramics, drawing, fibers, intermedia, metals, painting, photography, printmaking, or sculpture. Teaching experience is provided in the Children’s Art Workshop, which is an on-campus program based in studio art and art history for children ages five to 15. Participation in the workshop is part of the requirements for ARE 486 Art Education: Strategies and Applications. ARE 486 meets the state certification requirements for the elementary methods class, and ARE 496 Methods and Assessment of Learning in Art meets the requirements for the secondary methods class in the subject area. Both of these courses have prerequisites.



The Art Building

Tim Trumble photo

A student pursuing a B.F.A. degree in Art with a concentration in art education may also choose to become certified for teaching art K–12. If certification is elected while pursuing the art education undergraduate degree, additional semester hours are required in the College of Education. Students must make special application to the Initial Teacher Certification (ITC) program in the College of Education three months before the beginning of the junior year. Certification may also be pursued after receiving an undergraduate degree in art through the postbaccalaureate program in the College of Education. Interested students should contact an advisor in the College of Education and in art education for admission requirements to the postbaccalaureate program. Art education courses for this program are as follows:

ARE 450 Teaching Inquiry in Art.....	3
ARE 482 Teaching Art Processes	3
ARE 486 Art Education: Strategies and Applications	3
ARE 496 Methods and Assessment of Learning in Art	3
Total	12

The B.F.A. degree in Art with a concentration in art education and the postbaccalaureate program for certification in art has a special art education application procedure. This procedure is separate from, and in addition to, the admission requirements of ASU. Acceptance is based on a 2.50 GPA, completion of foundations courses (ART 111, 112, 113, and 115), completion of 12 semester hours of art history courses (ARS 101 and 102 and two upper-division courses), and a “B” or higher in ARE 440 and 450. In addition, undergraduate and postbaccalaureate students seeking K–12 certification should check requirements and deadlines for admission to the College of Education professional program.

Student teaching in art education occurs only in the spring semester. To be accepted into student teaching, a student must be recommended in writing by the art education faculty and must have completed all art education classes except for ARE 496, which should be taken concurrently with student teaching. Students who are not recommended may complete the B.F.A. degree in Art with a concentration in art education without certification or may reapply after meeting deficiencies in knowledge and skills related to the teaching of art.

Ceramics

Core Curriculum. See “[B.F.A. Core Curriculum,](#)” [page 281](#), for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ART 231 Sculpture I.....	3
ART 261 Ceramic Survey.....	3
ART 360 Ceramic Throwing	3
ART 364 Ceramic Handbuilding I.....	3
ART 365 Ceramic Handbuilding II	3
ART 460 Ceramic Clay	3
ART 463 Ceramic Glaze.....	3
ART 466 Special Problems in Ceramics	6
Total	27

Art History. Six semester hours of upper-division ARS courses, including a 20th-century and a non-Western ARS course, are required.

Additional Requirements. One of the following four courses is required:

ART 211 Drawing II.....	3
ART 214 Life Drawing I.....	3
ART 227 Watercolor I.....	3
ART 443 Intermedia	3

Two of the following three courses (six semester hours) are required:

ART 272 Jewelry I.....	3
ART 274 Wood I.....	3
ART 276 Fibers I.....	3

Art Electives. Fifteen semester hours of ARA, ARE, ARS, and ART courses are required.

Drawing

Core Curriculum. See “[B.F.A. Core Curriculum,](#)” [page 281](#), for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ART 211 Drawing II.....	3
ART 214 Life Drawing I.....	3
ART 223 Painting I.....	3
ART 227 Watercolor I.....	3
ART 311 Drawing III.....	3
ART 314 Life Drawing II	3
ART 315 Life Drawing III.....	3
ART 411 Advanced Drawing	3
Total	24

Also required are six semester hours of ART 411, 414, or 494 drawing, painting, or printmaking (three semester hours).

Art History. Nine semester hours, including six semester hours of upper-division and three semester hours of non-Western ARS courses, are required.

Additional Requirements. Two of the following six courses (six semester hours) are required:

ART 201 Photography I.....	3
ART 231 Sculpture I.....	3
ART 261 Ceramic Survey.....	3
ART 272 Jewelry I.....	3
ART 274 Wood I.....	3
ART 276 Fibers I.....	3

Art Electives. Nine semester hours of ARA, ARE, ARS, or ART courses are required.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “[General Studies,](#)” [page 83](#).

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Fibers

Core Curriculum. See [“B.F.A. Core Curriculum,”](#) page 281, for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ART 276 Fibers I.....	3
ART 376 Fibers: Loom Techniques.....	3
ART 377 Surface Design.....	3
ART 476 Fibers: Multiple Harness Weaving.....	6
ART 477 Printed Textiles.....	6
Total	21

Art History. Six semester hours of upper-division ARS courses are required, including a 20th-century elective.

Additional Requirements. Three of the following six courses (nine semester hours) are required:

ART 201 Photography I.....	3
ART 231 Sculpture I.....	3
ART 261 Ceramic Survey.....	3
ART 272 Jewelry I.....	3
ART 274 Wood I.....	3

Art Electives. Twenty-one semester hours of ARA, ARE, ARS, and ART courses are required.

Intermedia

Core Curriculum. See [“B.F.A. Core Curriculum,”](#) page 281, for the courses that make up the core curriculum.

Portfolio Review. Admission to the courses listed below requires both a portfolio review and a minimum GPA of 2.70. Students must also declare an emphasis in mixed media, 3D imaging and animation, or video. The portfolio deadlines are October 15 for spring classes and March 15 for fall classes.

Specialization. Eighteen to nineteen semester hours are required. Students must select three semester hours of Non-Electronic Media and three hours of Digital Imaging. The remaining fifteen to sixteen hours are completed in either Non-Electronic Media or Digital Imaging depending on the emphasis selected.

The following courses make up the specialization:

Select three semester hours from the following Non-Electronic Media courses:

ART 439 Mixed Media.....	3
ART 442 Folk/Outsider Art.....	3
ART 443 Intermedia.....	3
ART 494 ST: Nonelectronic Intermedia.....	3

Select three or four semester hours from the following Digital Imaging courses:

ART 345 Visualization and Prototyping I.....	3
ART 346 3D Computer Imaging and Animation CS.....	3
ART 348 Computer Animation I.....	3
ART 440 New Media Concepts.....	3
ART 441 Video Art.....	1
ART 494 Visualization and Prototyping II.....	3

or any ART 494 digital art course (3)

Intermedia-Related Study

Two of the following two dimensional courses (six semester hours) are required:

ART 201 Photography I.....	3
ART 211 Drawing II.....	3
ART 214 Life Drawing I.....	3
ART 223 Painting I.....	3
ART 227 Watercolor I.....	3
ART 351 Intaglio I.....	3
ART 352 Lithography I.....	3
ART 354 Screen Printing I.....	3
ART 355 Photo Process for Printmaking I.....	3

Two of the following three dimensional courses (six semester hours) are required:

ART 231 Sculpture I.....	3
ART 261 Ceramic Survey.....	3
ART 272 Jewelry I.....	3
ART 274 Wood I.....	3
ART 276 Fibers I.....	3

Art History. Nine semester hours, including three hours of non-Western, and six hours of 20th-century and/or contemporary art history (ARS) classes are required. Six hours must be in the upper-division.

Art Electives. Seventeen to eighteen semester hours of ARA, ARE, ARS, and ART courses are required.

The deadline for submitting review materials to enroll in computer animation courses is March 15 for fall semester and October 15 for spring semester.

Metals

Core Curriculum. See [“B.F.A. Core Curriculum,”](#) page 281, for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ART 272 Jewelry I.....	3
ART 372 Jewelry II.....	3
ART 373 Metalworking I.....	3
ART 472 Advanced Jewelry.....	6
ART 473 Advanced Metalworking.....	6
ART 494 ST: Metals.....	3
Total	24

Art History. Six semester hours of upper-division ARS courses are required, including a 20th-century elective.

Additional Requirements. Three of the following six courses (nine semester hours) are required:

ART 201 Photography I.....	3
ART 223 Painting I.....	3
ART 231 Sculpture I.....	3
ART 261 Ceramic Survey.....	3
ART 274 Wood I.....	3
ART 276 Fibers I.....	3

Art Electives. Eighteen semester hours of ARA, ARE, ARS, and ART courses are required.

Painting

Core Curriculum. See [“B.F.A. Core Curriculum,” page 281](#), for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ART 211 Drawing II.....	3
ART 214 Life Drawing I.....	3
ART 223 Painting I.....	3
ART 227 Watercolor I.....	3
ART 311 Drawing III.....	3
ART 314 Life Drawing II.....	3
ART 323 Painting II.....	3
ART 324 Painting III.....	3
or ART 327 Watercolor II (3)	
ART 325 Figure Painting.....	3
ART 423 Advanced Painting.....	3
or ART 427 Advanced Watermedia (3)	
Total	30

One of the following six courses (three semester hours) is required:

ART 324 Painting III.....	3
ART 327 Watercolor II.....	3
ART 411 Advanced Drawing.....	3
ART 423 Advanced Painting.....	3
ART 425 Advanced Figure Painting.....	3
ART 427 Advanced Watermedia.....	3
ART 494 ST: Drawing.....	3
or ART 494 ST: Painting (3)	

Art History. Nine semester hours of ARS courses are required, including three hours of non-Western. Six hours must be upper-division ARS courses.

Additional Requirements. Two of the following six courses (six semester hours) are required:

ART 201 Photography I.....	3
ART 231 Sculpture I.....	3
ART 261 Ceramic Survey.....	3
ART 272 Jewelry I.....	3
ART 274 Wood I.....	3
ART 276 Fibers I.....	3

Art Electives. Nine semester hours of ARA, ARE, ARS, and ART courses are required.

Photography

Core Curriculum. See [“B.F.A. Core Curriculum,” page 281](#), for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ARA 202 Understanding Photographs.....	3
ART 201 Photography I.....	3
ART 301 Photography II.....	3
ART 304 Advanced Photography.....	3
Total	12

Three of the following ten courses (nine semester hours) are required:

ART 305 Color Photography I.....	3
ART 308 Digital Photographic Images.....	3

ART 401 Nonsilver Photography.....	3
ART 403 Senior Photographic Projects.....	3
ART 404 Portraiture Photography.....	3
ART 405 Advanced Color Photography.....	3
ART 406 Photo Techniques.....	3
ART 407 View Camera.....	3
ART 409 Photographic Exhibition.....	3
ART 494 ST: Photo.....	3

Art History. Twelve semester hours are required including ARS 250 History of Photography and a non-Western art history course. Six hours must be upper-division

Additional Requirements. Select one of the following courses:

ART 211 Drawing II.....	3
ART 214 Life Drawing I.....	3
ART 223 Painting I.....	3
ART 227 Watercolor I.....	3

One of the following five courses (three hours) is required:

ART 231 Sculpture I.....	3
ART 261 Ceramic Survey.....	3
ART 272 Jewelry I.....	3
ART 274 Wood I.....	3
ART 276 Fibers I.....	3

Art Electives. Eighteen semester hours of ARA, ARE, ARS, and ART courses are required.

Printmaking

Core Curriculum. See [“B.F.A. Core Curriculum,” page 281](#), for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ART 211 Drawing II.....	3
or ART 214 Life Drawing I (3)	
ART 351 Intaglio I.....	3
ART 352 Lithography I.....	3
ART 354 Screen Printing I.....	3
Total	12

Three of the following ten courses (nine semester hours) are required:

ART 253 Introduction to Printmaking.....	3
ART 355 Photo Process for Printmaking I.....	3
ART 451 Advanced Intaglio.....	3
ART 452 Advanced Lithography.....	3
ART 454 Advanced Screen Printing.....	3
ART 455 Advanced Photo Processes for Printmaking.....	3
ART 456 Fine Printing and Bookmaking I.....	3
ART 457 Fine Printing and Bookmaking II.....	3
ART 458 Papermaking.....	3
ART 459 Monoprinting.....	3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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Two of the following five courses (six semester hours) are required:

ART 214 Life Drawing I.....	3
ART 311 Drawing III.....	3
ART 314 Life Drawing II.....	3
ART 315 Life Drawing III.....	3
ART 411 Advanced Drawing	3

Art History. Six semester hours of upper-division ARS courses are required.

Additional Requirements. Two of the following eight courses (six semester hours) are required:

ART 201 Photography I.....	3
ART 223 Painting I.....	3
ART 227 Watercolor I.....	3
ART 231 Sculpture I.....	3
ART 261 Ceramic Survey.....	3
ART 272 Jewelry I.....	3
ART 274 Wood I.....	3
ART 276 Fibers I.....	3

Art Electives. Eighteen semester hours of ARA, ARE, ARS, and ART courses are required.

Sculpture

Core Curriculum. See [“B.F.A. Core Curriculum,” page 281](#), for the courses that make up the core curriculum.

Specialization. The following courses make up the specialization:

ART 223 Painting I.....	3
ART 231 Sculpture I.....	3
ART 274 Wood I.....	3
ART 331 Sculpture II.....	3
ART 332 Sculpture III	3
ART 431 Special Problems in Sculpture	3
Total	18

Four of the following nine courses (12 semester hours) are required (note that all are repeatable except ART 333):

ART 333 Foundry Casting Methods.....	3
ART 374 Wood II	3
ART 431 Special Problems in Sculpture	3
ART 432 Neon Sculpture.....	3
ART 436 Architectural Sculpture	3
ART 437 Film Animation	3
ART 438 Experimental Systems in Sculpture	3
ART 474 Advanced Wood	3
ART 494 Special Topics in Sculpture.....	3

Art History. Six semester hours of upper-division ARS courses are required.

Additional Requirements. Two of the following three courses are required:

ART 261 Ceramic Survey.....	3
ART 272 Jewelry I.....	3
ART 276 Fibers I.....	3

Art Electives. Fifteen semester hours of ARA, ARE, ARS, and ART courses are required.

GRADUATE PROGRAMS

The faculty in the School of Art offer programs leading to the M.A. degree in Art, with a concentration in art education or art history, the Master of Fine Arts degree with a concentration in ceramics, drawing, fibers, intermedia, metals, painting, photographic studies, photography, printmaking, sculpture, or wood, and a Ph.D. degree in History and Theory of Art. In cooperation with the College of Education, the Doctor of Education degree is offered with a concentration in art education. See the *Graduate Catalog* for requirements for all graduate degrees.

ART AUXILIARY (ARA)

ARA 202 Understanding Photographs. (3)

once a year

Slide lecture course in understanding photography as a fine art form.

ARA 311 Art Appreciation and Human Development. (3)

fall

Foundations of art for children and young adults. Emphasis on learning, development, and understanding art in historical and cultural contexts. Lecture, discussion. Prerequisites: ENG 101, 102; junior standing.

General Studies: HU

ARA 460 Gallery Exhibitions. (3)

fall and spring

Practical experience in all phases of department gallery operations and preparation of gallery publications. May be repeated for credit. Prerequisite: instructor approval.

ARA 488 Understanding Art. (3)

fall and spring

Understanding art as an emergent cultural phenomenon with an emphasis on a critical examination of conceptual issues in art. Requires writing. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: L/HU

ARA 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- **Advanced Photo Aesthetics. (3)**

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56](#).

ART EDUCATION (ARE)

ARE 301 Studio Art and Human Development. (3)

once a year

Study of human development in studio art from early childhood to adult years.

ARE 440 Disciplines of Art Education. (3)

once a year

Explorations in art education's disciplines, history, and people's art-making development at diverse age levels and abilities. Lecture, discussion. Prerequisites: a combination of ARS 101 and 102 and ART 113 and 115 or only instructor approval.

ARE 450 Teaching Inquiry in Art. (3)

fall and spring

Designing inquiry-based curriculum units built on developmental levels of art making and art understanding. Lecture, discussion. Prerequisites: ARS 101, 102.

ARE 470 Art Criticism: Aesthetics. (3)

fall

Traditions of aesthetics and art criticism; conceptual issues in contemporary art; education in the visual arts. Prerequisite: ARE 440 or instructor approval.

ARE 482 Teaching Art Processes. (3)

spring

Art traditions of the 20th century as a basis for studio and art history instruction. Meets art postbaccalaureate certification requirement. 2 hours lecture, 2 hours studio. Prerequisite: ARE 450.

ARE 486 Art Education: Strategies and Applications. (3)*fall*

Implementation and evaluation of art instruction for K–12 population. Includes teaching of Saturday classes in the Children’s Art Workshop. Meets art postbaccalaureate certification requirement. Prerequisite: ARE 482.

ARE 494 Special Topics. (3)*once a year***ARE 496 Methods and Assessment of Learning in Art. (3)***once a year*

Individual or group research on the assessment of art learning incorporating theory and practice. Meets art postbaccalaureate certification requirement. Prerequisites: both ARE 470 and 486 or only instructor approval.

ARE 510 Art Education Colloquium. (3)*selected semesters*

Historical foundations of art education and faculty presentations regarding teaching and research related to the visual arts.

ARE 520 Issues in Teaching Inquiry in Art. (3)*once a year*

Issues in teaching and learning through inquiry about artworks using print and electronic reproductions and information. Recommended to be taken before ARE 525.

ARE 525 Research on Teaching Art History. (3)*once a year*

Review of empirical and historical research, research methods, learning theory, and assessment of learning in art history. Pilot studies on the effects of instruction upon learning. Recommended to be taken after ARE 520.

ARE 530 Issues in Teaching Studio Art. (3)*once a year*

Critical examination of issues concerning teaching multicultural art to different populations of students. Historical and philosophical foundations reviewed. Recommended to be taken before ARE 535. Lecture, discussion.

ARE 535 Research on Teaching Studio Art. (3)*once a year*

Review of empirical and historical research methods, learning theory, and assessment of learning in studio art, including developmental studies and their limitations. Pilot studies on the effects of instruction upon learning. Recommended to be taken after ARE 530.

ARE 540 Teaching Art in Cultural Contexts. (3)*once a year*

Relationship of multicultural perspectives to teaching/learning art criticism, aesthetics, studio art, and art history.

ARE 610 Issues and Trends in Art Education. (3)*selected semesters*

Doctoral-level investigation of historical and contemporary issues related to teaching and research in art education.

ARE 611 Curriculum Development in Art Education. (3)*selected semesters*

Doctoral-level inquiry into the philosophical, psychological, and sociological foundations of curriculum development.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56](#).

ART HISTORY (ARS)**ARS 100 Introduction to Art. (3)***fall, spring, summer*

Understanding of art and its relationship to everyday life through painting, sculpture, architecture, and design. No credit for Art majors or students who have completed ARS 101 or 102 or 300.

*General Studies: HU***ARS 101 Art of the Western World I. (3)***fall, spring, summer*

History of Western art from the Paleolithic period through the Middle Ages.

*General Studies: HU, H***ARS 102 Art of the Western World II. (3)***fall, spring, summer*

History of Western art from the Renaissance to the present.

*General Studies: HU, H***ARS 201 Art of Asia. (3)***once a year*

History of the art of the Asian cultures, with emphasis on China, Japan, and India. Meets non-Western art history requirement.

*General Studies: HU, G, H***ARS 202 Art of Africa, Oceania, and the Americas. (3)***spring*

History of art of Africa, Oceania, and the New World. Meets non-Western art history requirement. Lecture, discussion. Cross-listed as AFH 202. Credit is allowed for only AFH 202 or ARS 202.

*General Studies: HU, G, H***ARS 250 History of Photography. (3)***once a year*

History of photography from the 19th century to the present.

*General Studies: HU***ARS 300 Introduction to Art. (3)***fall and spring*

Course content same as ARS 100 but requires a higher level of accomplishment and comprehension. No credit for students who have completed ARS 100 or used as art history credit by Art majors.

*General Studies: HU***ARS 302 Art of Africa, Oceania, and the Americas. (3)***once a year*

History of art of Africa, Oceania, and the New World. Meets non-Western art history requirement. Credit is allowed for only ARS 302 or 202. Prerequisites: ARS 101, 102.

*General Studies: HU, G, H***ARS 310 The Renaissance in Tuscany. (3)***summer*

Course taught in Florence, Italy. History of arts in Tuscany with focus on city of Florence from 14th through 16th centuries. Completion of ARS 101 and 102 suggested. Lecture, tours.

ARS 340 Art in America. (3)*once a year*

American art from colonial times through the Second World War. Not available to students who have completed ARS 444, 542, or 543. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU, H***ARS 400 History of Printmaking. (3)***once a year*

History of the print as an art form and its relation to other modes and forms of artistic expression. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU, H***ARS 402 Art of Ancient Egypt. (3)***selected semesters*

Aesthetic, philosophical, and cultural basis of Egyptian art from pre-Dynastic period through New Kingdom. Emphasis on sculpture and architectural monuments. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU, H***ARS 404 Greek Art. (3)***once a year*

History of art, architecture of Aegean civilizations (Cycladic, Minoan, Mycenaean) and of Greece to end of Hellenistic period. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU, H***ARS 406 Roman Art. (3)***once a year*

Art and architecture of Etruria, the Roman Republic, and the Roman Empire. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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ARS 410 Early Christian and Byzantine Art. (3)

once a year

Art and architecture of the early church and the Byzantine Empire from the 4th to the 15th century. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 412 Early Medieval Art. (3)

selected semesters

Painting, sculpture, architecture, and the minor arts from Migration, Carolingian, and Ottonian periods considered within religious, social, and economic contexts. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 414 Romanesque Art. (3)

once a year

Sculpture, painting, architecture, and minor arts in western Europe, ca. 1030–1200, considered within religious, economic, and social contexts. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 416 Gothic Art. (3)

once a year

Painting, sculpture, and architecture in western Europe during the Gothic period. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 417 Late Gothic Art in Central Europe. (3)

selected semesters

Sculpture, painting, and architecture of the late-Gothic style, ca. 1350–1525, considered within religious, social, economic, and political contexts. Prerequisites: both ARS 101 and 102 or only instructor approval.

ARS 418 Renaissance Art in Northern Europe. (3)

once a year

Graphics, painting, sculpture, and architecture, ca. 1450–1550. Reformation themes and Renaissance style considered within religious, political, social, and economic contexts. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 420 Early Renaissance Art in Italy. (3)

selected semesters

Painting, sculpture, and architecture in Italy from 1300 to 1500. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 422 Italian High Renaissance Art and Mannerism. (3)

once a year

History of Italian art during the 16th century, including the achievements and influence of Leonardo da Vinci, Raphael, and Michelangelo. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 424 Italian Baroque Art. (3)

once a year

Italian painting, sculpture, and architecture of the 17th century. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 426 Art of the 17th Century in Northern Europe. (3)

once a year

Baroque painting, sculpture, and architecture in Flanders, the Netherlands, France, and England. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 428 Art of the 18th Century. (3)

once a year

History of painting, sculpture, architecture, graphic arts, and the decorative arts from 1700 to the French Revolution (1789). Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 430 Art of Spain and Its Colonies. (3)

once a year

Architecture, painting, and sculpture from 1500 to 1800. Colonial focus on central Mexico and the American Southwest. Prerequisite: ARS 102 or instructor approval.

General Studies: HU, H

ARS 432 19th-Century French Art and Culture. (3)

fall

History of painting, graphic arts, sculpture, and architecture, 1800 to 1900 in France in its political, social, and economic contexts. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 434 From Courbet to Cézanne: History of European Art 1860–WWI. (3)

spring

Aesthetic, political, and social forces affecting the visual arts in the late 19th century. Concentration on cubism, expressionism, impressionism, and postimpressionism. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 436 Art at the Turn of the Century: 1885–1914. (3)

fall

History of European avant-garde movements. Concentration on postimpressionism, symbolism, expressionism, and cubism. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 438 Art of the 20th Century I. (3)

once a year

Developments and directions in art between 1900 and World War II. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 439 Art of the 20th Century II. (3)

once a year

Art since World War II, with consideration of new concepts and experimentation with media and modes of presentation. Prerequisites: a combination of ARS 101 and 102 and 438 or only instructor approval.

General Studies: HU, H

ARS 442 Critical Issues in American Painting I. (3)

once a year

Explores themes and social issues in American art with a critical study of American painting from the 18th century to 1850. Lecture, discussion. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 443 Critical Issues in American Painting II. (3)

once a year

Explores themes and social issues in American art with a critical study of American painting from 1850 to 1900. Lecture, discussion. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 444 Modern American Art, 1900–1945. (3)

once a year

American painting, sculpture, photography, and architecture, 1900–1945. Covers major monuments, including the Eight, modernism, precisionism, regionalism, and the WPA. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 458 Critical Theories in the Visual Arts. (3)

selected semesters

Examines current critical theories through their application to all visual arts. May include new historicism, Marxism, deconstruction, post-structuralism, semiotics, Lacanian psychoanalysis, feminism, post-modernism. Lecture, discussion, student presentations. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU

ARS 459 Writing Art Criticism. (3)

selected semesters

Traditional and contemporary approaches to the criticism of art. Students write critical essays. Latter half of the semester stresses the criticism of contemporary art in various media. Prerequisite: ARS 458 or instructor approval.

ARS 462 Pre-Columbian Art. (3)

once a year

Architecture, sculpture, ceramics, painting, and other arts of Mesoamerica before European contact. Meets non-Western art history requirement. Prerequisites: both ARS 101 and 102 or only instructor approval.

General Studies: HU, H

ARS 465 Native North American Art. (3)*once a year*

Native American art forms of the United States and Canada from pre-historic times to the present. Meets non-Western art history requirement. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU, H***ARS 466 Native American Art of the Southwest. (3)***once a year*

American Indian art in the southwestern states from its origins to the present day. Meets non-Western art history requirement. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU, C, H***ARS 468 Art of the Arctic and Northwest Coast. (3)***selected semesters*

Art associated with ceremony, shamanism, and daily life in the Arctic and on the Northwest Coast. Meets non-Western art history requirement. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU***ARS 469 Mexican Art. (3)***once a year*

Art of Mexico and related Central American cultures from the prehistoric to the contemporary schools. Meets non-Western art history requirement. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU, H***ARS 472 Art of China. (3)***once a year*

Study of major forms in Chinese art: ritual bronze, sculpture, ceramic, calligraphy, painting, and architecture. Meets non-Western art history requirement. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU***ARS 473 Art of Japan. (3)***once a year*

Japanese art from the Jomon period to the present. Meets non-Western art history requirement. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU***ARS 475 Chinese Painting. (3)***once a year*

From Ku K'ai-chin to Ch'i Pai-shih. Major artists, styles, and movements in Chinese painting. Meets non-Western art history requirement. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: HU***ARS 480 Research Methods. (3)***fall and spring*

Methodology and resource material for art historical research. Techniques of scholarly and critical writing and evaluation of bibliographic sources. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: L***ARS 484 Internship. (1–12)***selected semesters*

Topics may include the following:

- Museum

ARS 485 Women in the Visual Arts. (3)*spring*

Historical study of art by women in various media; related social, political, educational issues; representation of women in art. Lecture, discussion. Prerequisites: both ARS 101 and 102 or only instructor approval.

*General Studies: L***ARS 494 Special Topics. (1–4)***fall and spring*

Topics may include the following:

- History of Photography. (3)
- Introduction to Museums. (3)

ARS 498 Pro-Seminar. (1–7)*once a year*

Undergraduate seminar. Problems or criticism in topics that may include the following:

- American Art. (3–6)
- American Indian Art. (3–6)
- Ancient Art. (3–6)
- Art History. (3–6)
- Baroque Art. (3–6)
- British Empire (3–6)
- Chinese Art. (3–6)
- Medieval Art. (3–6)
- Modern Art. (3–6)
- Photographic History. (3–6)
- Pre-Columbian Art. (3–6)
- Renaissance Art. (3–6)

Prerequisite: instructor approval.

ARS 501 Methodologies and Art History. (3)*fall*

History of the discipline and an exploration of various methodologies, critical theory, and bibliographies used by art historians. Seminar.

ARS 502 Critical Studies in Egyptian Art. (3)*selected semesters*

Egyptian art from pre-Dynastic to New Kingdom periods. Focus on aesthetic, philosophical, and cultural contexts. Requires research paper and readings.

ARS 504 Critical Approaches to Greek Art. (3)*once a year*

Art and architecture of Aegean civilizations (Cycladic, Minoan, Mycenaean) and of Greece to end of Hellenistic period. Requires research paper and readings.

ARS 506 Critical Studies in Roman Art. (3)*once a year*

Art and architecture of Etruria, the Roman Republic, and the Roman Empire. Requires research paper and/or supplemental readings.

ARS 514 Critical Approaches to Romanesque Art. (3)*selected semesters*

Sculpture, painting, architecture, and the minor arts in western Europe, ca. 1030–1200, considered within religious, economic, and social contexts. Requires research paper.

ARS 516 Critical Approaches to Gothic Art. (3)*selected semesters*

Architecture, sculpture, painting, and the minor arts in western Europe, ca. 1150–1350, considered within religious, social, and economic contexts. Requires research paper.

ARS 517 Critical Approaches to Late Gothic Art. (3)*selected semesters*

Art of the late-Gothic style, ca. 1350–1525, considered within religious, social, economic, and political contexts. Requires research or reading project.

ARS 522 16th-Century Italian Art. (3)*once a year*

Critical study of painting, sculpture, and architecture in 16th-century Italy in its religious and historical context.

ARS 528 18th-Century Art in Europe. (3)*once a year*

Critical study of European art from the late Baroque to the early years of Neoclassicism.

ARS 530 Art of Spain and New Spain. (3)*once a year*

Critical study of architecture, painting, and sculpture from 1500 to 1800. Lecture, conference.

ARS 532 Art, Politics, and Patronage, 1770–1850. (3)*fall*

Critical analyses of political events in Europe. Examines issues of patronage, art as propaganda. Impact of war and revolution on visual arts.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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ARS 534 Studies in Modern European Art, 1850–1914. (3)

once a year

Critical study of visual arts using primary source material from mid-19th century to WWI within philosophical, socioeconomic, and economic contexts. Lecture, tutorial. Prerequisite: instructor approval.

ARS 542 Critical Issues in American Painting I. (3)

once a year

Explores themes and social issues in American art with a critical study of American painting from the 18th century to 1850. Lecture, discussion. Prerequisites: ARS 101, 102.

ARS 543 Critical Issues in American Painting II. (3)

once a year

Explores themes and social issues in American art with a critical study of American painting from 1850 to 1900. Lecture, lab. Prerequisite: instructor approval.

ARS 544 American Modernism and Realism, 1900–1945. (3)

once a year

Critical study of the social, political, and artistic changes in American art during the first half of the 20th century. Prerequisites: both ARS 101 and 102 or only ARS 340.

ARS 562 Art of Ancient Mesoamerica. (3)

fall

Critical study of art and architecture of Mexico and Maya areas before Spanish contact. Lecture, conference.

ARS 565 Native Art of North America. (3)

once a year

Critical examination of Native American art within culture, prehistory to the present. Prerequisites: both ARS 101 and 102 or only instructor approval.

ARS 574 Studies in Japanese Art. (3)

once a year

Critical examination of the nature and history of Japanese art, its rich heritage and its indebtedness to foreign sources. Lecture, discussion. Prerequisites: both ARS 101 and 102 or only instructor approval.

ARS 575 Approaches to Chinese Painting. (3)

fall

Critical history of Chinese painting from Eastern Chou to 1911.

Emphasis on masters, regional developments, and conceptual underpinnings. Lecture, discussion. Prerequisites: both ARS 101 and 102 or only instructor approval.

ARS 591 Seminar. (1–12)

once a year

Graduate seminar. Problems or criticism in topics that may include the following:

- American Art. (3–6)
- American Indian Art. (3–6)
- Ancient Art. (3–6)
- Baroque Art. (3–6)
- British Empire (3–6)
- Chinese Art. (3–6)
- Critical Theories in the Visual Arts. (3–6)
- Medieval Art. (3–6)
- Modern Art. (3–6)
- Native American Art. (3–6)
- Photographic History. (3–6)
- Pre-Columbian Art. (3–6)
- Renaissance Art. (3–6)

Prerequisite: instructor approval.

ARS 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

ART (ART)

Studio Core Curriculum

ART 111 Drawing I. (3)

fall, spring, summer

Fundamental, technical, and perceptual skills using common drawing media and their application to pictorial organization. 6 hours a week.

ART 112 Two-Dimensional Design. (3)

fall, spring, summer

Fundamentals of pictorial design. 6 hours a week.

ART 113 Color. (3)

fall, spring, summer

Principles of color theory as related to the visual arts. 6 hours a week.

Prerequisites: ART 111, 112.

ART 115 Three-Dimensional Design. (3)

fall, spring, summer

Fundamentals of 3D form. 6 hours a week. Fee. Prerequisites: ART 111, 112.

ART 294 Special Topics. (3)

fall and spring

Ceramics

ART 261 Ceramic Survey. (3)

fall, spring, summer

Handforming methods, throwing on the wheel, decorative processes, and glaze application. 6 hours a week. Fee. Prerequisites: ART 112, 115.

ART 360 Ceramic Throwing. (3)

fall and spring

Design analysis and production of functional pottery. Emphasis on throwing techniques, surface enrichment, and glaze application. 6 hours a week. May be repeated once for credit. Fee.

ART 364 Ceramic Handbuilding I. (3)

fall

Search for form using handbuilding techniques. Kiln firing and related problems. Fee. Prerequisite: ART 261 or instructor approval.

ART 365 Ceramic Handbuilding II. (3)

spring

Continuation of ART 364 with an additional focus on large-scale works, surface treatments, and glaze decoration with related kiln firing applications. Fee. Prerequisite: ART 364 or instructor approval.

ART 394 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Ceramics
Fee.
- Turning
Fee.

ART 460 Ceramic Clay. (3)

spring

Research into various clay body formulations, local natural materials, slip glazes, and engobes. Lecture, lab, studio. Fee. Prerequisites: both ART 360 and 364 or only instructor approval.

ART 463 Ceramic Glaze. (3)

fall

Glaze calculation and formulation using various glaze colors and surfaces. Lecture, lab, studio. Fee. Prerequisite: ART 460 or instructor approval.

ART 466 Special Problems in Ceramics. (3)

fall, spring, summer

Emphasis on personal expression within structure of seminars, critiques, and studio work. Professional methods of presentation/documentation of work. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 364 or instructor approval.

ART 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Ceramics Printmaking
Fee.
- Enameling
Fee.
- Turning
Fee.
- Vapor Glazes
Fee.

ART 594 Conference and Workshop. (1–12)

selected semesters

Topics may include the following:

- Turning
Fee.

ART 598 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Ceramic Clay
Fee.
- Ceramic Glaze
Fee.
- Ceramics Printmaking
Fee.
- Enameling
Fee.
- Experimental Printmaking
Fee.
- Special Problems in Ceramics
Fee.

Drawing**ART 211 Drawing II. (3)***fall, spring, summer*

Continued development of technical and perceptual skills. Emphasis on materials and pictorial content. 6 hours a week. Prerequisites: ART 113, 115.

ART 214 Life Drawing I. (3)*fall, spring, summer*

Development of skill and expressiveness in drawing the basic form, construction, and gesture from the human figure. 6 hours a week. Fee. Prerequisites: ART 113, 115.

ART 311 Drawing III. (3)*fall and spring*

Emphasis on composition, exploration of drawing media. 6 hours a week. Prerequisites: ART 211, 214; instructor approval.

ART 314 Life Drawing II. (3)*fall and spring*

Drawing from the model with greater reference to structural, graphic, and compositional concerns. 6 hours a week. Fee. Prerequisite: ART 214 or instructor approval.

ART 315 Life Drawing III. (3)*fall and spring*

The human figure as the subject for drawing. Emphasis on conceptual alternatives and management of materials. 6 hours a week. Fee. Prerequisite: ART 314 or instructor approval.

ART 411 Advanced Drawing. (3)*fall and spring*

Visual and intellectual concepts through problem solving and independent study. Emphasis on the individual creative statement. 6 hours a week. May be repeated for credit. Prerequisites: ART 311; instructor approval.

ART 414 Advanced Life Drawing. (3)*fall and spring*

Various media and techniques on an advanced level. The human figure as an expressive vehicle in various contexts. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 315 or instructor approval.

ART 415 Art Anatomy. (4)*selected semesters*

Study of human anatomical structures as applied to the practice of figure-oriented art. 3 hours lecture, 5 hours studio a week. Fee. Prerequisite: ART 214.

ART 494 Special Topics. (1–4)*fall and spring*

Topics may include the following:

- Drawing. (3)

ART 598 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Art Anatomy
Fee.
- Life Drawing
Fee.

Fibers**ART 276 Fibers I. (3)***fall and spring*

Explores traditional and contemporary materials and basic techniques related to fibers. Embroidery, feltmaking, dyeing, block printing, plaiting, 3D structures. Fee. Prerequisites: both ART 113 and 115 or only instructor approval.

ART 294 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Fibers for Nonmajors
Fee.

ART 376 Fibers: Loom Techniques. (3)*once a year*

Investigates loom techniques and computer pattern design. 6 hours a week. Fee. Prerequisite: ART 113 or 115 or instructor approval.

ART 377 Surface Design. (3)*fall and spring*

Application of dyes and pigments on cloth exploring techniques, formal issues, and content. Cyanotype, monoprinting, painting on silk, resists, stenciling. Fee. Prerequisite: ART 276 or instructor approval.

ART 394 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Fibers Design for Nonmajors
Fee.

ART 476 Fibers: Multiple Harness Weaving. (3)*fall and spring*

Advanced loom techniques and computer pattern design. Emphasis on individual design and loom application. Fee. Prerequisite: ART 113 or 115 or 376 or instructor approval.

ART 477 Printed Textiles. (3)*once a year*

Techniques for screen printing on fabric exploring pattern as a compositional element. Various stencil methods including photographic processes. May be repeated for credit. Studio. Fee. Prerequisite: ART 377 or instructor approval.

ART 478 Advanced Surface Design. (3)*spring in odd years*

Emphasis on personal expression with advanced problems in stitch resist, arashi shibori, transfers, indigo, vat and disperse dyes, and pigments. Studio. Prerequisites: both ART 377 and 477 or only instructor approval.

ART 494 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Fibers and Surface
Fee.
- Print Textiles
Fee.

ART 598 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Fibers and Surface
Fee.
- Print Textiles
Fee.
- Printed Textiles
Fee.

Intermedia**ART 345 Visualization and Prototyping I. (3)***spring in even years*

Studio/seminar introduces concepts of computer visualization, modeling, and rapid prototyping in an interdisciplinary manner. Lecture, studio. Prerequisite: a General Studies CS course or instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

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ART 346 3D Computer Imaging and Animation. (3)

fall and spring

3D modeling and animation. Emphasis on concepts and fine arts applications. Studio. Fee. Prerequisites: ART 113, 115; junior standing; instructor approval.

General Studies: CS

ART 348 Computer Animation I. (3)

fall and spring

Principles and applications of 3D animation for fine arts. Emphasis on animation techniques for expressive effects. Studio. Fee. Prerequisites: ART 346; junior standing; instructor approval.

ART 439 Mixed Media. (3)

fall and spring

Exploring visual effects by combining traditional and nontraditional methods, techniques, and concepts. 6 hours a week. May be repeated for credit. Studio. Prerequisites: a combination of ART 113 and 115 and 6 hours additional studio requirements or only instructor approval.

ART 440 New Media Concepts. (3)

fall and spring

Continued experiments with new media and interdisciplinary concerns in art. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 443. Corequisite: ART 441.

ART 441 Video Art. (1)

fall and spring

Utilizing video and audio equipment essential to the production of broadcast quality video art. 2 hours a week. May be repeated for credit. Corequisite: ART 440.

ART 442 Folk/Outsider Art. (3)

fall

Explores ideas, attitudes, and art of contemporary "self-taught," "visionary," and "outsider" artists. Research and studio practice. Lecture, studio. Prerequisites: both ART 113 and 115 or only instructor approval.

ART 443 Intermedia. (3)

fall and spring

Experimental, conceptual, and interdisciplinary studio art with emphasis on new media and technologies. 6 hours a week. May be repeated once for credit. Prerequisites: both ART 113 and 115 or only instructor approval.

ART 449 Computer Animation and Video. (3)

fall and spring

Integrates 3D fine arts animation with video and compositing. May be repeated for credit. Studio. Fee. Prerequisite: ART 348 or instructor approval.

ART 450 Computer Animation and Audio. (3)

fall and spring

Integrates audio with 3D animation for fine arts applications. Includes compositing and effects. May be repeated for credit. Studio. Fee. Prerequisites: ART 449; instructor approval.

ART 470 Computer Animation Portfolio. (3)

fall and spring

Production of videotape and CD 3D animation portfolios for fine arts and industry integrating animation, video, and audio. May be repeated for credit. Studio. Fee. Prerequisites: ART 449; instructor approval.

General Studies: CS

ART 484 Internship. (1–12)

selected semesters

ART 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Digital. (3)
- Intermedia. (3)
- Intermedia Elective. (3)
- Nonelectronic Intermedia. (3)

ART 499 Individualized Instruction. (1–3)

selected semesters

ART 530 Two-Dimensional and Three-Dimensional Computer Art. (3)

once a year

Integrates 2D and 3D computer imaging for art. Emphasizes new directions for computer imaging which accounts for media characteristics. Studio. Fee.

ART 540 Advanced Computer Art. (3)

once a year

Study of motion for 3D models, light sources, and surface effects. Assumes a comprehension of complex modeling, mapping, and lighting. Studio. Fee. Prerequisite: ART 346 or instructor approval.

ART 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Dimensional Animation
Fee.
- New Media Concepts
Fee.
- Video Art

Metals

ART 272 Jewelry I. (3)

fall and spring

Emphasis on fabrication in jewelry making. Basic techniques of cutting and piercing, forging and soldering, and forming. 6 hours a week. Fee. Prerequisite: freshman or sophomore or junior standing.

ART 372 Jewelry II. (3)

fall and spring

Fabricated approach to jewelry making. Techniques in stone setting and surface embellishment. 6 hours a week. Fee. Prerequisites: a combination of ART 113 and 115 and 272 or only instructor approval.

ART 373 Metalworking I. (3)

once a year

Compression, die, and stretch forming as applied to hollow form construction. Hot and cold forging techniques as applied to smithing. 6 hours a week. Fee. Prerequisites: a combination of ART 113 and 115 and 272 or only instructor approval.

ART 472 Advanced Jewelry. (3)

fall and spring

Jewelry making with emphasis on developing personal statements and craftsmanship. 6 hours a week. May be repeated for credit. Fee. Prerequisites: ART 372; instructor approval.

ART 473 Advanced Metalworking. (3)

once a year

Forging and forming techniques in individualized directions. 6 hours a week. May be repeated for credit. Fee. Prerequisites: ART 373; instructor approval.

ART 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Metals. (3)

ART 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Jewelry Metalworking
Fee.

Painting

ART 223 Painting I. (3)

fall, spring, summer

Fundamental concepts and materials of traditional and experimental painting media. Emphasis on preparation of painting supports, composition, and color. 6 hours a week. Prerequisites: ART 113, 115.

ART 227 Watercolor I. (3)

fall and spring

Fundamental concepts, materials, and techniques of watercolor. Emphasis on problem solving, basic skills, composition, and color. 6 hours a week. Fee. Prerequisites: ART 113, 115.

ART 323 Painting II. (3)

fall and spring

Development of competency in skills and expression. Assigned problems involve light, space, color, form, and content. 6 hours a week. Prerequisite: ART 223 or instructor approval.

ART 324 Painting III. (3)

fall and spring

Continuation of ART 323. 6 hours a week. Prerequisite: ART 323 or instructor approval.

ART 325 Figure Painting. (3)*fall and spring*

The human figure clothed and nude as the subject for painting in selected media. 6 hours a week. Fee. Prerequisites: ART 314, 323.

ART 327 Watercolor II. (3)*once a year*

Explorations of personal expression in watercolor. Continued development of watercolor skills using traditional and experimental materials and techniques. 6 hours a week. Fee. Prerequisite: ART 227.

ART 423 Advanced Painting. (3)*fall and spring*

Continuation of ART 324. 6 hours a week. May be repeated for credit. Prerequisite: ART 324.

ART 425 Advanced Figure Painting. (3)*fall and spring*

Continuation of ART 325. 6 hours a week. May be repeated for credit. Fee. Prerequisites: ART 315, 324, 325.

ART 427 Advanced Watermedia. (3)*fall and spring*

Continuation of ART 327. Advanced techniques, concepts, and methods with watercolor and other water-based media on paper. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 327 or instructor approval.

ART 494 Special Topics. (1–4)*fall and spring*

Topics may include the following:

- Painting. (3)

ART 598 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Figure Painting
Fee.
- Watercolor
Fee.

Photography

ART 201 Photography I. (3)*fall and spring*

Development of skills and techniques of black and white photography. Emphasis on camera work and darkroom procedures. Must be taken with ART 202.

ART 202 Photography I Lab. (0)*fall and spring*

See ART 201. Fee.

ART 294 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Digital Art. (3)

ART 301 Photography II. (3)*fall and spring*

Photography as an art medium with additional exploration into personal photographic aesthetics. 6 hours a week. Fee. Prerequisites: a combination of ART 113 and 115 and 201 or only instructor approval.

ART 304 Advanced Photography. (3)*fall and spring*

Interpretation and manipulation of light as a tool in the performance of expressive photography. 6 hours a week. Fee. Prerequisite: ART 301 or instructor approval.

ART 305 Color Photography I. (3)*fall and spring*

Application of color transparencies and prints to photographic art. 6 hours a week. Fee. Prerequisite: ART 304 or instructor approval.

ART 308 Digital Photographic Images. (3)*fall and spring*

Scanning, manipulation, refinement, and compositing of photographic images in the computer. Lab, studio. Fee. Prerequisites: ART 113, 115, 201; junior standing; instructor approval.

ART 394 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Digital Art. (3)

ART 401 Nonsilver Photography. (3)*fall and spring*

Recognition of the inherent characteristics of nonsilver processes and their use in communicating ideas. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 304 or instructor approval.

ART 403 Senior Photographic Projects. (3)*fall and spring*

Technical and philosophical refinement of personal aesthetic with various photographic media. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 304 or instructor approval.

ART 404 Portraiture Photography. (3)*fall and spring*

Photographing people. Critical discussions and slide lectures on issues in portraiture. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 304 or instructor approval.

ART 405 Advanced Color Photography. (3)*fall and spring*

Intensive use of subtractive color process in photographic printing. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 305 or instructor approval.

ART 406 Photo Techniques. (3)*fall and spring*

Camera and darkroom techniques with emphasis on creative control of the black and white print. 6 hours a week. Prerequisite: ART 301 or instructor approval.

ART 407 View Camera. (3)*fall and spring*

View camera and darkroom techniques. Studio, lab. Fee. Prerequisite: ART 301 or instructor approval.

ART 409 Photographic Exhibition. (3)*once a year*

Care of photographic prints, print presentation, and exhibition. Practical experience in gallery operations. 6 hours a week. May be repeated for credit. Prerequisite: ART 304 or instructor approval.

ART 494 Special Topics. (1–4)*fall and spring*

Topics may include the following:

- Collotype
Fee.
- Digital Photographic Images II. (3)
Fee.
- Digital Printing
Fee.
- Documentary Photography
Fee.
- Issues in Digital Photography
Fee.
- Landscape Photography
Fee.
- 19th-Century Photo Processes. (3)
- Photo. (3)
- Photographic Fabrications
Fee.
- Photogravure
Fee.
- Visualization and Prototyping II. (3)

ART 498 Pro-Seminar. (1–7)*selected semesters*

Topics may include the following:

- Landscape Photography: Theory
Fee.

ART 598 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Advanced Color Photography
Fee.
- Collotype
Fee.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

- Digital Photographic Images
Fee.
- Digital Printing
Fee.
- Documentary Photography
Fee.
- Issues in Digital Photography
Fee.
- Landscape Photography
Fee.
- Nonsilver Photography
Fee.
- Photographic Fabrications
Fee.
- Photogravure
Fee.
- Portraiture Photography
Fee.
- View Camera
Fee.

Printmaking

ART 253 Introduction to Printmaking. (3)

once a year

Introduction to basic monotype, intaglio, relief, and related techniques. Studio. Fee. Prerequisite: ART 113.

ART 351 Intaglio I. (3)

fall and spring

Introduces contemporary and traditional developmental techniques for black and white prints. 6 hours a week. Fee. Prerequisites: both ART 113 and 115 or only instructor approval.

ART 352 Lithography I. (3)

fall and spring

Monochromatic and color planographic printmaking utilizing stone and aluminum plate processes. 6 hours a week. Fee. Prerequisites: both ART 113 and 115 or only instructor approval.

ART 354 Screen Printing I. (3)

fall and spring

Introduces paper, direct, and photographic stencil techniques. 6 hours a week. Fee. Prerequisites: both ART 113 and 115 or only instructor approval.

ART 355 Photo Process for Printmaking I. (3)

fall

Introduces photographic principles and skills for photomechanical printmaking processes, including photosilkscreen, photolitho, and photoetching. 6 hours a week. Fee. Prerequisite: ART 201 (or its equivalent).

ART 394 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Relief Printmaking
Fee.

ART 451 Advanced Intaglio. (3)

fall and spring

Various contemporary and traditional methods of printing to achieve color prints. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 351 or instructor approval.

ART 452 Advanced Lithography. (3)

fall and spring

Continuation of ART 352. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 352 or instructor approval.

ART 454 Advanced Screen Printing. (3)

once a year

Continuation of ART 354. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 354 or instructor approval.

ART 455 Advanced Photo Processes for Printmaking. (3)

once a year

Continued study of photomechanical techniques and applications to printmaking or photographic processes. Fee. Prerequisite: ART 355 or instructor approval.

ART 456 Fine Printing and Bookmaking I. (3)

once a year

Letterpress printing and typography as fine art. Study of history, alphabets, mechanics of hand typesetting, presswork, and various forms of printed matter. Fee. Prerequisite: instructor approval.

ART 457 Fine Printing and Bookmaking II. (3)

once a year

Continuation of ART 456. Bookbinding, book design and printing, advanced typography, theory, and presswork. May be repeated for credit. Fee. Prerequisites: ART 456; instructor approval.

ART 458 Papermaking. (3)

fall and spring

History, theory, demonstrations, sheet forming, collage treatments, and 3-dimensional approaches. 6 hours a week. May be repeated for credit. Fee. Prerequisite: instructor approval.

ART 459 Monoprinting. (3)

fall and spring

Nonmultiple printed image using a variety of technical approaches. 6 hours a week. May be repeated for credit. Fee. Prerequisites: ART 311, 323 (or any 300-level printmaking class); instructor approval.

ART 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Advanced Screen Printing
Fee.
- Artists' Books
Fee.
- Experimental Paper
Fee.
- Experimental Printmaking
Fee.
- Relief Printmaking
Fee.

ART 551 Intaglio Projects. (3)

fall and spring

Materials and methods of intaglio as a matrix for exploring various contemporary issues. Specifically structured to accommodate the graduate-level drawing student with no printmaking background. Studio. Fee.

ART 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Advanced Photo Process for Printmaking
Fee.
- Artists' Books
Fee.
- Experimental Paper
Fee.
- Fine Printing and Bookmaking I
Fee.
- Fine Printing and Bookmaking II
Fee.
- Lithography
Fee.
- Monoprinting
Fee.
- Papermaking
Fee.
- Photo Processes for Printmaking
Fee.
- Relief Printmaking
Fee.
- Screen Printing
Fee.

Sculpture

ART 231 Sculpture I. (3)

fall, spring, summer

Explores sculptural forms through concepts related to basic materials. Focus on studio production, safety, aesthetic criticism, and history of sculpture. 6 hours a week. Fee. Prerequisites: both ART 113 and 115 or only instructor approval.

ART 274 Wood I. (3)*fall and spring*

Fundamental woodworking techniques to produce creative functional 3D objects. 6 hours a week. Fee.

ART 331 Sculpture II. (3)*fall and spring*

Continuation of ART 231 with an emphasis on metal fabrication as an expressive sculptural process. Techniques in welding, cutting and bending of metals and their aesthetics. 6 hours a week. Fee. Prerequisite: ART 231 or instructor approval.

ART 332 Sculpture III. (3)*fall and spring*

Explores diverse media with a focus on mold-making processes. Development of the sculpture portfolio. 6 hours a week. Fee. Prerequisite: ART 331 or instructor approval.

ART 333 Foundry Casting Methods. (3)*fall and spring*

Fine art and techniques of metal casting: mold making, foundry safety, finishing techniques, application of patinas, and history of casting. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 332 or instructor approval.

ART 374 Wood II. (3)*fall and spring*

Individual and directed problems in wood related to the production of unique functional art objects. 6 hours a week. Fee. Prerequisites: a combination of ART 113 and 115 and 274 or only instructor approval.

ART 394 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Carving
Fee.

ART 431 Special Problems in Sculpture. (3)*fall and spring*

Development of a personal approach to sculpture. Emphasis on form, individual problems, and related color technology. Professional practices and presentation. 6 hours a week. May be repeated for credit. Fee. Prerequisites: ART 332; instructor approval.

ART 432 Neon Sculpture. (3)*fall*

Techniques for creating neon in an art context. Glass tube bending and fabrication. Construction of artworks utilizing light-generating gases. 6 hours a week. May be repeated for credit. Fee. Prerequisite: instructor approval.

ART 433 Foundry Research Methods. (3)*fall and spring*

Research in foundry techniques. Studio. Pre- or corequisite: ART 333 or instructor approval.

ART 436 Architectural Sculpture. (3)*selected semesters*

Sculptural concepts as related to architecture and other man-made environments. Scale drawing, models, and relief sculpture. 6 hours a week. May be repeated for credit. Fee. Prerequisite: ART 332 or instructor approval.

ART 437 Film Animation. (3)*fall*

Production of short 16mm films that feature articulated sculptural objects, models, dolls, puppets, and graphics through the use of single-frame filming techniques. 6 hours a week. May be repeated for credit. Fee. Prerequisite: instructor approval.

ART 438 Experimental Systems in Sculpture. (3)*spring*

Simple electrical and mechanical systems that can be utilized in the context of studio art and installations. Requires active production of studio artworks. 6 hours a week. May be repeated for credit. Fee. Prerequisite: instructor approval.

ART 474 Advanced Wood. (3)*fall and spring*

Extended experience and advanced techniques in the use of wood to create functional works of art. 6 hours a week. May be repeated for credit. Fee. Prerequisites: ART 374; instructor approval.

ART 494 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Advanced Sculpture
Fee.
- Carving
Fee.
- Film: Post-Production
Fee.
- Foundry Casting Methods
Fee.
- Foundry Research Methods
Fee.
- Live Action Filmmaking
Fee.

ART 594 Conference and Workshop. (1–12)*selected semesters*

Topics may include the following:

- Carving
Fee.

ART 598 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Advanced Sculpture
Fee.
- Architectural Sculpture
Fee.
- Experimental Systems in Sculpture
Fee.
- Film Animation
Fee.
- Film: Post-Production
Fee.
- Foundry Casting Methods
Fee.
- Foundry Research Methods
Fee.
- Live Action Filmmaking
Fee.
- Neon Sculpture
Fee.
- Special Problems in Sculpture
Fee.
- Wood
Fee.

Special Studio Art**ART 582 Art Research. (1–12)***fall, spring, summer*

Independent study research using classroom facilities and supplies. Studio.

ART 621 Studio Problems. (3)*fall, spring, summer*

Advanced study. 6 hours a week each section. May be repeated for credit. Topics may include the following:

- Ceramics
Fee.
 - Drawing
 - Fiber Art
 - Intermedia
 - Jewelry Metalworking
Fee.
 - Metals
 - Painting
 - Photography
 - Printmaking
Fee.
 - Sculpture
 - Studio Art
 - Wood
- Prerequisite: instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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ART 680 Practicum: M.F.A. Exhibition. (1–15)

fall, spring, summer

Studio work in preparation for required M.F.A. exhibition. Public exhibit to be approved by the student's supervisory committee and accompanied by a final oral examination. Photographic documentation and written statement of problem. Prerequisite: approval of the student's supervisory committee.

ART 682 M.F.A. Exhibition Research. (1–12)

fall, spring, summer

M.F.A. exhibition practicum using classroom facilities and supplies. Can be used in place of ART 680. Prerequisite: approval of the student's supervisory committee.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Dance

herbergercollege.asu.edu/dance

480/965-5029

PEBE 107A

Claudia Murphey, Chair

Professors: Kaplan, Keuter, Ludwig, Murphey

Associate Professors: Jackson, Matt, Mooney

Assistant Professors: Fitzgerald, Lindholm Lane, Parrish, Rolnick, Tsukayama, Vissicaro

Associate Research Professional: Mitchell

Lecturer: Tongret

The Department of Dance is committed to providing a stimulating and diverse environment where students develop as scholars, educators, and artists through participation in innovative programs, residencies, performances, and partnerships. All students registering in a degree program enroll through the Herberger College of Fine Arts. Admission policies and procedures and the specific requirements of each Bachelor of Fine Arts degree concentration are available from the Department of Dance Advisement Office.

Admission. All new Dance majors are admitted into the preprofessional program. While in the preprofessional program, students enroll in General Studies courses, complete lower-division dance requirements and explore academic interests and career options through advising and mentoring. Completion of preprofessional courses does not ensure acceptance into the Bachelor of Fine Arts degree in Dance.

All students must petition for admission to the Bachelor of Fine Arts degree in Dance by the second semester of the sophomore year. Transfer students may request admission to a concentration after one semester in residence. Concentrations are offered in four areas: choreography, dance education, dance studies, and performance. Depending upon the concentration selected, the admission process may include a technique audition, submission of videotapes of choreographed works, submission of a writing sample, and/or sub-

mission of a written statement of intent and research interests. All students are interviewed before admission.

Specific requirements and policies related to admission to each of the concentrations are available through the Advisement Office. Admission is highly selective. Students who are not admitted to the Bachelor of Fine Arts degree in Dance are not dismissed from the university and may reapply once during the following semester or transfer to another program. Students who intend to reapply or transfer should meet with the department advisor. Registration for most upper-division dance courses is limited to students admitted to Bachelor of Fine Arts degree in Dance concentrations.

Placement Auditions. A placement audition in modern and ballet technique is required of all new students before enrolling in the preprofessional program. Placement auditions are conducted for high school seniors and transfer students in November and February. Scholarship auditions, which are highly competitive, are held in tandem with the February placement auditions. Additional opportunities to audition for placement are provided during the August and January orientation periods. To take advantage of the early registration process, new students are advised to audition for placement before high school graduation or transferring. Students are not allowed to register for dance technique classes without an assessment of their technical proficiency through audition. Criteria for placement in dance technique classes are published in student handbooks, available in the Advisement Office; the placement audition process is conducted and monitored by the Department of Dance Technique Committee. Through audition, students are placed in levels based on demonstrated abilities; therefore prior background in dance is helpful. Students unable to demonstrate proficiency for Dance major classes are recommended for placement in nonmajor classes to fulfill technique deficiencies. Credits in nonmajor course work ordinarily do not apply to Dance major requirements in modern or ballet technique.

Transfer students who have completed music theory for dance, dance production, or choreography courses at another institution are also required to take placement examinations in these areas before enrolling in intermediate or advanced course work. These examinations are offered during the August and January orientation periods.

DANCE—B.F.A.

The faculty in the Department of Dance offer a Bachelor of Fine Arts (B.F.A) degree at the undergraduate level with four areas of concentration: choreography, dance education, dance studies, and performance. All new students are admitted into the preprofessional program. Students audition or petition for admission into one of the concentrations during the sophomore year of study. Transfers may request admission into the B.F.A. degree after one semester in residence. Further details may be obtained from the Department of Dance.

Graduation Requirements. In addition to fulfilling the major requirements, students must meet all university graduation requirements and college degree requirements. At

least 45 semester hours must be upper-division courses. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 276](#).

Preprofessional Program. First-semester students in the preprofessional program should take the following courses:

DAN 134 Technique and Theory of Modern Dance	3
DAN 135 Technique and Theory of Ballet.....	2
ENG 101 First-Year Composition.....	3
Dance elective	2
General Studies courses	6
Total	16

Core Curriculum. The Dance major consists of a minimum of 59 semester hours in the dance core. All courses in the major must be completed with a grade of “C” or higher. The following areas make up the core curriculum.

Technique. Twenty-six semester hours in ballet and modern technique are required.

Performance. Two upper-division courses are required.

Theory. The following dance theory courses are required:

DAH 100 Dance in World Cultures <i>HU, G</i>	3
or DAH 191 First-Year Seminar (3)	
DAN 221 Rhythmic Theory for Dance I.....	2
DAN 222 Rhythmic Theory for Dance II.....	2
DAN 340 Dance Kinesiology.....	4
Total	11

Choreography and Improvisation. The following courses are required:

DAN 264 Improvisational Structures	3
DAN 265 Approaches to Choreography	3
Total	6

History. Choose two from the following three courses:

DAH 301 Philosophy and Criticism of Dance <i>L/HU</i>	3
DAH 302 Cross-Cultural Dance Studies <i>L/HU, G</i>	3
DAH 401 Dance History <i>HU</i>	3

Production. For the concentration in dance studies, choose one of the following two courses:

DAN 210 Dance Production I*	3
DAN 211 Dance Production II*	3

* Both courses are required for performance, choreography, and dance education concentrations.

Dance Concentration Curriculum. Each concentration in the dance curriculum—choreography, dance education, dance studies, and performance—is composed of 25 semester hours.

Choreography

Core Curriculum. See “Core Curriculum,” on this page.

Specialization. The following courses are required for the choreography specialization:

DAN 228 Dance Notation	3
or DAN 445 Laban Movement Analysis (3)	
DAN 321 Music Literature for Dance.....	3
DAN 364 Choreography and Accompaniment.....	3
DAN 365 Advanced Choreography.....	3
DAN 480 Senior Performance in Dance	4
Total	16

Production. The following two courses are required:

DAN 210 Dance Production I	3
DAN 211 Dance Production II	3

Additional requirements are listed on the check sheet available from the Department of Dance.

Dance Education

Core Curriculum. See “Core Curriculum,” on this page.

Specialization. The following courses are required for the dance education specialization:

DAN 311 Methods of Teaching Children’s Dance.....	3
or DAN 350 Methods of Teaching Contemporary Dance Technique and Composition in Secondary Education (3)	
or DAN 351 Methods of Teaching Ballet (3)	
DAN 321 Music Literature for Dance	3
DAN 359 Dance Education Theory.....	3
DAN 364 Choreography and Accompaniment.....	3
DAN 480 Senior Performance in Dance	4
Total	16

Production. The following two courses are required:

DAN 210 Dance Production I	3
DAN 211 Dance Production II	3

Dance Methods. The following three courses are required:

DAN 350 Methods of Teaching Contemporary Dance Technique and Composition in Secondary Education.....	3
DAN 351 Methods of Teaching Ballet	3

A student pursuing the dance education concentration may also choose to become certified to teach dance (K–12) in Arizona public schools. Students should apply to the College of Education in the middle of the sophomore year. To be considered for admission to the teacher certification program students must complete an admission portfolio specified by the College of Education. Students should be advised that at least 20 additional semester hours are required to complete certification requirements. For more information, consult the dance education advisor and College of Education Office of Student Services.

Additional requirements are listed on the check sheet available from the Department of Dance.

Dance Studies

Core Curriculum. See “Core Curriculum,” on this page.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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Specialization. The following courses are required for the dance studies specialization:

DAH 495 Dance Research Sources	2
DAH 496 Senior Thesis Project	2
Total	4

Twenty additional hours approved by an advisor must be taken in no more than two related fields. Additional requirements are listed on the check sheet available from the Department of Dance.

Performance

Core Curriculum. See [“Core Curriculum,” page 297.](#)

Specialization. The following courses are required for the performance specialization:

DAN 321 Music Literature for Dance	3
DAN 380 Performance Studies Practicum	3
DAN 480 Senior Performance in Dance	4
THP 101 Introduction to the Art of Acting.....	3
Total	13

Production. The following two courses are required:

DAN 210 Dance Production I	3
DAN 211 Dance Production II	3

Performance. Choose from the following three courses (six semester hours are required):

DAN 371 Dance Theatre Performance/Production	1–3
DAN 471 Dance Arizona Repertory Theatre	3–4
DAN 472 Concert Dance.....	2

Additional requirements are listed on the check sheet available from the Department of Dance.

MINOR

The department offers a minor in Dance consisting of 18 semester hours of course work, including 12 upper-division hours. A minimum grade of “C” is required in all courses. Dance minor requirements include:

Performance or choreography	3
Technique	6
Theory	6
Elective.....	3

Interested students should contact the Department of Dance for specific requirements and admission procedures.

GRADUATE PROGRAM

Dance—M.F.A.

The M.F.A. degree in Dance is a 60-semester-hour program designed to provide opportunities for the student to continue to develop in areas of dance technique, choreography, performance, and production; to gain further understanding of the philosophy, history, theory, education, and science and somatics of dance; and to begin to chart the direction of the future through technology, media opportunities, outreach, and community partnerships.

DANCE HISTORY (DAH)

DAH 100 Dance in World Cultures. (3)

fall, spring, summer

Orientation to the field of dance focusing on history, styles, cultural, and theatrical aspects of the art form from a global perspective.
General Studies: HU, G

DAH 190 Introduction to the Dance Profession. (3)

fall

Orientation to the dance profession introducing career options, wellness, technical, historical, and cultural aspects. Designed for premajors in Dance.

DAH 191 First-Year Seminar. (1–3)

selected semesters

DAH 300 Focus on Dance. (3)

fall, spring, summer

Specialized study of cultural and theatrical aspects of dance, such as social dance forms, specific genres or historical periods. May be repeated for credit. Lecture, studio.

General Studies: HU

DAH 301 Philosophy and Criticism of Dance. (3)

fall and spring

Philosophical issues in dance and dance criticism, with emphasis on written analysis and interpretation. Prerequisite: 1 semester of First-Year Composition.

General Studies: L/HU

DAH 302 Cross-Cultural Dance Studies. (3)

fall and spring

Comparative analysis of dance in diverse cultural contexts. Requires ethnographic research project. Prerequisites: completion of First-Year Composition requirement; junior standing.

General Studies: L/HU, G

DAH 401 Dance History. (3)

fall and spring

History of dance with a focus on Western forms from the Renaissance to contemporary times.

General Studies: HU

DAH 495 Dance Research Sources. (2)

fall

Investigates various resources and methods for conducting research in dance. Seminar. Prerequisite: instructor approval.

DAH 496 Senior Thesis Project. (2)

spring

Culminating research project that integrates dance and a related field of interest. Prerequisite: DAH 495.

DAH 501 Philosophy of Dance. (3)

once a year

Analyzes traditional and contemporary theories of dance with regard to issues of expression, form, and meaning.

DAH 502 Cultural Concepts of Dance. (3)

once a year

Examines the close connection between culture, dance, and movement through writings in cultural theory, dance ethnology, and philosophy.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

DANCE (DAN)

DAN 130 Dance. (2)

fall, spring, summer

Introduces styles and forms of dance; ballet, modern, jazz, tap, ballroom, ethnic. May be repeated for credit.

DAN 134 Technique and Theory of Modern Dance. (3)

fall and spring

Elementary concepts of modern dance technique. Development of movement quality and performance skills. 6 hours weekly. May be repeated for credit. Prerequisites: Dance major; placement audition.

DAN 135 Technique and Theory of Ballet. (2)*fall and spring*

Elementary ballet technique with emphasis on alignment, control, and development of the feet with proper awareness of style and phrasing. 4 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 164 Improvisation. (1)*fall and spring*

Improvisation techniques employing the basic elements of space, time, and energy. Studio.

DAN 210 Dance Production I. (3)*fall*

Theory and practice of lighting, scenery, sound, and stage management for dance production. Labs cover all areas of production. Lecture, lab.

DAN 211 Dance Production II. (3)*spring*

Theory and practice of arts management and costume design for dance production. Labs cover all areas of production. Lecture, lab.

DAN 221 Rhythmic Theory for Dance I. (2)*fall*

Elements of music, music structures, and their relationship to dance. Emphasis on rhythmic analysis and dance accompaniment.

DAN 222 Rhythmic Theory for Dance II. (2)*spring*

Continuation of DAN 221 with an emphasis on small group/movement projects in relation to musical time and structure. CD-ROM work included. Prerequisite: DAN 221 or proficiency exam.

DAN 228 Dance Notation. (3)*fall and spring*

Surveys systems of dance notation. Introduces effort-shape analysis of movement. Emphasizes learning elementary labanotation. Lecture, studio. Prerequisites: DAN 221; MUS 100.

DAN 230 Dance. (2)*fall, spring, summer*

Intermediate levels. Continuation of DAN 130. May be repeated for credit.

DAN 234 Technique and Theory of Modern Dance. (3)*fall and spring*

Intermediate concepts of modern dance technique. Development of movement quality and performance skills. 6 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 235 Technique and Theory of Ballet. (2)*fall and spring*

Advanced study of elementary ballet technique through the traditional exercises, with proper awareness of style and phrasing. 4 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 237 Beginning Pointe. (1)*fall and spring*

Study of elementary pointe technique through the traditional exercises. 2 hours weekly. May be repeated for credit. Prerequisites: basic ballet training; instructor approval.

DAN 264 Improvisational Structures. (3)*fall*

Introduces basic improvisational and choreographic principles with emphasis on current media and technology, group structures, and movement invention. Lecture, studio.

DAN 265 Approaches to Choreography. (3)*spring*

Intermediate application of basic choreographic principles with emphasis on improvisation, form, content, and evaluative skills. Lecture, studio. Prerequisite: DAN 264.

DAN 311 Methods of Teaching Children's Dance. (3)*fall and spring*

Theory and practice of teaching creative dance to children. Designed for Dance majors and related curricula, but open to all students. Lecture, studio, field experience.

DAN 321 Music Literature for Dance. (3)*fall and spring*

Historical survey of music and compositional elements relative to dance. Emphasis on analysis of choreography from a musical standpoint. Lecture, lab, CD-ROM lab. Prerequisites: both DAN 221 and 222 or only instructor approval. Pre- or corequisite: MUS 340.

DAN 330 Dance. (2)*fall, spring, summer*

Advanced levels. Continuation of DAN 230. May be repeated for credit.

DAN 334 Technique and Theory of Modern Dance. (3)*fall and spring*

Advanced concepts of modern dance technique. Development of movement quality and performance skills. 6 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 335 Technique and Theory of Ballet. (2)*fall and spring*

Intermediate ballet technique with emphasis on strength, dynamics, rhythmical impulses, and transitions with awareness of proper style and phrasing. 4 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 337 Intermediate Pointe. (1)*fall and spring*

Study of intermediate and advanced pointe technique through the traditional exercises. 2 hours weekly. May be repeated for credit. Prerequisite: DAN 237 or instructor approval.

DAN 340 Dance Kinesiology. (4)*fall and spring*

Principles of kinesiology applied to the lower extremity including identification of muscular imbalances, inherited anatomical differences, and pathomechanics in dance movement. Prerequisites: both BIO 201 and admission to a Dance B.F.A. concentration or only instructor approval.

DAN 342 Ideokinesis. (2)*fall*

Study of posture using the visualization of image/goals to facilitate improved alignment and movement efficiency. May be repeated for credit. Lecture, studio.

DAN 350 Methods of Teaching Contemporary Dance Technique and Composition in Secondary Education. (3)*spring*

Analysis and acquisition of skills and materials for teaching contemporary dance technique and composition in secondary education. Lecture, studio, field experience. Pre- or corequisite: DAN 359.

DAN 351 Methods of Teaching Ballet. (3)*spring*

Analysis and acquisition of teaching techniques and materials for ballet, jazz, and multicultural dance forms. Lecture, studio. Pre- or corequisite: DAN 359.

DAN 359 Dance Education Theory. (3)*fall*

Motivation; learning; assessment; historical, cultural, and social constructs; outreach; service; advocacy; curriculum development in dance education. Lecture, field experience.

DAN 364 Choreography and Accompaniment. (3)*fall*

Experience in the use of traditional and nontraditional musical structures as a basis for choreographic projects. Lecture, studio. Prerequisite: DAN 321.

DAN 365 Advanced Choreography. (3)*spring*

Investigation and practice of contemporary styles of choreography. Studio. Prerequisites: DAN 264 and 265 (or their equivalents).

DAN 371 Dance Theatre Performance/Production. (1–3)*fall and spring*

Performance or technical theatre work in designated dance productions. 3 hours a week per semester hour. May be repeated for credit. Prerequisite: instructor approval.

DAN 380 Performance Studies Practicum. (3)*spring*

Focus on developing rehearsal skills and achieving performance excellence through the preparation of three completed works. Studio, lab.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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DAN 423 Dance, Computers, and Multimedia. (3)

fall and spring

Introduces desktop multimedia as it relates to dance creation, education, production, and research. Lecture, lab.

General Studies: CS

DAN 434 Technique and Theory of Modern Dance. (3)

fall and spring

Preparation in the performance and comprehension of professional-level modern dance technique. 6 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 435 Technique and Theory of Ballet. (2)

fall and spring

Study of professional advanced ballet technique with emphasis on preparation for performance. 4 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 443 Bodywork for Dancers. (2)

spring

Introduces various massage therapy modalities for dancers including Shiatsu, Swedish massage, sports massage and proprioceptive neuromuscular facilitation techniques.

DAN 445 Laban Movement Analysis. (3)

spring

Theory and practice of Laban movement analysis and Bartenieff fundamentals through movement investigation, observation, notation, and analysis. Lecture, studio. Prerequisite: admission to a B.F.A. in Dance concentration.

DAN 471 Dance Arizona Repertory Theatre. (3–4)

fall and spring

Preprofessional modern dance company, emphasizing outreach and performance. Opportunity to work with guest artists and community schools and organizations. Lecture, studio. Prerequisite: instructor approval.

DAN 472 Concert Dance. (2)

fall and spring

Extensive preparation of repertory or new works created by experienced choreographers. Simulates dance company experience, culminating in performance. Studio. Prerequisites: audition; instructor approval.

DAN 480 Senior Performance in Dance. (2)

fall

Original choreography for group performance with analysis and critique of problems encountered in production. Must be repeated for a total of 4 credits. Prerequisites: DAN 364, 365.

DAN 484 Dance Internship. (1–3)

fall and spring

DAN 494 Special Topics. (1–4)

once a year

Topics may include the following:

- Concert Dance. (2)

DAN 500 Research Methods. (1–12)

selected semesters

DAN 510 Dance Stagecraft and Production. (1–3)

fall and spring

Theory of costuming, lighting, makeup, scenery, and sound as related to dance performance. May be repeated once for credit. Lecture, studio. Prerequisite: DAN 211 (or its equivalent).

DAN 521 Sound Lab. (2)

fall

Audio mixing for analog/digital recording and editing. Lecture, lab. Prerequisite: instructor approval.

DAN 522 Sound Design. (2)

spring

Focus on digital recording/editing of audio compositions for choreographic and video projects. Lecture, lab. Pre- or corequisite: DAN 423 or 521.

DAN 523 Dance, Computers, and Multimedia. (3)

fall and spring

Introduces desktop multimedia as it relates to dance creation, production, education, and research. Lecture, lab.

DAN 534 Technique and Theory of Modern Dance. (3)

fall and spring

Preparation in the performance and comprehension of professional-level modern dance for first-year graduate students. 6 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 535 Technique and Theory of Ballet. (2)

fall and spring

Graduate study of ballet technique. May be repeated for credit. Studio. Prerequisite: placement audition.

DAN 540 Advanced Problems in Dance Kinesiology. (3)

fall

Principles of kinesiology applied to the torso and shoulders. Focus on identifying muscular imbalances, pathomechanics, and analysis of dance conditioning practices. Lecture, lab.

DAN 542 Ideokinesis. (2)

fall

Theoretical examination of ideokinetic methods of facilitating postural change and movement efficiency.

DAN 545 Laban Movement Analysis. (3)

spring

Theory and practice of Laban movement analysis and Bartenieff fundamentals through movement integration, observation, critical research, notation, and analysis. Lecture, studio.

DAN 550 Graduate Dance Pedagogy: Modern. (3)

spring

Overview of the role of modern dance technique and theory in the university curriculum including current pedagogical theory, diversity, gender. May follow or precede internship in practical teaching.

DAN 551 Graduate Dance Pedagogy: Ballet. (3)

fall

Advanced analysis of teaching techniques for ballet. Prerequisite: instructor approval.

DAN 564 Solo and Group Choreography I. (3)

fall

Original choreography created for solo and group performance. Studio. Prerequisites: DAN 364 and 365 (or their equivalents).

DAN 565 Solo and Group Choreography II. (3)

spring

Continuation of DAN 564. Studio. Prerequisite: DAN 564.

DAN 571 Dance Theatre. (1–3)

fall and spring

Performance in specially choreographed dance productions. May be repeated for credit. Prerequisite: instructor approval.

DAN 580 Performance Studies Practicum. (1–3)

spring

Focus on developing rehearsal skills and achieving performance excellence through the preparation of three completed works. Studio, lab.

DAN 591 Seminar. (1–3)

fall and spring

Seminar focusing on enrichment topics, production aspects of thesis projects, teaching concerns, special lectures, films, or critiques.

DAN 634 Technique and Theory of Modern Dance. (3)

fall and spring

Preparation in the performance and comprehension of professional-level modern dance for second-year graduate students. 6 hours weekly. May be repeated for credit. Prerequisite: placement audition.

DAN 640 Paradigms for the Analysis of Dance Technique. (3)

spring

Motor learning, cognitive science, motor development, dance medicine, and somatics paradigms applied to the practice of dance technique. Prerequisite: DAN 500 or instructor approval.

DAN 664 Choreography Workshop. (1–3)

fall

Choreographic study in a seminar context with faculty and guest artists. May be repeated for credit. Studio. Prerequisites: DAN 564, 565.

DAN 671 Dance Arizona Repertory Theatre. (3–4)

fall and spring

Preprofessional modern dance company, emphasizing outreach and performance. Opportunity to work with guest artists and community schools and organizations. Lecture, studio. Prerequisite: instructor approval.

DAN 693 M.F.A. Project. (1–8)*fall, spring, summer*

Preparation for required M.F.A. project approved by the student's supervisory committee. Work is followed by a final oral examination and documentation appropriate to the project. Prerequisite: committee approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

School of Music

herbergercollege.asu.edu/music

480/965-3371

MUSIC E185

Wayne A. Bailey, Director

**Kimberly Marshall, Associate Director,
Graduate Studies**

**Karen M. Bryan, Associate Director,
Undergraduate Studies**

Regents' Professors: Hickman, Pagano

Professors: Bailey, Britton, Cosand, Crowe, Demars, Doan, Dreyfoos, Fleming, Hackbarth, Hamilton, Hill, Hoffer, Humphreys, Kliewer-Britton, Koonce, Lockwood, Marohnic, Metz, Oldani, Pilafian, Reber, Rogers, Russell, Sellheim, Shinn, Spring, Stauffer, Sunkett, Swaim, Thompson, Umberson, Williamson, Wytko

Associate Professors: Bush, Carpenter, Haefer, Holbrook, Kopta, Lyman, Marshall, May, Peterson, Rockmaker, Rodland, Smith, Solís, Wilson

Assistant Professors: Bryan, Ericson, Landschoot, Lingas, McLin, Meir, Rio, Schmidt, Schuring, Sullivan, Swartz

Senior Lecturers: Norton, Shellans

Lecturer: Tongret

Academic Professional: Campbell

The School of Music in the Katherine K. Herberger College of Fine Arts at ASU is an accredited institutional member of the National Association of Schools of Music. The requirements for entrance and graduation set forth in this catalog are in accordance with the published regulations of the association.

The School of Music is committed to the growth and development of both faculty and students so that music may be created, performed, studied, and taught with excellence.

The following statement of basic musicianship is endorsed by the School of Music:

All musicians, whether performers, composers, scholars, or teachers, share common professional needs. Every musician must to some extent be a performer, a listener, a historian, a composer, a

theorist, and a teacher. For this reason, certain subject matter areas and learning processes are common to all baccalaureate degrees in music.

Basic musicianship is developed in studies that prepare the student to function in a variety of musical roles that are supportive of his/her major concentration. All undergraduate curricula, therefore, provide the following:

1. A conceptual understanding of such musical properties as *sound, rhythm, melody, harmony, texture, and form* and opportunities for developing a comprehensive grasp of their interrelationships as they form the cognitive-affective basis for listening, composing and performing.
2. Repeated opportunities for enacting in a variety of ways the roles of listener (analysis), performer (interpretation), composer (creation), scholar (research), and teacher.
3. A repertory for study that embraces all cultures and historical periods.

All students registering in a School of Music major program enroll through the Herberger College of Fine Arts.

Audition/Admission Requirements. *All students who wish to enroll in an undergraduate music degree program are required to pass an entrance audition in their primary performing medium (instrument or voice) before being admitted to the School of Music.* Audition forms and specific audition requirements for each instrument or voice may be obtained upon request by contacting the School of Music. Official dates for these auditions are set for each academic year.

Until the audition process is finished, all students interested in majoring in Music at ASU enter the university in the preprofessional program. The preprofessional program is designed to prepare students who have performance deficiencies and/or music academic deficiencies for entry into the major degree program. Upon successful completion of the audition, the student is admitted to his or her specified degree option.

Students who wish to be Music majors who do not successfully complete the audition are allowed to remain in the preprofessional program for two semesters (excluding summer and winter sessions). They are allowed to reaudition two times in addition to the initial audition; these additional auditions may take place either during or at the end of each fall or spring semester that the student is enrolled under this program. During these semesters, the student is allowed to enroll in music ensembles; concert attendance; and general studies courses to be chosen through consultation with a School of Music academic advisor. Students are also encouraged to obtain private instruction on their major instrument through either the School of Music preparatory program or with private instructors. These private instructions are not required and do not generate university course credit hours. The reauditions are heard and evaluated by School of Music faculty.

Admission to the composition concentration is subject to the approval of the composition faculty based upon an evaluation of the student's compositions and/or interview.

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See "[General Studies](#)," page 83.

Diagnostic Examinations. Entering students, including *all* transfer students, must take a diagnostic examination in piano during orientation week of their first semester on campus, regardless of previous piano course work completed. All students are required to reach a minimum level of piano proficiency.

Continuation in the composition program is subject to review in the sophomore or junior year.

All Music Education majors, including transfer and post-baccalaureate students, must perform an additional audition before being admitted to the teacher education program. Normally, this audition occurs during the sophomore year.

All students majoring in Music Therapy must pass MUE 211 Music in Recreation and a music therapy faculty review and screening interview before being passed into upper-division study.

MUSIC—B.A.

The Bachelor of Arts degree requires a minimum of 120 semester hours for graduation.

The Music major consists of 50 semester hours and includes the requirements that follow for each area of study.

In addition to fulfilling the major requirements, students must meet all university graduation requirements and college degree requirements. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 276](#).

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 320 Modal Counterpoint	2
or MTC 321 Tonal Counterpoint (2)	
MTC 327 Form and Analysis I	3
MTC 422 Musical Acoustics	3
Total	20

Music History. Three semester hours of MHL 341 Music History and three semester hours of MHL 342 Music History are required. Nine elective upper-division hours in music history and/or theory are required.

Major Performing Medium. Eight semester hours of MUP 111 Studio Instruction or MUP 311 Studio Instruction are required. At least four of these hours must be at ASU.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

The remaining semester hours in music are selected by the student in consultation with an advisor. Areas of study may include ethnomusicology, music education, music history, music theory, and performance. At least 23 semester hours, 12 in the field of specialization, must be in the upper division. Students must select sufficient elective courses to complete the 120 hours required for graduation.

BACHELOR OF MUSIC DEGREE

All Bachelor of Music (B.M.) degree programs require 120 semester hours for graduation excluding Music Education (125 to 130 semester hours) and Music Therapy (129 semester hours). The B.M. curriculum offers majors in Music Education, Music Therapy, Performance, and Theory and Composition.

The curricula for the Music Education and Music Therapy majors require more than 120 semester hours. A student wishing to complete these programs in four years is required to take more than 15 semester hours per semester or to attend summer sessions.

The music curriculum for the B.M. majors on the pages which follow consists of 79 semester hours. The requirements for each major are listed on this page. In addition, the Music Education major provides certification to students interested in teaching in the public schools.

In addition to fulfilling the major requirements, students must meet all university graduation requirements and college degree requirements. See [“University Graduation Requirements,” page 79](#), and [“College Degree Requirements,” page 276](#).

MUSIC EDUCATION—B.M.

Choral-General Concentration

This degree program may include instrumental music as a minor teaching field.

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 327 Form and Analysis I	3
Total	15

Music History. The following music history courses are required:

MHL 341 Music History	3
MHL 342 Music History	3
Total	6

Conducting. The following conducting courses are required:

MUP 209 Beginning Choral Conducting	1
MUP 339 Choral Conducting	2
Total	3

Music Education. The following music education courses are required:

MUE 110 Introduction to Music Education	1
MUE 313 Elementary Music Methods	3
MUE 315 General Music in the Secondary Schools	2
MUE 480 Choral Methods	3
Total	9

Major Performing Medium. Eight semester hours of MUP 111 Studio Instruction and eight semester hours of

MUP 311 Studio Instruction are required to obtain a proficiency level necessary to meet the graduation recital requirement. MUP 495 Performance completes the requirement.

Minor Performing Medium. A proficiency equal to six semesters of study in keyboard or voice (whichever is not the major performing medium) is required. Students wishing to extend their proficiency beyond this level may continue to study in MUP 321 Studio Instruction.

Ensemble. Eight different semesters of participation, including at least six semesters of MUP 352 Concert Choir and/or MUP 353 University Choir, four of which must be at ASU, are required.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Instrumental Concentration

It is strongly recommended that this degree program include courses in choral music or courses in jazz education.

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 327 Form and Analysis I	3
Total	15

Music History. The following music history courses are required:

MHL 341 Music History	3
MHL 342 Music History	3
Total	6

Conducting. The following conducting courses are required:

MUP 210 Beginning Instrumental Conducting	1
MUP 340 Instrumental Conducting	2
Total	3

Music Education. The following music education courses are required:

MUE 110 Introduction to Music Education	1
MUE 315 General Music in the Secondary Schools	2
MUE 317 Educational Methods for Violin and Viola	1
MUE 318 Educational Methods for Cello and String Bass	1
MUE 327 Educational Methods for Trumpet and Horn	1
MUE 328 Educational Methods for Trombone, Euphonium, and Tuba	1
MUE 336 Educational Methods for Percussion	1
MUE 337 Educational Methods for Flute, Clarinet, and Saxophone	1
MUE 338 Educational Methods for Double Reed Instruments	1
MUE 481 Instrumental Practicum/Methods	5
MUE 482 Instrumental Practicum/Methods	5
Total	20

Major Performing Medium. Eight semester hours of MUP 111 Studio Instruction and eight semester hours of MUP 311 Studio Instruction are required to obtain a proficiency level necessary to meet the graduation recital requirement. MUP 495 Performance completes the requirement.

Ensemble. Eight different semesters of participation in an ensemble are required, four of which must be at ASU. Two of the four ASU semesters must be in marching band. Wind and percussion players must have a minimum of six semesters of MUP 361 Marching and Concert Bands or equivalent large ensemble.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

String Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 327 Form and Analysis I	3
Total	15

Music History. Three semester hours of MHL 341 Music History and three semester hours of MHL 342 Music History are required.

Conducting. The following conducting courses are required:

MUP 210 Beginning Instrumental Conducting	1
MUP 340 Instrumental Conducting	2
Total	3

Music Education. The following music education courses are required:

MUE 110 Introduction to Music Education	1
MUE 315 General Music in the Secondary Schools	2
MUE 317 Educational Methods for Violin and Viola	1
or MUE 318 Educational Methods for Cello and String Bass (1)	
MUE 327 Educational Methods for Trumpet and Horn	1
or MUE 328 Educational Methods for Trombone, Euphonium, and Tuba (1)	
MUE 335 Educational Methods for Guitar	1
MUE 336 Educational Methods for Percussion	1
MUE 337 Educational Methods for Flute, Clarinet, and Saxophone	1
or MUE 338 Educational Methods for Double Reed Instruments (1)	
MUE 482 Instrumental Practicum/Methods	5

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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MUE 485 String Practicum/Methods	5
Total	18

Also required are three semesters of MUP 121 Studio Instruction and one semester in each of the three stringed instruments other than the major instrument.

Major Performing Medium. Eight semester hours of MUP 111 Studio Instruction and eight semester hours of MUP 311 Studio Instruction are required to obtain a proficiency level necessary to meet the graduation recital requirement. MUP 495 Performance completes the requirement.

Ensemble. Eight different semesters of participation in an ensemble are required, four of which must be at ASU. Six semesters of MUP 345 Symphony Orchestra or equivalent are required.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Recommended Elective. MUE 313 Elementary Music Methods is recommended.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

MUSIC THERAPY—B.M.

Students are eligible to apply for the Certification Exam offered by the Certification Board for Music Therapists upon completion of the requirements for graduation.

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 327 Form and Analysis I	3
MTC 422 Musical Acoustics	3
Total	18

Music History. The following music history courses are required:

MHL 341 Music History	3
MHL 342 Music History	3
Total	6

Conducting. One of the following two courses is required:

MUP 209 Beginning Choral Conducting	1
MUP 210 Beginning Instrumental Conducting	1

Music Education. The following music education courses are required:

MUE 211 Music in Recreation	2
MUE 313 Elementary Music Methods	3
MUE 335 Educational Methods for Guitar	1
MUE 336 Educational Methods for Percussion	1
MUE 389 Repertoire for Music Therapy	3
Total	10

Music Therapy. The following music therapy courses are required:

MUE 161 Introduction to Music Therapy	2
MUE 261 Music Therapy as a Behavioral Science	2
MUE 361 Music Therapy Theory and Practice in Psychopathology	3
MUE 362 Music Therapy Techniques	3
MUE 381 Music Therapy Research <i>L</i>	3
MUE 384 Therapy Preclinical I	1
MUE 385 Therapy Preclinical II	1
MUE 386 Therapy Preclinical III	1
MUE 387 Therapy Preclinical IV	1
MUE 388 Therapy Preclinical V (elective)	1
MUE 441 Psychology of Music	3
MUE 475 Group Process and Music Therapy	1
MUE 476 Internship in Music Therapy	1
Total	23

Major Performing Medium. A minimum of twelve semester hours are required in the major performing medium, which must include at least four semester hours of MUP 311 Studio Instruction.

Voice. Two semesters of study in voice are required.

Ensembles. Six semesters of ensemble participation are required with at least four semesters in large groups.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Additional Requirements. These courses are also required:

BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
PGS 101 Introduction to Psychology <i>SB</i>	3
PGS 466 Abnormal Psychology <i>SB</i>	3
PSY 230 Introduction to Statistics <i>CS</i>	3
or STP 226 Elements of Statistics <i>CS</i> (3)	
SOC 101 Introductory Sociology <i>SB</i>	3
Four semesters of dance (DAN only)	4
Total	20

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

PERFORMANCE—B.M.

Guitar Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 320 Modal Counterpoint	2
or MTC 321 Tonal Counterpoint (2)	
MTC 327 Form and Analysis I	3
Total	17

Music History. Three semester hours of MHL 341 Music History and three semester hours of MHL 342 Music History are required.

Repertoire and Pedagogy. Two semester hours of MUP 451 Repertoire and two semester hours of MUP 481 Performance Pedagogy and Materials are required.

Conducting. MUP 210 Beginning Instrumental Conducting is required.

Major Performing Medium. Sixteen semester hours of MUP 127 Studio Instruction and 16 semester hours of MUP 327 Studio Instruction are required to attain a proficiency level necessary to meet the graduation recital requirements. A half recital (MUP 495 Performance) and a full recital (MUP 496 Performance) are also required.

Ensemble. Eight semester hours of ensemble are required within a minimum of six different semesters. Four of the eight semester hours must be MUP 379 Chamber Music Ensembles: Guitar.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

Jazz Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 315 Modern Arranging	2
MTC 316 Modern Arranging	2
MTC 320 Modal Counterpoint	2
or MTC 321 Tonal Counterpoint (2)	
MTC 327 Form and Analysis I	3
MTC 440 Jazz Theory and Ear Training	2
MTC 441 Jazz Composition	2
Total	25

Music History. The following music history courses are required:

MHL 341 Music History	3
MHL 342 Music History	3
MHL 352 The Evolution of Jazz <i>H</i>	3
Total	9

Conducting. MUP 210 Beginning Instrumental Conducting is required.

Major Performing Medium. Eight semester hours of MUP 111 Studio Instruction and eight semester hours of MUP 311 Studio Instruction are required to obtain a proficiency level necessary to meet the graduation recital requirements. Two half recitals (MUP 495 Performance) are required, with one in the jazz idiom.

Improvisation. The following courses are required:

MUP 141 Jazz Fundamentals	1
MUP 142 Jazz Fundamentals	1
MUP 217 Improvisation Workshop	2

MUP 218 Improvisation Workshop	2
MUP 417 Advanced Improvisation	2
MUP 418 Advanced Improvisation	2
Total	10

Workshops. The following courses are required:

MUP 319 Recording Studio Techniques	2
MUP 235 Jazz Piano	1
MUP 236 Jazz Piano	1
Total	4

Ensemble. Eight semesters of ensemble are required, including six semesters of MUP 379 Chamber Music Ensembles and two semesters of MUP 386 Jazz Band.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

Keyboard Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 320 Modal Counterpoint	2
or MTC 321 Tonal Counterpoint (2)	
MTC 327 Form and Analysis I	3
MTC 425 Studies in 20th-Century Theory	3
or MTC 428 Form and Analysis II (3)	
Total	20

Music History. The following music history courses are required:

MHL 341 Music History	3
MHL 342 Music History	3
Total	6

Repertoire and Pedagogy. The following courses are required:

MUP 451 Repertoire	2
MUP 481 Performance Pedagogy and Materials	2
or MUP 482 Piano Pedagogy (2)	
Total	4

Conducting. One of the following two courses is required:

MUP 209 Beginning Choral Conducting	1
MUP 210 Beginning Instrumental Conducting	1

Harpischord. One semester hour of harpischord is required.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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Major Performing Medium. Sixteen semester hours of MUP 127 Studio Instruction and 16 semester hours of MUP 327 Studio Instruction are required to attain a proficiency level necessary to meet the graduation recital requirements. A half recital (MUP 495 Performance) and a full recital (MUP 496 Performance) are required.

Ensemble. Eight semester hours of ensemble within a minimum of six different semesters are required, including two semesters of accompanying and two semesters of chamber music.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Music Theatre Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 327 Form and Analysis I	3
Total	15

Music History. The following music history courses are required:

MHL 341 Music History	3
MHL 342 Music History	3
Total	6

Major Performing Medium. Eight semester hours of MUP 111 Studio Instruction and eight semester hours of MUP 311 Studio Instruction are required to attain a proficiency level necessary to meet the graduation requirement of a public performance of two roles, both of which must be of major proportion.

Music Theatre. Five semesters of MUP 370 Music Theatre: Techniques; four semesters of MUP 371 Music Theatre: Workshops; eight semesters of MUP 373 Music Theatre: Performance; two semesters of MUP 374 Music Theatre: Production; and one semester of MUP 451 Repertoire: Broadway Musicals are required.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Additional Requirements. Nine semester hours in theatre and 11 semester hours in dance are required.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

Opera Option. For those students whose goal is opera performance, the following substitutions to the course of study may be made: MUP 451 Repertoire: Opera instead of MUP 451 Repertoire: Broadway Musicals, and two semesters of MUP 371 Music Theatre: workshops (Aria Preparation) and three semesters of MUP 250 Diction for Singers instead of five semester hours of dance. Permission of the director of the music theatre program is required.

Orchestral Instrument Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 320 Modal Counterpoint	2
or MTC 321 Tonal Counterpoint (2)	
MTC 327 Form and Analysis I	3
MTC 425 Studies in 20th-Century Theory	3
Total	20

Music History. The following courses are required:

MHL 341 Music History	3
MHL 342 Music History	3
Total	6

Repertoire and Pedagogy. One of the following two courses is required:

MUP 451 Repertoire	2
MUP 481 Performance Pedagogy and Materials	2

Conducting. The following courses are required:

MUP 210 Beginning Instrumental Conducting	1
MUP 340 Instrumental Conducting	2
Total	3

Major Performing Medium. Sixteen semester hours of MUP 127 Studio Instruction and 16 semester hours of MUP 327 Studio Instruction are required to attain a proficiency level necessary to meet the graduation recital requirements. A half recital (MUP 495 Performance) and a full recital (MUP 496 Performance) are required.

Ensemble. Eight semester hours of large ensembles within a minimum of six different semesters are required plus four semester hours of small ensembles within a minimum of four different semesters.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

Piano Accompanying Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 320 Modal Counterpoint	2
or MTC 321 Tonal Counterpoint (2)	
MTC 327 Form and Analysis I	3
MTC 428 Form and Analysis II	3
Total	20

Music History. The following courses are required:

MHL 341 Music History.....	3
MHL 342 Music History.....	3
Total	6

Diction and Repertoire. The following courses are required:

MUP 250 Diction for Singers.....	1
MUP 451 Repertoire.....	2
MUP 453 Song Literature.....	2
MUP 454 Song Literature.....	2
Total	7

Conducting. One of the following two courses is required:

MUP 209 Beginning Choral Conducting	1
MUP 210 Beginning Instrumental Conducting	1

Major Performing Medium. The following courses are required:

MUP 127 Studio Instruction.....	16
MUP 311 Studio Instruction.....	8
MUP 337 Studio Instruction: Piano Accompanying	8
Total	32

In addition, each student accompanies two half recitals (MUP 495 Performance), one for a singer and one for an instrumentalist, during his or her junior year. (A half solo recital may be substituted for either of the above.) During the senior year, the student accompanies two full recitals (MUP 496 Performance), one vocal and one instrumental.

Ensemble. Two semesters of MUP 379 Chamber Music Ensembles, one semester of MUP 379 Chamber Music Ensembles: Piano, four semesters of MUP 388 Piano Accompanying, one semester of MUP 487 Piano Accompanying, and two semesters of ensemble elective (minimum of six different semesters) are required.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Voice Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century.....	3
MTC 222 Music Theory: 19th Century.....	3
MTC 223 Music Theory: 20th Century.....	3
MTC 320 Modal Counterpoint.....	2
or MTC 321 Tonal Counterpoint (2)	
MTC 327 Form and Analysis I.....	3
Total	17

Music History. The following music history courses are required:

MHL 341 Music History.....	3
MHL 342 Music History.....	3
Total	6

Repertoire and Pedagogy. Two semester hours of MUP 451 Repertoire and two semester hours of MUP 481 Performance Pedagogy and Materials are required.

Also required are two semester hours selected from MUP 453 Song Literature or 454 Song Literature or a repeated enrollment of MUP 451 Repertoire.

Diction. Three semester hours of MUP 250 Diction for Singers is required, which includes one hour each of Italian, German, and French.

Conducting. MUP 209 Beginning Choral Conducting is required.

Major Performing Medium. Sixteen semester hours of MUP 127 Studio Instruction and 16 semester hours of MUP 327 Studio Instruction are required to attain a proficiency level necessary to meet the graduation recital requirements. A half recital (MUP 495 Performance) and a full recital (MUP 496 Performance) are required.

Ensemble. Four different semesters of large vocal ensembles are required plus five semester hours of ensembles within five different semesters to be selected from large and/or small ensembles.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Language. Sixteen semester hours are required in more than one foreign language, chosen from French, German, and Italian. A student may select one year of one language and one semester of the others, chosen in conference with the advisor.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

THEORY AND COMPOSITION—B.M.

Composition Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century.....	3
MTC 222 Music Theory: 19th Century.....	3
MTC 223 Music Theory: 20th Century.....	3
MTC 320 Modal Counterpoint.....	2
MTC 321 Tonal Counterpoint	2
MTC 327 Form and Analysis I.....	3
MTC 432 Instrumentation	2
MTC 433 Orchestration.....	2
MTC 436 Electronic Studio Techniques I	2
Total	25

An additional five hours, to be selected from MTC 422, 425, 428, 429, 430, 437, and 441 are required.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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Three semesters of MTC 123 Beginning Composition and four semesters of MTC 323 Composition are also required. At least three semesters of MTC 323 Composition must be taken at ASU.

Music History. Three semester hours of MHL 341 Music History and three semester hours of MHL 342 Music History are required.

Also required are three upper-division elective semester hours in music history.

Conducting. Choose between the two combinations of courses: MUP 209 Beginning Choral Conducting and MUP 339 Choral Conducting *or* MUP 210 Beginning Instrumental Conducting and MUP 340 Instrumental Conducting.

Applied Music. Ten semester hours of study in applied music are required, at least eight of which must be in MUP 111 Studio Instruction.

Ensemble. Six semesters of participation in an ensemble are required.

Final Project. MTC 495 Final Project is required.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.



John Metz, professor of music, collaborates with Barbara Bailey.

Tim Trumble photo

Additional Requirements. At least four hours of electives to be chosen from MTC, MHL, or MUP (excluding courses taken to meet Class Piano proficiency) are required. MHL 447 Music Since 1900 may be used to satisfy the General Studies L requirement.

Theory Concentration

Music Theory. The following music theory courses are required:

MTC 125 Basic Music Theory	3
MTC 221 Music Theory: 18th Century	3
MTC 222 Music Theory: 19th Century	3
MTC 223 Music Theory: 20th Century	3
MTC 320 Modal Counterpoint	2
MTC 321 Tonal Counterpoint	2
MTC 323 Composition	2-3
MTC 327 Form and Analysis I	3
MTC 422 Musical Acoustics	3
MTC 425 Studies in 20th-Century Theory	3
MTC 428 Form and Analysis II	3
MTC 496 Theory Project	3
Total	33-34

Also required are 10 semester hours of electives in MTC courses at the 300 level or above, to be chosen in consultation with advisor.

Music History. Three semester hours of MHL 341 Music History and three semester hours of MHL 342 Music History are required.

Also required are three upper-division elective semester hours in music history.

Conducting. Choose between the two combinations of courses: MUP 209 Beginning Choral Conducting and MUP 339 Choral Conducting *or* MUP 210 Beginning Instrumental Conducting and MUP 340 Instrumental Conducting.

Applied Music. Twelve semester hours of study in applied music are required, eight of which must be in MUP 111 Studio Instruction.

Ensemble. Eight semesters of participation in an ensemble are required.

Final Project. MTC 496 Theory Project is required.

Recital Attendance. Six semesters of MUP 100 Concert Attendance are required.

Diagnostic Examination. Four semesters of class piano (MUP 131, 132, 231, 232), unless waived by a diagnostic examination at the time of entrance, are required.

Additional Requirements. MHL 447 Music Since 1900 may be used to satisfy the General Studies L requirement.

MUSIC MINOR

The School of Music offers a minor in Music consisting of 20 semester hours of course work. A minimum grade of "C" is required in all courses.

MHL 341 Music History	3
MHL 342 Music History	3
MTC 125 Basic Music Theory	3

MTC 221 Music Theory: 18th Century	3
Electives*	8
Total	20

* Electives may be chosen from MUS, MHL, MTC, and selected MUP courses. The minor does not include Studio Instruction.

Diagnostic Examination. Students pursuing a minor in music must first take a Theory Diagnostic Exam. This exam may be taken in the Music Building's Electronic Classroom, room W-225.

Interested students should contact the School of Music for specific requirements and admission procedures.

GRADUATE PROGRAMS

The faculty in the School of Music offer graduate programs leading to the following degrees: Master of Arts, Master of Music, and Doctor of Musical Arts. Refer to the ["Herberger College of Fine Arts Graduate Degrees and Majors" table, page 278](#), for a list of majors and concentrations. A document on graduate degree programs in music may be obtained by contacting the School of Music. See the *Graduate Catalog* for information on all graduate degrees.

MUSIC HISTORY/LITERATURE (MHL)

MHL 201 MacLiteracy for Musicians. (3)

fall, spring, summer

Instruction in basic Macintosh computer literacy, including generic applications and music-specific programs with hands-on experience. Lecture, lab.

General Studies: CS

MHL 341 Music History. (3)

fall and spring

Western music from the Greeks to the present day. Need not be taken in sequence with MHL 342. Prerequisite: MTC 221.

MHL 342 Music History. (3)

fall and spring

See MHL 341. Prerequisite: MTC 221.

MHL 344 Music in World Cultures. (3)

spring

Examines the relations among music, dance, theatre, religion, and social status in Asia, Africa, Oceania, Europe, and the United States.

General Studies: HU, G

MHL 352 The Evolution of Jazz. (3)

selected semesters

Origin, development, and styles of jazz music and its exponents. Prerequisite: MTC 223.

General Studies: H

MHL 363 Survey of Russian Music. (3)

fall in odd years

Examines music and musical life in Russia, the Soviet Union, and the post-Soviet C.I.S. from the Middle Ages to the present. Lecture, discussion. Prerequisite: MHL 342 or instructor approval.

General Studies: HU

MHL 438 Music in the Classic Era. (3)

fall in even years

Development of the classic style of the 18th century; major works of Haydn, Mozart, and Beethoven. Prerequisites: MHL 341, 342; MTC 327.

General Studies: H

MHL 439 Music in the 19th Century. (3)

spring

European art music after Beethoven. Prerequisites: MHL 341, 342; MTC 327.

General Studies: L, H

MHL 441 Music of the Baroque Era. (3)

fall in odd years

Works of major composers and stylistic tendencies of the period. Prerequisites: MHL 341, 342; MTC 327.

General Studies: L

MHL 447 Music Since 1900. (3)

fall and summer

Survey of the works by major composers and stylistic trends. Prerequisites: MHL 341, 342; MTC 327.

General Studies: L

MHL 456 History of Opera. (3)

spring in odd years

Development of opera from its creation ca. 1600 to present. Emphasis placed on major stylistic developments and representative works. Prerequisites: MHL 341, 342; MTC 222.

MHL 466 North American Indian Music. (3)

spring in odd years

Various styles of Indian music in the United States, Canada, and Mexico. Open to Music majors and nonmajors.

General Studies: L/HU, C

MHL 532 Music Bibliography. (3)

fall

Major historical and analytical writings; systematic and historical collections of music. Prerequisite: reading knowledge of a foreign language recommended.

MHL 535 Medieval Music. (3)

spring in odd years

Music of Europe in the Middle Ages, Gregorian chant, religious and secular monophony and polyphony to 1400.

MHL 536 Music of the Renaissance. (3)

spring in even years

Music in Europe, with emphasis on stylistic concepts and changes, ca. 1400–1580.

MHL 544 World Music I. (3)

fall in odd years

Music of traditional and folk cultures of Africa, Europe, and the Americas.

MHL 545 World Music II. (3)

fall in even years

Traditional, folk, and art music of the Pacific, Near East, and Asia.

MHL 547 Topics in American Music. (3)

selected semesters

Selected topics in the history of music. Composers working in the Americas with emphasis upon music since 1900.

MHL 557 Topics in Symphonic Literature. (3)

spring in even years

Examines the evolution of the symphony and symphonic poem from the early classic era through the 19th century, with emphasis on the analysis of selected works.

MHL 564 History of Music Instruments. (3)

fall in even years

Survey of the history and development of music instruments in traditional, folk, and art cultures.

MHL 566 Area Studies in Ethnomusicology. (3)

spring

Study of the music of a particular culture, country, or area (e.g., music of Mexico, Latin America, China, Africa). May be repeated for credit.

MHL 568 Introduction to Ethnomusicology. (3)

fall in odd years

Introduces the theory and methodology of the discipline, including bibliography, fieldwork, transcription, analysis, and organology.

MHL 575 History of Choral Music. (3)

fall

Major choral works.

MHL 591 Seminar. (1–12)

fall and spring

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

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MHL 592 Research. (1–12)

fall and spring

MHL 599 Thesis. (1–12)

fall and spring

MHL 644 Notation of Polyphonic Music. (3)

spring in even years

Music notation from the 15th through 17th centuries, including problems of transcription into modern notation.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses;](#)" page 56.

MUSIC THEORY AND COMPOSITION (MTC)

MTC 123 Beginning Composition. (2)

fall and spring

Intended for freshmen and sophomores in the composition concentration. Introduces composing. May be repeated for credit. Prerequisite: instructor approval.

MTC 125 Basic Music Theory. (3)

fall and spring

Notation, scales, keys, modes, intervals, chords, basic part writing. Development of related aural skills through sightsinging and dictation. Prerequisite: Music major or instructor approval.

MTC 221 Music Theory: 18th Century. (3)

fall and spring

Styles, techniques, and idioms of 18th-century music; emphasizes analysis, composition (part writing), and related aural skills, with applications for performance. Prerequisite: MTC 125.

MTC 222 Music Theory: 19th Century. (3)

fall and spring

Styles, techniques, and idioms of 19th-century music; emphasizes analysis, composition (part writing), and related aural skills, with applications for performance. Prerequisite: MTC 221.

MTC 223 Music Theory: 20th Century. (3)

fall and spring

Styles, techniques, and idioms of 20th-century music; emphasizes innovative treatments of musical elements; related aural skills. Prerequisite: MTC 222.

MTC 315 Modern Arranging. (2)

fall

Techniques in arranging for the contemporary jazz, radio, television, and studio orchestra. Prerequisite: MTC 223.

MTC 316 Modern Arranging. (2)

spring

Continuation of MTC 315. Prerequisite: MTC 315.

MTC 320 Modal Counterpoint. (2)

fall

Counterpoint based on 16th-century vocal polyphonic style. Prerequisite: MTC 221.

MTC 321 Tonal Counterpoint. (2)

spring

Counterpoint based on 18th-century polyphonic style. Prerequisite: MTC 221.

MTC 323 Composition. (2–3)

fall and spring

Writing music compositions, with emphasis on basic techniques and smaller structures. May be repeated for credit. Prerequisite: 3 semesters of MTC 123 or instructor approval.

MTC 327 Form and Analysis I. (3)

fall and spring

Organizing elements in the most important contrapuntal and homophonic musical forms from the Renaissance through the 19th century. Prerequisite: MTC 222.

MTC 422 Musical Acoustics. (3)

fall

Properties of sound and tone. Harmonic series, instruments, the ear, auditorium acoustics, and the reproduction of sound. Assumes a thorough knowledge of musical notation, intervals, scales, and harmony, or 2 years of music theory.

MTC 425 Studies in 20th-Century Theory. (3)

fall

Continued development of analytical techniques and aural skill, with an examination of theoretical systems applicable to 20th-century music. Prerequisite: MTC 223.

MTC 428 Form and Analysis II. (3)

spring

Organizing principles of the large forms of musical composition in the 19th and 20th centuries. Prerequisite: MTC 327.

MTC 429 Canon and Fugue. (2)

fall in odd years

Writing of canons and fugues in tonal style. Prerequisite: MTC 321.

MTC 430 20th-Century Counterpoint. (2)

spring in even years

Counterpoint studies utilizing 20th-century idioms. Prerequisite: MTC 223.

MTC 432 Instrumentation. (2)

fall in even years

Study of the characteristics and performance techniques of individual orchestral instruments. Prerequisite: MTC 223.

MTC 433 Orchestration. (2)

spring in odd years

Theoretical and practical study of scoring music for orchestra. Prerequisite: MTC 432.

MTC 436 Electronic Studio Techniques I. (2)

fall

Principles of analog electronic music systems and their application in the composition of electronic music. Assumes a thorough knowledge of music notation and intervals.

MTC 437 Electronic Studio Techniques II. (2)

spring

Principles of digital electronic music systems and their applications in the composition of electronic music. Prerequisite: MTC 436.

MTC 440 Jazz Theory and Ear Training. (2)

fall

Advanced study of jazz harmonic systems. Daily oral drills. Prerequisite: MTC 223.

MTC 441 Jazz Composition. (2)

fall

Creative writing in the smaller forms and in the idiom of jazz. Prerequisite: MTC 321.

MTC 495 Final Project. (0)

fall and spring

Half recital of compositions or approval of a large-scale composition or a research paper.

MTC 496 Theory Project. (3)

fall and spring

Supervised individual writing project dealing with music theory.

MTC 516 Baroque Music. (3)

spring in even years

Detailed analysis of selected examples of music from the Baroque period.

MTC 517 Classic Music. (3)

spring in odd years

Detailed analysis of selected examples of music from the Classic period.

MTC 518 Romantic Music. (3)

fall in even years

Detailed analysis of selected examples of music from the Romantic period.

MTC 519 Late 19th-/Early 20th-Century Music. (3)

fall in odd years

Detailed analysis of selected examples of music from the late 19th and early 20th centuries.

MTC 520 Analytical Techniques. (3)

spring and summer

Analytical techniques systematically applied to music. Concentration on structural and compositional procedures.

MTC 523 Advanced Composition. (2–3)*fall and spring*

Advanced music composition, including complex techniques and larger structure. May be repeated for credit. Prerequisite: instructor approval.

MTC 525 Pedagogy of Theory. (3)*fall in even years*

Practices and principles of teaching music theory. Emphasizes most desirable and practical offerings possible. Comparative studies of existing practices.

MTC 527 History of Music Theory. (3)*selected semesters*

Theory from Pythagoras to the 16th century. Need not be taken in sequence with MTC 528.

MTC 528 History of Music Theory. (3)*selected semesters*

Theory from the 17th century to the present. Need not be taken in sequence with MTC 527.

MTC 555 Computer Music Notation. (2)*selected semesters*

Instruction in preparing score and parts of music compositions using various music-notation software packages. Credit cannot be applied toward the graduate theory requirement. Lecture, lab. Prerequisite: instructor approval.

MTC 591 Seminar. (1–12)*fall and spring***MTC 592 Research. (1–12)***fall and spring***MTC 599 Thesis. (1–12)***fall and spring***MTC 647 Directions in New Music. (3)***selected semesters*

Studies in contemporary idioms and aesthetics drawn from recent works of visiting composers; involves analytical discourse, critical writing, and applied concepts in composition. Lecture, discussion, exercise. Prerequisite: instructor approval.

MTC 723 Advanced Composition. (3)*fall and spring*

Special problems in writing in complex forms and textures. May be repeated for credit. Studio.

MTC 755 Music Composition Technology. (3)*selected semesters*

Advanced study in digital sampling, synthesis, sequencing, computer-generated sound, and computer/performer interfaces. May be repeated for credit. Lecture, lab. Prerequisites: MTC 436 and 437 (or their equivalents).

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56](#).

MUSIC EDUCATION (MUE)**MUE 110 Introduction to Music Education. (1)***spring*

Overview of music education. Orientation to student characteristics, teacher roles, and foundations of philosophy and history. Requires school observations.

MUE 161 Introduction to Music Therapy. (2)*fall*

Overview of the profession of music therapy and its applications in mental health, rehabilitation, and special education.

MUE 211 Music in Recreation. (2)*fall*

Materials, methods, and organizational structures appropriate for recreational music. Prerequisite: ability to read music, as determined by the instructor.

MUE 261 Music Therapy as a Behavioral Science. (2)*fall*

Orientation to preclinical experience with emphasis on observation skills, assessment, goal setting, and professional ethics. Requires off-campus observations. Prerequisite: MUE 161.

MUE 310 Music in Early Childhood Education. (3)*spring*

Identifying and understanding musical needs of young children. Methods and materials for program development for classroom teachers.

MUE 311 Music for the Classroom Teacher. (3)*fall and spring*

Development of the classroom music program in the elementary school. Requires no previous music experience or course work. Prerequisite: non-Music major or minor.

MUE 313 Elementary Music Methods. (3)*fall*

Methods of instruction, planning, and presentation of appropriate contents in music. For music educators and music therapists. Prerequisite: Music major.

MUE 315 General Music in the Secondary Schools. (2)*fall and spring*

Curriculum, student characteristics, and teaching strategies for general music. Prerequisite: Music major.

MUE 317 Educational Methods for Violin and Viola. (1)*fall and spring*

Teaching and playing skills for music teachers. 3 hours per week.

MUE 318 Educational Methods for Cello and String Bass. (1)*fall and spring*

Teaching and playing skills for music teachers. 3 hours per week.

MUE 327 Educational Methods for Trumpet and Horn. (1)*fall and spring*

Teaching and playing skills for music teachers. 3 hours per week.

MUE 328 Educational Methods for Trombone, Euphonium, and Tuba. (1)*fall and spring*

Teaching and playing skills for music teachers. 3 hours per week.

MUE 335 Educational Methods for Guitar. (1)*fall and spring*

Teaching and playing skills for music teachers. 3 hours per week.

MUE 336 Educational Methods for Percussion. (1)*fall and spring*

Teaching and playing skills for music teachers. 3 hours per week.

MUE 337 Educational Methods for Flute, Clarinet, and Saxophone. (1)*fall and spring*

Teaching and playing skills for music teachers. 3 hours per week.

MUE 338 Educational Methods for Double Reed Instruments. (1)*fall and spring*

Teaching and playing skills for music teachers. 3 hours per week.

MUE 361 Music Therapy Theory and Practice in Psychopathology. (3)*fall*

Influence of music on behavior; principles and practices of music therapy and psychiatric clients. Prerequisites: MUE 211, 261; Music Therapy major.

MUE 362 Music Therapy Techniques. (3)*spring*

Organization, administration, and use of music in rehabilitation with various client populations. Prerequisites: MUE 361; Music Therapy major.

MUE 381 Music Therapy Research. (3)*spring*

Statistics and research design appropriate for investigations in music therapy.

*General Studies: L***MUE 384 Therapy Preclinical I. (1)***fall and spring*

Paired students provide music therapy for small groups at a community agency for mentally retarded, geriatric, or physically disabled clients for a minimum of 10 clock hours. Prerequisites: MUE 211, 261.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

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MUE 385 Therapy Preclinical II. (1)

fall and spring

Individual placement in ASU Music Therapy Clinic.

MUE 386 Therapy Preclinical III. (1)

fall and spring

See MUE 385.

MUE 387 Therapy Preclinical IV. (1)

fall and spring

Individual clinical work in a community mental health facility.

MUE 388 Therapy Preclinical V. (1)

fall and spring

See MUE 387.

MUE 389 Repertoire for Music Therapy. (3)

spring

Music skills repertoire for music therapy, including units on brass, strings, woodwinds, electronic instruments, computer music, and improvisation techniques. Lab. Prerequisites: MUE 211; Music Therapy major.

MUE 441 Psychology of Music. (3)

spring

Psychological and physiological aspects of music emphasizing musical behavior, function, perception, and learning. Prerequisites: junior standing; Music Therapy major (or instructor approval).

MUE 475 Group Process and Music Therapy. (1)

fall

Principles of group process, verbal counseling, professional writing, as related to music therapy practice. Prerequisites: MUE 362; Music Therapy major.

MUE 476 Internship in Music Therapy. (1)

fall and spring

Full-time, 6-month, off-campus residency in an approved clinical institution.

MUE 480 Choral Methods. (3)

spring

Methods of instruction, organization, and presentation of appropriate content in choral music classes. Prerequisite: Secondary Education major.

MUE 481 Instrumental Practicum/Methods. (5)

fall

Instrumental music as a means of developing music skills, understandings, and attitudes in elementary and secondary school students. Prerequisite: Secondary Education major.

MUE 482 Instrumental Practicum/Methods. (5)

spring

See MUE 481. Prerequisites: MUE 481 (or 485); Secondary Education major.

MUE 485 String Practicum/Methods. (5)

fall

For students preparing to administer a string program and teach strings at the elementary level. Lecture, lab.

MUE 548 Introduction to Research in Music Education. (3)

fall and summer

Introduces historical, quantitative, and qualitative research methods and sources as they apply to research in music education.

MUE 549 Foundations of Music Education. (3)

once a year

Historical/sociological survey of formal and informal music teaching and learning practices from the ancient Greeks to the present, including the evolution of philosophies and learning theories.

MUE 550 Studies in Music Curricula. (3)

once a year

Scope and sequence of musical experiences. Development of criteria for the evaluation of music curricula.

MUE 551 Advanced Studies in Elementary School Music. (3)

once a year

For experienced teachers; organization and content of K–6 general music classes. Emphasizes teaching music reading and ear training to young children.

MUE 552 Advanced Studies in Secondary General Music. (3)

once a year

Organization and content of school music classes that are not performance oriented.

MUE 553 Contemporary Elementary Music. (3)

selected semesters

Identification and development of materials and techniques for teaching special units of music study to elementary (K–8) children.

MUE 560 Jazz Pedagogy. (3)

spring in odd years

Study of pedagogy, repertoire, and technique of instruction in jazz styles, ensemble techniques, and performance practice for school ensembles. Lecture, lab, discussion, observation. Prerequisite: M.M., Music Education major.

MUE 562 Jazz Ensemble Rehearsal Techniques. (1)

fall and spring

Conducting and rehearsal techniques for school jazz ensembles. Lab. Prerequisite: M.M., Music Education major.

MUE 564 Instrumental Music, Advanced Rehearsal Techniques. (3)

once a year

In-depth analysis of instrumental techniques in preparation for a thorough discussion of band tuning problems and solutions. Discussion of productive conducting and rehearsal techniques for school music teachers.

MUE 566 Instrumental Literature for Schools. (3)

once a year

Comprehensive study and analysis of all types of instrumental music.

MUE 568 Choral Music, Advanced Rehearsal Techniques. (3)

once a year

Musical and vocal techniques necessary for presentation of choral literature. Analysis and experimentation with psychological, acoustical, and other problems of rehearsal and performance.

MUE 570 Choral Literature for Schools. (3)

once a year

Comprehensive study and analysis of choral music for the high school with special emphasis on octavo literature.

MUE 579 Psychology of Music. (3)

once a year

Nature of musicality and its evaluation. Review of recent research.

MUE 585 Vocal Acoustics and Production. (3)

once a year

In-depth approach to the psychological/physiological workings of the vocal mechanism.

MUE 733 Contemporary Issues and Research in Music Education. (3)

once a year

Emphasizes recent research relating to music instruction at all levels; current and historical issues in choral, general, and instrumental music.

MUE 744 Higher Education Instruction. (3)

once a year

Philosophical and psychological principles of college/university teaching. Patterns of music teacher education and a projection of course outlines.

MUE 755 Historical Research in Music Education. (3)

summer

Knowledge and insights related to conducting historical research in music education. Includes development of a mini-proposal for a dissertation on the history of music education.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

MUSIC PERFORMANCE (MUP)

MUP 100 Concert Attendance. (0)

fall and spring

Required of all music majors for 6 semesters in each degree program, with a minimum of 4 convocations attended each semester.

MUP 111 Studio Instruction. (2)

fall and spring

Bassoon, cello, clarinet, contrabass, cornet, euphonium, flute, guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, voice. Minimum contact of 1 hour plus studio class weekly. May be repeated for credit. May not be taken for audit. Fee. Prerequisites: music major; placement examination; audition.

MUP 121 Studio Instruction. (1)*fall, spring, summer*

Secondary or minor instrument instruction. Bassoon, cello, clarinet, contrabass, cornet, euphonium, flute, guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, voice. Minimum contact of 1/2 hour per week. May be repeated for credit. May not be taken for audit. Fee. Prerequisites: music major; instructor approval.

MUP 127 Studio Instruction. (4)*fall and spring*

Bassoon, cello, clarinet, contrabass, cornet, euphonium, flute, guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, voice. Minimum contact of 1 hour plus studio class weekly. May be repeated for credit. May not be taken for audit. Fee. Prerequisites: Performance major; placement examination; audition.

MUP 130 Beginning Group Piano. (1)*fall and spring*

Provides a basic introduction to playing piano through music reading, chords, rhythmic, and written activities. Prerequisite: non-music major.

MUP 131 Class Piano. (1)*fall and spring*

4-semester sequence (with MUP 132, 231, and 232) designed for those with little or no piano experience. Emphasizes keyboard technique, sight reading, simple accompaniments, and improvisation. 2 hours per week. May not be taken for audit. Prerequisite: music major.

MUP 132 Class Piano. (1)*spring*

See MUP 131.

MUP 133 Class Voice. (1)*fall and spring*

4-semester sequence (MUP 134, 233, and 234) open to all students. 2 hours per week. May not be taken for audit.

MUP 134 Class Voice. (1)*fall and spring*

See MUP 133. Prerequisite: MUP 133 or instructor approval.

MUP 141 Jazz Fundamentals. (1)*fall*

Principles, methods, and theory of jazz performance, especially designed for the small jazz ensemble. 2 hours per week.

MUP 142 Jazz Fundamentals. (1)*spring*

Continuation of MUP 141. 2 hours per week.

MUP 209 Beginning Choral Conducting. (1)*fall and spring*

Essentials of choral conducting techniques. 2 hours per week.

MUP 210 Beginning Instrumental Conducting. (1)*spring*

Essentials of instrumental conducting techniques. 2 hours per week.

MUP 217 Improvisation Workshop. (2)*fall and spring*

Emphasizes basic jazz literature, chord symbol reading, melodic patterns, ear training, melodic concepts, and analysis of improvised solos. Must be taken in sequence with MUP 218. May not be taken for audit. Prerequisites: MTC 125; MUP 111 (1 semester).

MUP 218 Improvisation Workshop. (2)*fall and spring*

Continuation of MUP 217. Prerequisite: MUP 217.

MUP 231 Class Piano. (1)*fall*

See MUP 131.

MUP 232 Class Piano. (1)*spring*

See MUP 131.

MUP 233 Class Voice. (1)*fall and spring*

See MUP 133. Prerequisite: MUP 134 or instructor approval.

MUP 234 Class Voice. (1)*fall and spring*

See MUP 133. Prerequisite: MUP 233 or instructor approval.

MUP 235 Jazz Piano. (1)*fall*

2-semester sequence (with MUP 236) designed for jazz keyboard experience. Emphasizes chord symbol reading, simple improvisation, and voicing. 2 hours per week. Prerequisite: MUP 132.

MUP 236 Jazz Piano. (1)*spring*

See MUP 235. Prerequisite: MUP 132.

MUP 237 Fretboard Harmony. (1)*fall and spring*

Scales, chords, harmony, basic improvisation for the guitar. 2 hours per week.

MUP 250 Diction for Singers. (1)*fall and spring*

Use of phonetics in the study of song and opera literature. Language emphasis differs each semester. May be repeated for credit.

MUP 301 Advanced Class Piano. (1)*fall*

Required for the choral-general concentration of the Music Education major. Open to other music majors who have completed MUP 232.

Emphasizes accompaniments, ensemble playing, score reading, advanced harmonizations, repertoire, technique, and improvisation. 2 hours per week. May not be taken for audit. Prerequisites: MUP 232 (or proficiency); music major; placement examination.

MUP 302 Advanced Class Piano. (1)*spring*

Required for the choral-general concentration of the Music Education major. Open to other music majors who have completed MUP 301. A sequential continuation of MUP 301 skills that include both group and studio instruction. 2 hours per week. May not be taken for audit. Prerequisites: MUP 301 (or proficiency); music major; placement examination.

MUP 311 Studio Instruction. (2)*fall and spring*

See MUP 111. Fee.

MUP 319 Recording Studio Techniques. (2)*spring*

Study of both analog and digital recording methods. Includes lab time on recording console and tape machines. Lab.

MUP 320 MIDI Workshop. (2)*fall*

Presents hardware and software applications for sequencing and music printing. Lab.

MUP 321 Studio Instruction. (1)*fall, spring, summer*

See MUP 121. Fee.

MUP 327 Studio Instruction. (4)*fall and spring*

See MUP 127. Fee.

MUP 337 Studio Instruction: Piano Accompanying. (2)*spring*

Repertoire to be selected from vocal and instrumental literature. 1 hour lesson per week. May be repeated for credit. Prerequisites: Performance major with a concentration in piano accompanying; placement examination.

MUP 339 Choral Conducting. (2)*fall and spring*

Elements of choral conducting technique and interpretation. 3 hours per week. Prerequisite: MUP 209.

MUP 340 Instrumental Conducting. (2)*fall*

Fundamentals of score reading and interpretation of instrumental music. 3 hours per week. Prerequisite: MUP 210.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

MUP 344 Chamber Orchestra. (1)

fall and spring

Important masterpieces from all periods of music are performed throughout the year. May be repeated for credit. Prerequisite: audition with director.

MUP 345 Symphony Orchestra. (1)

fall and spring

Over a 4-year period, the student is introduced to the masterpieces of symphony orchestra literature. 3 times per week. May be repeated for credit. Prerequisite: audition with director.

MUP 346 Sinfonietta. (1)

fall and spring

Symphonic orchestra that presents approximately six concerts annually, performing masterpieces of the classical repertoire. 3 times per week. May be repeated for credit. Prerequisite: audition with director.

MUP 350 Choral Union. (1)

fall and spring

Open to all students in the university and to interested singers in the community by audition. Preparation and performance of the larger choral works. 2 hours per week. May be repeated for credit. Prerequisite: audition with director.

MUP 352 Concert Choir. (1)

fall and spring

Important masterpieces from all periods of music are performed. May be repeated for credit. Prerequisite: instructor approval.

MUP 353 University Choir. (1)

fall and spring

4 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 355 Men's Chorus. (1)

fall and spring

Rehearsal and performance of music for male voices. 3 hours per week. May be repeated for credit. Prerequisites: audition with director; instructor approval.

MUP 357 Women's Chorus. (1)

fall and spring

2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 361 Marching and Concert Bands. (1)

fall and spring

Staging of formations and drills for football games and other events (fall); masterpieces of symphonic band literature (spring). Meets daily. May be repeated for credit. Prerequisite: audition with director.

MUP 362 Wind Ensemble. (1)

fall and spring

Rehearsal and performance of literature for wind ensemble. 2 hours per week in fall, 4 hours in spring. Performing ensemble. May be repeated for credit. Prerequisite: instructor approval.

MUP 363 Chamber Winds. (1)

fall and spring

Rehearsal and performance of advanced literature for chamber winds. 2 hours per week. Performing ensemble. May be repeated for credit. Prerequisite: instructor approval.

MUP 370 Music Theatre: Techniques. (1)

fall and spring

Exercises and improvisations for the singer/actor emphasizing body awareness, basic music theater performance skills, and freedom of the vocal and breath mechanisms. Section 1 (Movement for Singers); Section 2 (Expression); Section 3 (Interpretation); Section 4 (Advanced Expression); Section 5 (Advanced Interpretation). Sections 2 through 5 must be taken in sequence. Each section: 3 hours per week. May be repeated for credit.

MUP 371 Music Theatre: Workshops. (1)

fall and spring

Development of specific skills for musical-dramatic interpretation. Section 1 (Aria Preparation); Section 2 (Broadway I); Section 3 (Broadway II). Each section: 1 hour lecture, demonstration, 1 lab per week. May be repeated for credit.

MUP 372 Music Theatre: Orchestras. (1)

fall and spring

Participation in Lyric Opera Theatre productions. Section 1 (Orchestra); Section 2 (Chamber Orchestra); Section 3 (Chamber Ensemble).

May be repeated for credit. Prerequisites: audition with director; instructor approval.

MUP 373 Music Theatre: Performance. (1)

fall and spring

Participation in Lyric Opera Theatre productions. Section 1 (Principal Roles); Section 2 (Chorus). May be repeated for credit. Prerequisites: audition with director; instructor approval.

MUP 374 Music Theatre: Production. (1)

fall and spring

Participation in Lyric Opera Theatre productions. Section 1 (Vocal Performance); Section 2 (Technical Music Theatre); Section 3 (Problems in Production) to be taken concurrently with MUP 373, Section 2. May be repeated for credit.

MUP 376 New Music Ensemble. (1)

fall and spring

Rehearsal and performance of music written in the last 20 years. May be repeated for credit. Prerequisite: instructor approval.

MUP 377 Brass Choir. (1)

fall and spring

Specializing in public performance of music written for brass instruments. 2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 379 Chamber Music Ensembles. (1)

fall and spring

Brass, guitar, keyboard, mixed, percussion, string, vocal, and woodwinds ensembles. 2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 382 Collegium Musicum. (1)

selected semesters

Singers and instrumentalists specializing in the performance of early and unusual music. 2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 385 Percussion Ensemble. (1)

fall and spring

Rehearsal and performance of standard and original repertoire for the percussion ensemble and related instruments. 2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 386 Jazz Band. (1)

fall and spring

Rehearsal and performance of new, traditional, and Latin literature for jazz bands. 4 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 387 Ethnomusicology Ensembles. (1)

fall and spring

Performance learning experience for the music of various cultures of the world. May be repeated for credit. Prerequisite: knowledge of instrument or instructor approval.

MUP 388 Piano Accompanying. (1)

fall and spring

Piano accompaniments found in vocal and instrumental literature; discussion of styles and performance practices; experience in public performance. 2 hours per week. May be repeated for credit. Prerequisite: Performance major with a concentration in piano accompanying or instructor approval.

MUP 417 Advanced Improvisation. (2)

fall and spring

Emphasizes analysis and performance of advanced jazz literature; composition in contemporary styles. Must be taken in sequence with MUP 418. May not be taken for audit. Prerequisite: MUP 218.

MUP 418 Advanced Improvisation. (2)

fall and spring

Continuation of MUP 417. Prerequisite: MUP 417.

MUP 440 Keyboard Harmony. (1)

fall

Performance-oriented class emphasizing chord progressions, harmonization, figured bass realization, stylistic improvisation, transposition, open score reading, and sight reading. Prerequisite: Performance major with a concentration in keyboard or instructor approval.

MUP 451 Repertoire. (2)

fall and spring

Literature available for performance in all performing media. May be repeated for credit. Prerequisite: junior standing in major performance field.

MUP 453 Song Literature. (2)*once a year*

Early Italian, English, German, and French art song.

MUP 454 Song Literature. (2)*once a year*

American, Russian, Spanish, Scandinavian, and contemporary song.

MUP 481 Performance Pedagogy and Materials. (2)*fall and spring*

Principles and methods of performance techniques for each performance field. May be repeated for credit. Prerequisite: senior standing or instructor approval.

MUP 482 Piano Pedagogy. (2)*selected semesters*

Continuation of MUP 481 (Piano). Problems and techniques of teaching intermediate to advanced piano students. Prerequisites: junior standing in Performance (keyboard or piano accompanying concentration); instructor approval.

MUP 487 Piano Accompanying. (1)*fall and spring*

Piano accompaniments found in vocal and instrumental literature; discussion of styles and performance practices; experience in public performance. 2 hours per week. May be repeated for credit. May not be taken for audit. Prerequisite: Performance major with a concentration in keyboard or piano accompanying.

MUP 495 Performance. (0)*fall*

For candidates of a B.M. degree in which 1/2 recital is a requirement. Prerequisite: B.M. degree candidate.

MUP 496 Performance. (0)*fall*

For candidates of a B.M. degree in which a full recital is a requirement. Prerequisites: B.M. degree candidate; MUP 495.

MUP 507 Group Piano Practicum. (2)*fall*

Curricula, materials, and teaching techniques for group teaching at the university and community college levels. Observation/supervised teaching in group piano.

MUP 508 Studio Observation. (1)*fall and spring*

Weekly observation of studio teaching by various piano faculty. Paper as final requirement. Prerequisite: M.M. piano student in Performance major (performance pedagogy or solo performance concentration).

MUP 509 Jazz Keyboard Harmony. (1)*fall*

Emphasizes jazz chords and chord progressions, harmonization, voicing, and analysis of transcriptions. Lab. Prerequisite: M.M., Music Education student.

MUP 510 Jazz Keyboard Harmony. (1)*spring*

Continuation of MUP 509. Lab. Prerequisite: MUP 509.

MUP 511 Studio Instruction. (2)*fall and spring*

Bassoon, cello, clarinet, contrabass, cornet, euphonium, flute, guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, voice. Minimum contact of 1 hour plus studio class weekly. May be repeated for credit. May not be taken for audit. Fee. Prerequisites: graduate music major; placement examination; audition.

MUP 517 Advanced Improvisation. (1)*fall*

Improvisation techniques within the context of advanced jazz literature. Must be taken in sequence with MUP 518. Lab. Prerequisites: placement examination; audition.

MUP 518 Advanced Improvisation. (1)*spring*

Continuation of MUP 517. Lab. Prerequisite: MUP 517.

MUP 521 Studio Instruction. (1)*fall, spring, summer*

Secondary or minor instrument instruction. Bassoon, cello, clarinet, contrabass, cornet, euphonium, flute, guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, voice. Minimum contact of 1/2 hour per week. May be

repeated for credit. May not be taken for audit. Fee. Prerequisites: graduate music major; instructor approval.

MUP 527 Studio Instruction. (2 or 4)*fall and spring*

Bassoon, cello, clarinet, contrabass, cornet, euphonium, flute, guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, voice. Minimum contact of 1/2 hour per week. May be repeated for credit. May not be taken for audit. Fee. Prerequisites: M.M., Performance major; placement examination; audition.

MUP 540 Advanced Conducting. (3)*fall*

Score preparation and conducting techniques for instrumental music. Concentration on study of historical styles. Required of D.M.A. students in Instrumental Music.

MUP 541 The Art Song. (3)*selected semesters*

Seminar on solo song from its beginning to the present day.

MUP 544 Chamber Orchestra. (1)*fall and spring*

Important masterpieces from all periods of music are performed throughout the year. May be repeated for credit. Prerequisite: instructor approval.

MUP 545 Symphony Orchestra. (1)*fall and spring*

Masterpieces of symphony orchestra literature. 3 times per week. May be repeated for credit. Prerequisite: audition with director.

MUP 546 Sinfonietta. (1)*fall and spring*

Symphonic orchestra that presents approximately six concerts annually, performing masterpieces of the classical repertoire. 3 times per week. May be repeated for credit. Prerequisite: audition with director.

MUP 550 Choral Union. (1)*fall and spring*

Open to all students in the university and to interested singers in the community by audition. Preparation and performance of the larger choral works. 2 hours per week. May be repeated for credit. Prerequisite: audition with director.

MUP 551 Repertoire. (2)*fall and spring*

Literature available for performance in all performing media. May be repeated for credit.

MUP 552 Concert Choir. (1)*fall and spring*

Important masterpieces from all periods of music are performed. May be repeated for credit. Prerequisite: instructor approval.

MUP 553 University Choir. (1)*fall and spring*

4 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 555 Men's Chorus. (1)*fall and spring*

Rehearsal and performance of music for male voices. 3 hours per week. May be repeated for credit. Prerequisites: audition with director; instructor approval.

MUP 557 Women's Chorus. (1)*fall and spring*

2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 561 Marching and Concert Bands. (1)*fall and spring*

Staging of formations and drills for football games and other events (fall); masterpieces of symphonic band literature (spring). Meets daily. May be repeated for credit. Prerequisite: audition with director.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

MUP 562 Wind Ensemble. (1)

fall and spring

Rehearsal and performance of literature for wind ensemble. 2 hours per week in fall, 4 hours in spring. May be repeated for credit. Performing ensemble. Prerequisite: instructor approval.

MUP 563 Chamber Winds. (1)

fall and spring

Rehearsal and performance of advanced literature for chamber winds. 2 hours per week. May be repeated for credit. Performing ensemble. Prerequisite: instructor approval.

MUP 570 Music Theatre: Techniques. (1)

fall and spring

Exercises and improvisations for the singing actor emphasizing body awareness, isolations, and freedom of the vocal and breath mechanisms. Section 1 (Interpretation); Section 2 (Expression); Section 3 (Movement for Singers). Each Section: 3 hours per week. May be repeated for credit.

MUP 571 Music Theatre: Workshops. (1)

fall and spring

Development of specific skills for the musical-dramatic interpretation. Section 1 (Role Preparation); Section 2 (Styles); Section 3 (Opera Scenes); Section 4 (Musical Comedy); Section 5 (Revue Ensembles). Each section: 1 hour lecture, demonstration, 1 lab per week. May be repeated for credit.

MUP 572 Music Theatre: Orchestras. (1)

fall and spring

Participation in Lyric Opera Theatre productions. Section 1 (Orchestra); Section 2 (Chamber Orchestra); Section 3 (Chamber Ensemble). May be repeated for credit. Prerequisites: audition with director; instructor approval.

MUP 573 Music Theatre: Performance. (1)

fall and spring

Participation in Lyric Opera Theatre productions. Section 1 (Principal Roles); Section 2 (Chorus). May be repeated for credit. Prerequisites: audition with director; instructor approval.

MUP 574 Music Theatre: Production. (1)

fall and spring

Participation in Lyric Opera Theatre productions. Section 1 (Vocal Performance); Section 2 (Technical Music Theatre); Section 3 (Problems in Production) to be taken concurrently with MUP 573, Section 2. May be repeated for credit.

MUP 576 New Music Ensemble. (1)

fall and spring

Rehearsal and performance of music written in the last 20 years. May be repeated for credit. Prerequisite: instructor approval.

MUP 579 Chamber Music Ensembles. (1)

fall and spring

String, brass, woodwind, percussion, keyboard, vocal, and mixed ensembles. 2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 581 Performance Pedagogy and Materials. (2)

fall and spring

Principles and methods of performance techniques for each performance field. May be repeated for credit.

MUP 582 Collegium Musicum. (1)

selected semesters

Singers and instrumentalists specializing in the performance of early and unusual music. 2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 585 Percussion Ensemble. (1)

fall and spring

Rehearsal and performance of standard and original repertoire for the percussion ensemble and related instruments. 2 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 586 Jazz Band. (1)

fall and spring

Rehearsal and performance of new, traditional, and Latin literature for jazz bands. 4 hours per week. May be repeated for credit. Prerequisite: instructor approval.

MUP 587 Ethnomusicology Ensembles. (1)

fall and spring

Performance learning experience for the music of various cultures of the world. May be repeated for credit. Prerequisite: knowledge of instrument or instructor approval.

MUP 588 Piano Accompanying. (1)

fall and spring

Piano accompaniments found in vocal and instrumental literature; discussion of styles and performance practices; experience in public performance. 2 hours per week. May be repeated for credit. Prerequisite: Performance major with a concentration in piano accompanying or instructor approval.

MUP 591 Seminar. (1–12)

selected semesters

MUP 595 Continuing Registration. (1)

fall and spring

MUP 596 Solo Performance. (1)

fall

May be full recital, major operatic role, solo performance with orchestra, ensemble, or lecture recital. Prerequisite: M.M. candidate in applied music.

MUP 597 Solo Performance. (1)

fall

See MUP 596.

MUP 671 Choral Repertoire. (3)

selected semesters

Examines large choral/orchestral works to determine their musical and textual characteristics from a conductor's point of view.

MUP 727 Studio Instruction. (2 or 4)

fall and spring

Minimum contact of 1 hour per week. May be repeated for credit. Fee. Prerequisite: D.M.A. candidate.

MUP 751 Seminar in Piano Literature. (2)

fall in odd years

In-depth study of selected topics related to the standard piano literature. Requires research paper, bibliography, class presentation. Seminar.

MUP 792 Research. (1–12)

fall, spring, summer

MUP 796 Solo Performance. (1–15)

fall and spring

May be repeated for credit. Prerequisite: D.M.A. candidate.

MUP 799 Dissertation. (1–15)

fall and spring

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

MUSIC (MUS)

MUS 100 Fundamentals of Music Notation. (3)

fall and spring

Provides non-Music majors with sufficient symbol literacy to begin work in the field of musical learning. Credit not applicable toward any music degree.

MUS 340 Survey of Music History. (3)

fall, spring, summer

Major composers, compositions, and periods in the history of music. Credit not applicable toward any music degree.

General Studies: HU, H

MUS 347 Jazz in America. (3)

fall, spring, summer

Current practices employed by contemporary jazz musicians; the historical development of jazz techniques. Credit not applicable toward any music degree. Lecture, discussion. Cross-listed as AFH 347. Credit is allowed for only AFH 347 or MUS 347.

General Studies: HU

MUS 354 Popular Music. (3)

fall, spring, summer

Emphasizes historical, cultural, and performance patterns in a variety of popular idioms such as, but not limited to, rock, folk, jazz, and Afro-American music. May be repeated for credit. Credit not applicable toward any music degree.

General Studies: HU

MUS 355 Survey of American Music. (3)

fall, spring, summer

Growth and development of American music. Credit not applicable toward any music degree.

General Studies: HU, H

MUS 356 Survey of the Musical Theatre. (3)

once a year

Music's place in the theatre, viewed in terms of historical importance and relative function. Credit not applicable toward any music degree.

General Studies: HU

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Theatre

herbergercollege.asu.edu/theatre

480/965-5337

GHALL 232

Johnny Saldaña, Interim Chair

Professors: Barker, Bedard, Eckard, Giner, Knapp, Mason, Saldaña, Thomson, Wills

Associate Professors: Acker, Edwards, Holloway, Riske, Vining

Assistant Professors: Furr-Soloman, Gharavi, Reyes, Steenerson, Sterling, Underiner, Woodson

Senior Lecturer: McMahon

Lecturers: Irvine, Tongret

The Department of Theatre is a member of the National Association of Schools of Theatre, and the requirements set forth in this catalog are in accordance with the published regulations of the association. For advising purposes, all students registering in a Theatre degree program enroll through the Herberger College of Fine Arts. Special advising check sheets, providing complete information regarding requirements and suggested electives, are available in the Department of Theatre office for the B.A. degree program.

Freshman and sophomores who meet university and departmental standards must receive a grade of "C" or higher in all major courses and a 2.50 cumulative GPA during their first semester to continue in the B.A. Theatre program. Students failing to meet these requirements will have one semester of departmental probation to receive a "C" or higher in major courses and raise their cumulative GPA to 2.50. Students failing to meet the above requirements by the end of the first year (two semesters) are asked to seek advising regarding other majors.

THEATRE—B.A.

The major in Theatre consists of 57 semester hours. The following 33 semester hours of core courses are required of all B.A. degree candidates:

THE 125 Orientation to Theatre	1
THE 220 Principles of Dramatic Analysis <i>L</i>	3
THE 320 History of the Theatre I <i>HU, H</i>	3
THE 321 History of the Theatre II <i>HU, H</i>	3
THE 440 Theatre Forms and Contexts	3
THP 102 Fundamentals of Acting	3
THP 218 The Director's Vision	3
THP 301 Theatre Production: Running Crew	1
THP 301 Theatre Production*	1
THP 313 Scenography	3
THP 428 Theatre and the Future	3
Total	27

* One semester hour in a different production option is required.

One of the following two courses (three semester hours) is required:

THP 213 Introduction to Technical Theatre	4
THP 214 Introduction to Costuming	3

Three semester hours of departmental approved course work in developing new work is also required (e.g., playwriting, solo performance, theatre for social change). Check the department advising office for a list of eligible courses.

Twenty-four semester hours of THE and THP electives are selected by the student and advisor to complete the 57 semester hours required in the major. These 24 semester hours can constitute an optional focus area for the student, which involves enrolling in related course work from one of seven specialty areas in Theatre: acting; directing and stage management; playwriting; scenography; history, theory, and criticism; film; and theatre for youth. A list of recommended courses appropriate to each area is available from the department advising office. Undergraduate students interested in pursuing Arizona teacher certification or endorsement for Theatre are encouraged to pursue the focus area in theatre for youth, then obtain postbaccalaureate teacher certification through the ASU College of Education or another Arizona educational institution. General Studies courses make up 45–48 semester hours of the total courses required. Additional elective courses are selected with an advisor to meet the total 120 semester hours required for the degree.

Within the major only courses with a grade of "C" or higher may be applied toward graduation.

Students who transfer 55 semester hours or more are required to enter with and retain a 2.50 GPA in theatre courses and a 2.00 cumulative GPA.

GRADUATION REQUIREMENTS

In addition to fulfilling the major requirements, students must meet all university graduation requirements. See ["University Graduation Requirements," page 79.](#)

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See ["General Studies," page 83.](#)

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

MINOR

The department offers a minor in Theatre consisting of 22 semester hours of course work. The following courses are required:

THE 100 Introduction to Theatre <i>HU</i>	3
THE 320 History of the Theatre I <i>HU, H</i>	3
THE 321 History of the Theatre II <i>HU, H</i>	3
THP 101 Introduction to the Art of Acting.....	3
THP 213 Introduction to Technical Theatre.....	4
THP 301 Theatre Production.....	1
Concentration area *.....	6
<hr/>	
Total	23

* Also required are two three-hour courses in the same area of concentration. Contact the department for options and course requirements.

Courses ordinarily limited to majors only are available to minors on a second-priority basis; that is, minors may not preregister for these courses, but are allowed to register after all majors' needs have been met. All prerequisites for the minor courses must be met (see course listings). Transfer students may transfer up to nine semester hours toward their minor.

GRADUATE PROGRAMS

The faculty in the Department of Theatre offer programs leading to the M.A. degree in Theatre; the Master of Fine Arts degree in Theatre with concentrations in performance, scenography, and theatre for youth; the Ph.D. degree in Theatre with a concentration in theatre for youth; and, in conjunction with the Department of English, an interdisciplinary Master of Fine Arts degree in Creative Writing (playwriting option). See the *Graduate Catalog* for details.

THEATRE (THE)

THE 100 Introduction to Theatre. (3)

fall, spring, summer

Surveys theatre production from the Greeks to contemporary theatre. Taught in conjunction with distance learning. Lecture, discussion, guest artists. Prerequisite: nonmajor.

General Studies: HU

THE 125 Orientation to Theatre. (1)

fall

Orientation to university and department resources and procedures. Career planning and guidance. Attendance and written responses to theatre productions. Required for B.A. Theatre majors. Prerequisite: Theatre major.

THE 220 Principles of Dramatic Analysis. (3)

fall and spring

Analysis, evaluation, and interpretation of dramatic literature for theatrical production. Emphasizes the traditional canon of dramatic literature and traditional structures and forms of drama. Prerequisites: ENG 101 (or 105); Theatre major.

General Studies: L

THE 300 Film: The Creative Process I. (3)

fall, spring, summer

Elements of theatrical film: cinematography, sound, editing, directing, acting, scriptwriting, producing, and criticism. 3 hours lecture, demonstration via film and videotape.

General Studies: HU

THE 301 Film: The Creative Process II. (3)

fall and spring

Advanced study of selected films, analyzing cinematography, sound, editing, directing, acting, screenwriting, producing, and criticism. Prerequisite: THE 300.

General Studies: HU

THE 320 History of the Theatre I. (3)

fall

Traces major developments in theatre production and dramatic literature from their beginnings to the mid-17th century. Lecture, student presentations.

General Studies: HU, H

THE 321 History of the Theatre II. (3)

spring

Traces major developments in theatre production and dramatic literature from the mid-17th century to the 20th century. Lecture, student presentations.

General Studies: HU, H

THE 325 Play Reading for Educational Theatre. (1)

fall and spring

Assigned independent readings in plays for secondary school play production. Prerequisite: theatre education concentration or written instructor approval.

THE 400 Focus on Film. (3)

fall, spring, summer

Specialized study of prominent film artists, techniques, and genres. Emphasizes the creative process. May be repeated for credit. Prerequisite: ENG 101 or 105.

THE 402 Gender Identity in Film. (3)

selected semesters

Examines the representation of gender in Hollywood cinema with particular focus on films from 1970 to the present. Prerequisite: THE 300.

THE 403 Independent Film. (3)

once a year

Examines independent films and filmmakers in the United States, 1968 to the present.

General Studies: HU

THE 404 Foreign Films and Filmmakers. (3)

once a year

Films and filmmakers from Europe, Asia, Australia, Far East, South America, and Caribbean. Emphasizes cultural content and filmmaking philosophies.

General Studies: G

THE 405 Film: Great Performers and Directors. (3)

fall, spring, summer

Examines processes and influences of one or more great film performers and/or directors. May be repeated for credit. Prerequisite: THE 300.

General Studies: HU

THE 421 History of the English Theatre. (3)

selected semesters

History of the artists, events, and plays in the development of English theatre from medieval times to the present. Lecture, group and independent work. Prerequisite: THE 100 or 220.

General Studies: L/HU

THE 422 Latino and Latina Theatre. (3)

selected semesters

Readings, discussion, video of dramatic literature and production styles of Latino/Latina playwrights and theatre companies in the United States. Prerequisites: both ENG 101 and 102 or only ENG 105.

THE 424 Trends in Theatre for Youth. (3)

selected semesters

Surveys the history, literature, and contemporary practices in theatre for youth.

THE 430 History of Costume: Western Tradition. (3)

selected semesters

Studies major costume styles throughout history of Western civilization and how these fashions reflected society. Explores how styles can be used by theatrical costumers.

THE 440 Theatre Forms and Contexts. (3)*fall and spring*

Explores 20th-century modernist theatrical forms and movements and development of alternative strategies for analyzing contemporary theatre and performance. Prerequisites: THE 220, 320, 321; Theatre major.

THE 480 Methods of Teaching Theatre. (4)*spring*

Applies materials, techniques, and theories for theatre with 9th-through 12th-grade students. Emphasizes curriculum development and praxis. Prerequisite: theatre education concentration or written instructor approval.

THE 500 Research Methods. (1–3)*fall*

Introduces graduate study in theatre.

THE 504 Studies in Dramatic Theory and Criticism. (3)*fall*

Dramatic theory, criticism, and aesthetics from the classical period to the 19th century. Related readings in dramatic literature. Prerequisite: Theatre major.

THE 505 Studies in Dramatic Theory and Criticism. (3)*spring*

Dramatic theory, criticism, and aesthetics from the 19th century to the present. Related readings in dramatic literature. Prerequisite: Theatre major.

THE 510 Studies in Literature. (1)*fall and spring*

Assigned individual reading program in standard sources and masterpieces in theatre literature. May be repeated for credit.

THE 520 Theatre History and Literature I. (3)*fall*

Surveys historiographical issues, historical periods, and theatre literature, through the 17th century.

THE 521 Theatre History and Literature II. (3)*spring*

Surveys historiographical issues, historical periods, and theatre literature, from the 17th century to present.

THE 524 Advanced Studies in Theatre for Youth. (3)*fall*

In-depth study of the history, literature, and contemporary practice of theatre for youth. Prerequisite: written instructor approval.

THE 562 Literary Management Workshop. (3)*once a year*

Advanced literary management for the contemporary theatre, including trends in new play development, festivals and productions throughout the United States. Participation in Arizona Playwriting Competition. Prerequisite: THP 560 or written instructor approval.

THE 591 Seminar. (3)*selected semesters*

Selected topics in child drama, community theatre, and theatre history. Prerequisite: written instructor approval.

THE 598 Special Topics. (1–4)*fall and spring*

Topics may include the following:

- College Teaching: Dramatic Analysis

THE 692 Research. (1–12)*selected semesters***THE 700 Advanced Research Methods. (3)***fall*

Critical review of research, development, and design of research in theatre and theatre for youth.

THE 791 Seminar. (3)*selected semesters*

Selected topics offered on a revolving basis. May be repeated for credit when topics vary.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

THEATRE PERFORMANCE AND PRODUCTION (THP)**THP 101 Introduction to the Art of Acting. (3)***fall, spring, summer*

Basic principles of acting. Topics include terminology, exercises, improvisation, and projects in acting. Prerequisite: nonmajor.

THP 102 Fundamentals of Acting. (3)*fall and spring*

Actor awareness, imaginative physical and vocal preparation, scene and character analyses, terminology, application of truthful acting techniques, and monologue preparation. Studio. Prerequisite: Theatre major.

THP 113 Techniques of Theatrical Makeup. (3)*selected semesters*

Techniques of theatrical makeup: age, corrective, masks, and special effects. 1 hour lecture, 2 hours lab. Fee.

THP 207 Acting: The Creative Imagination. (3)*fall*

Develops the actor as an artist, introducing the use of the creative imagination through sensory experience as led by Stanislavski. Studio. Prerequisite: instructor approval by interview. Prerequisite with a grade of "C" or higher: THP 102. Pre- or corequisite: THE 220.

THP 208 Acting: The Reality of Doing. (3)*spring*

Continuation of the inner process, applying the techniques of Meisner to discover the creativity in the spontaneous experience. Prerequisite: written instructor approval. Prerequisite with a grade of "B" or higher: THP 207.

THP 213 Introduction to Technical Theatre. (4)*fall and spring*

Procedures of technical theatre production and demonstration. Topics include design and construction of scenery, lighting, and properties. 2 hours lecture, 3 hours lab. Fee. Prerequisite: Theatre major or minor.

THP 214 Introduction to Costuming. (3)*fall and spring*

Basic principles of costume design, construction, and survey of selected historical periods including makeup styles. Costume design project and production experience. 3 hours lecture, 2 hours lab. Pre- or corequisites: THE 220; Theatre major.

THP 218 The Director's Vision. (3)*fall and spring*

History, theory, and principles of directing. Examines director's role and responsibilities, play selection, conceptualizing, ground plans, blocking. Prerequisites: THE 220; THP 102.

THP 260 Introduction to Playwriting. (3)*fall and spring*

Basic skills of playwriting including exercises in monologues, scenes, and conflict and resolution, leading to completion of a one-act play. Prerequisite: ENG 101 or 105 or 107.

THP 261 Introduction to Screenwriting. (3)*once a year*

Basic skills of screenwriting including exercises in conflict and resolution, plot points, and theories of three-act structure and design. Prerequisite: ENG 101 or 105 or 107.

THP 272 Introduction to Stage Movement. (3)*fall and spring*

Movement vocabulary and physical training in relaxation, alignment, conditioning, rhythm, and poise. Prerequisite: THP 101 or written instructor approval. Pre- or corequisite: THP 102.

THP 277 Introduction to Voice for the Actor. (3)*fall and spring*

Exercises and techniques to free the voice and improve projection. Prerequisites: both THP 101 (or 102) and 272 or only written instructor approval. Prerequisite with a grade of "C" or higher: THE 220.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

THP 285 Acting: Beginning Scene Study. (3)

fall and spring

Character analysis, rehearsal, and performance of modern plays. Prerequisite with a grade of "C" or higher: THP 102 or instructor approval. Pre- or corequisite: THE 220.

THP 301 Theatre Production. (1–4)

fall, spring, summer

Participation in university mainstage theatre productions (acting, running crew, etc.). May be repeated for credit. Prerequisites: application; written instructor approval.

THP 307 Acting: Research and Performance. (1–3)

once a year

Acting in theatre projects, productions, or collaborative performances in directing classes. May be repeated for credit. Prerequisite: instructor approval.

THP 311 Improvisation with Youth. (3)

fall, spring, summer

Basic materials, techniques, and theories for facilitating improvisational drama with children and youth. Not open to freshmen.

THP 312 Puppetry and Children. (3)

fall, spring, summer

Construction and manipulation of puppets; practice in performance skills. Emphasizes educational and recreational uses of puppetry by and with children. Fee. Prerequisite: junior standing or above.

THP 313 Scenography. (3)

fall and spring

Art and practice of scenic, costume, and lighting design for the theatre and the media. Prerequisite: THP 213 or 214.

THP 317 Stage Management. (3)

fall and spring

Readings in stage management and participation as a stage manager in a university theatre production. Prerequisite: written instructor approval. Prerequisite with a grade of "C" or higher: THE 220.

THP 318 Directing for the Stage. (3)

fall and spring

Director's approach to text analysis and articulation of ideas. Basic tools, rehearsal schedules, staging, rehearsal and audition techniques, scene work. Prerequisites: THP 213, 218; instructor approval.

THP 331 Costume Construction. (3)

selected semesters

Uses of materials and techniques for stage costumes with actual construction of period apparel. Prerequisite: THP 214 or instructor approval.

THP 340 Scene Design. (3)

once a year

Studio projects in designing realistic scenery for the contemporary proscenium stage. Fee. Prerequisite: THP 213 or written instructor approval. Prerequisite with a grade of "C" or higher: THE 220.

THP 345 Lighting Design. (3)

once a year

Principles and theory of stage lighting design, including design process and execution, equipment, and light plots. Lecture, lab. Fee. Prerequisite: THP 213 or written instructor approval. Prerequisite with a grade of "C" or higher: THE 220.

THP 350 Sound Design. (3)

once a year

Introduces the equipment, process, and recording techniques used in sound design for the theatre. Lecture, studio. Fee. Prerequisite with a grade of "C" or higher: THE 220.

THP 360 Intermediate Playwriting. (3)

once a year

Continued development of skills in playwriting through specific exercises and completion of a full-length play. Prerequisite: ENG 210 Introduction to Creative Writing (drama) or THP 260.

THP 377 Stage Speech. (3)

once a year

Introduces phonetic alphabet and standard speech and diction. Prerequisite: THP 277.

THP 385 Acting: Intermediate Scene Study. (3)

once a year

Script analysis and performance of modern classics. Prerequisite: THP 377 or instructor approval.

THP 394 Special Topics. (1–4)

fall and spring

THP 401 Theatre Practicum. (1–3)

fall and spring

Production assignments for advanced students of technical production, stage and business management, and design. May be repeated for credit. Prerequisites: THP 301; written instructor approval.

THP 406 Advanced Scenography. (3)

selected semesters

Process of production collaboration among scenographers, directors, and playwrights. Taught in conjunction with THP 519. Prerequisites: a combination of THP 214 and 340 and 345 or both THP 313 and 340.

THP 411 Methods of Teaching Drama. (3)

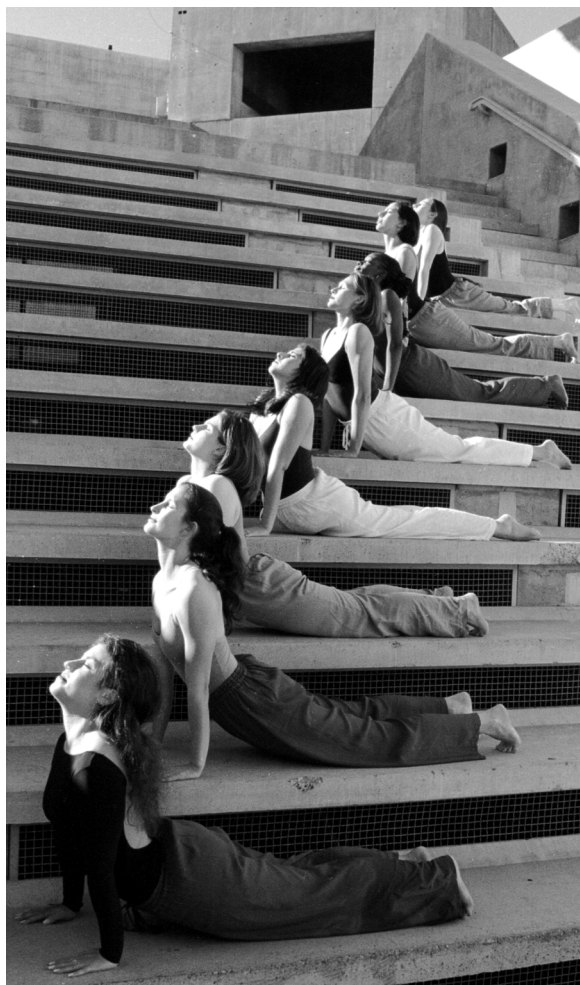
fall

Applies materials, techniques, and theories with grades K–8 youth. Regular participation with children. Prerequisite: THP 311 or written instructor approval.

THP 418 Directing the Actor. (3)

once a year

Practical applications of directing for the stage. Rehearsal and presentation of scenes and short plays. Prerequisites: THP 318; instructor approval.



Dancers on the steps of the Nelson Fine Arts Center

Tim Trumble photo

THP 428 Theatre and the Future. (3)*fall and spring*

Capstone course exploring visions of the future of theatre. Results in a project in creative or scholarly form. Prerequisites: THE 440; senior status; Theatre major.

THP 430 Costume Design. (3)*selected semesters*

Principles of costume design with projects in both modern and period styles. Includes budgets and fabric/pattern estimates. Lecture, studio. Prerequisite: THP 214.

THP 431 Advanced Costume Construction. (3)*selected semesters*

Specialized training in costume construction problems and crafts with projects in tailoring, millinery, and period accessories. Prerequisites: both THP 214 and 331 or only instructor approval.

THP 435 Advanced Technical Theatre. (3)*selected semesters*

Selection of materials, drafting of working drawings, tool operation, and construction techniques. 2 hours lecture, 2 hours lab. Prerequisites: both THP 340 and 345 or only written instructor approval.

THP 440 Advanced Scene Design. (3)*selected semesters*

Advanced studio projects in designing scenery for a variety of stage forms. Fee. Prerequisite: THP 340 or written instructor approval.

THP 441 Scene Painting. (3)*selected semesters*

Studio projects in painting stage scenery. Fee. Prerequisite: THP 340 or written instructor approval.

THP 442 Drawing. (3)*selected semesters*

Techniques in drawing and rendering for scenic, costume, and lighting design. Prerequisite: written instructor approval.

THP 444 Drafting for the Stage. (3)*selected semesters*

Fundamentals of and practice in graphic techniques for the stage. Introduces computer-aided design for the stage. 2 hours lecture, 3 hours studio. Fee. Prerequisites: THP 213; written instructor approval.

THP 445 Advanced Lighting Design. (3)*selected semesters*

Specialized techniques in stage lighting. Advanced application of design process, graphic techniques of design presentation, and use of qualities of light. Lecture, class workshops. Fee. Prerequisite: THP 345 or written instructor approval.

THP 450 Theatre Organization and Management. (3)*once a year*

Overview of nonprofit arts: organizational design, strategic planning, financial management, and leadership. Prerequisite: THE 220.

THP 460 Playwright's Workshop. (3)*fall and spring*

Practice and study of creating characters, dialogue, scenes, plays, and monologues for the stage. May be repeated for credit. Studio, lecture. Prerequisite: written instructor approval.

THP 461 Scripts in Progress. (3)*fall and spring*

Studio work with the instructor, centered on revisions of original plays. May be repeated for credit. Studio. Prerequisite: THP 460 or written instructor approval.

THP 472 Advanced Movement for the Stage. (3)*once a year*

Movement techniques for the classical and nonrealistic theatre; stage combat and special skills. Prerequisite: THP 272 or instructor approval.

THP 477 Advanced Speech for the Stage. (3)*once a year*

Exercises to develop vocal flexibility and power; mastery of elevated American diction and language skills applied to classical and nonrealistic drama; stage dialects. Prerequisite: THP 377.

THP 481 Secondary School Play Production. (3)*fall*

Methods of directing, designing, and coordinating play production experiences at the secondary school level. Off-campus practicum. Prerequisites: both THP 318 and theatre education concentration or only instructor approval.

THP 482 Theatre for Social Change. (3)*fall and spring*

Interactive theatre techniques (e.g., Boal, drama therapy, playback theatre) to examine and combat institutional, social, cultural, interpersonal, and personal oppressions. Lecture, lab.

*General Studies: C***THP 484 Internship. (1–4)***selected semesters***THP 485 Acting: Advanced Classical Scene Study. (3)***once a year*

Rehearsal and performance of period, classical, and nonrealistic plays. Emphasizes understanding poetic language and strong vocal and physical skills. Prerequisite: THP 385 or instructor approval.

THP 486 The Meisner Approach to Acting. (3)*once a year*

Improvisations and exercises developed by Sanford Meisner applied to scene work from selected texts. Studio. Prerequisite: introductory acting classes.

THP 487 Acting for TV and Film. (3)*once a year*

Professional television and film acting techniques, terminology, and on-camera experience. Studio. Prerequisite: THP 207 or 285.

THP 488 Audition Techniques. (3)*once a year*

Techniques and preparation for stage, commercial, and TV/film auditions utilizing monologues, cold readings, and personal style. Studio. Prerequisite: introductory acting classes.

THP 489 Actor Career Development. (3)*once a year*

Familiarization with the business of acting: self-promotional tools and techniques, marketing strategies, finances, interview skills, and actor unions. Studio. Prerequisite: introductory acting classes.

THP 494 Special Topics. (1–4)*once a year*

Topics may include the following:

- Advanced Screenwriting
- Performance and Technology
- Problems in Directing
- Solo and Collaborative Performance
- Solo Performance
- Stage Dialects
- Storytelling
- Theory and Practice of Performance

THP 498 Pro-Seminar. (1–7)*once a year*

Topics may include the following:

- Directing. (1–6)
 - Theatre-for-Youth Tour. (1–6)
 - Theatre in Education. (1–6)
- Prerequisite: written instructor approval.

THP 501 Performance: Solo Performance. (1–8)*once a year*

Students begin to define their mission in art. Emphasizes the actor as a solo storyteller, speaking as herself or himself. Studio. Prerequisite: instructor approval.

THP 502 Performance: Aesthetics of Theatre Art. (1–8)*once a year*

Understanding and analyzing scripts and performance in order to be an effective actor/storyteller who speaks as a character. Projects focus on solo, duet performances. Studio. Prerequisite: instructor approval.

THP 503 Performance: The Ensemble. (1–8)*once a year*

Ensemble, working with a playwright, creates a play that addresses social issues through improvisation and community input. Studio. Prerequisite: instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

THE KATHERINE K. HERBERGER COLLEGE OF FINE ARTS

THP 504 Acting: Transformation. (1–8)

once a year

Fundamentals including combat, scansion, poetic language, acting style. Scene study, ensemble performance projects focused on Shakespeare, new scripts. Studio. Prerequisite: THP 503 or written instructor approval.

THP 506 Scenography. (3)

selected semesters

Process of production collaboration. Taught in conjunction with THP 519. Fee. Prerequisite: theatre graduate standing or written instructor approval.

THP 507 Acting: Advanced Research and Performance. (1–3)

once a year

Acting in advanced theatre projects, productions, or collaborative performance in directing classes. May be repeated for credit. Studio. Prerequisite: instructor approval.

THP 509 Singing for Actors. (1)

fall and spring

Introduces the basics of singing technique. Breath control, resonance, articulation, exploration, and expansion of singing range. May be repeated for credit. Studio. Prerequisite: admission to M.F.A. performance concentration or written instructor approval.

THP 511 Improvisation with Youth Workshop. (3)

spring

Theories and techniques of drama with various populations of youth. Emphasizes how research informs practice. Includes practicum. Prerequisites: only THP 411 or both graduate standing and written instructor approval.

THP 512 Puppetry Workshop. (3)

fall, spring, summer

Survey of puppetry in education, puppetry as an art form in design and performance. Fee. Prerequisite: graduate standing or written instructor approval.

THP 517 Stage Management Practicum. (3)

once a year

Readings and research in stage management and participation as a stage manager in a university theatre production. Prerequisite: written instructor approval.

THP 518 Advanced Directing Lab. (3)

once a year

Active discovery of directing concepts through practical exercises and collaboration; deconstruction of contemporary/classic literature. Explores director as primary artist. Lab. Prerequisite: written instructor approval.

THP 519 Directing: Works in Progress. (3)

once a year

Advanced projects in directing concentrating on a collaborative process between director, playwright, actors, and designers. Focuses primarily on new scripts or adaptations of literature. May be repeated for credit. Studio, on-site practicum. Prerequisites: THP 418; instructor approval.

THP 530 Advanced Costume Design. (3)

selected semesters

Advanced studio projects in costume design for a variety of production forms. Prerequisite: written instructor approval.

THP 540 Scene Design Applications. (3)

selected semesters

Conceptual and practical application of the design process including graphic and sculptural projects. Practical design problems investigated in laboratory. Lecture, lab. Lab fee. Prerequisite: written instructor approval.

THP 545 Lighting Design Applications. (3)

selected semesters

Advanced studio projects in stage lighting design. Prerequisite: written instructor approval.

THP 560 Playwright's Workshop. (3)

fall and spring

Practice and study of creating characters, dialogue, scenes, plays, and monologues for the stage. May be repeated for credit. Studio. Prerequisite: written instructor approval.

THP 561 Scripts in Progress. (3)

fall and spring

Studio work with the instructor centered on revisions of original plays. May be repeated for credit. Studio. Prerequisite: THP 560 or written instructor approval.

THP 584 Internship. (1–3)

selected semesters

Field research and on-site training in theatre for youth, community theatre, and production techniques. Prerequisite: written instructor approval.

THP 592 Research. (1–12)

selected semesters

THP 593 Applied Project. (1–12)

selected semesters

Prerequisite: written instructor approval.

THP 594 Conference and Workshop in Child Drama. (3)

once a year

Prerequisite: written instructor approval.

THP 598 Special Topics. (1–4)

once a year

Lecture, studio. Topics may include the following:

- Advanced Screenwriting
- College Teaching:
 - Acting
 - Improvisation with Youth
 - Movement
 - Puppetry
 - Theatre for Social Change
 - Voice
- Performance and Technology
- Solo and Collaborative Performance
- Solo Performance
- Stage Dialects
- Storytelling

THP 599 Thesis. (1–12)

selected semesters

THP 611 Improvisation with Youth Seminar. (3)

once a year

Examines current research, theory, and practices in drama with youth. Development and execution of research projects. Prerequisite: written instructor approval.

THP 618 Directing Practicum. (3)

fall and spring

Practical experience in directing and producing an entire play or musical for young audiences. Prerequisite: written instructor approval.

THP 649 Design Studio. (3)

fall and spring

Projects include design of scenery, costume, lighting, or sound for laboratory or mainstage productions. May be repeated for credit. Prerequisite: written instructor approval.

THP 684 Internship. (1–6)

fall, spring, summer

Field research in performance, improvisation with youth, theatre for youth, puppetry, and scenography. Prerequisite: written instructor approval.

THP 691 Seminar: Scenography. (3)

selected semesters

Examines and researches modern concepts and practices of scenography. Prerequisite: written instructor approval.

THP 693 Applied Project. (1–12)

fall, spring, summer

Final projects for M.F.A. Theatre candidates in performance, scenography, and theatre for youth. Prerequisite: written instructor approval.

THP 783 Field Work. (1–12)

selected semesters

Topics may include the following:

- Theatre Education

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

College of Law

www.law.asu.edu

Patricia D. White, J.D., Dean

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ORGANIZATION

Law Building and Law Library

The John S. Armstrong Law Building is located near other colleges on the university's main campus. The Law Building provides every modern facility for legal education and has been described by experts involved in the planning of law buildings as setting a new standard in functional design.

The award-winning John J. Ross–William C. Blakley Law Library, named in memory of two prominent Phoenix attorneys, is one of the finest law libraries in the Southwest. The library houses a collection of more than 351,000 volumes and microform volume equivalents. The collection includes a broad selection of Anglo-American case reports and statutes as well as legal treatises, periodicals, encyclopedias, digests, citators, and administrative materials. The collection also includes a growing selection of special materials dealing with international law, Indian law, Mexican law, and law and technology.

PURPOSE

The prime function of the College of Law is to train men and women for the practicing legal profession and related professional assignments. In addition, the college has the responsibility to contribute to the quality of justice administered in our society.



The College of Law Great Hall

Jeff Havir photo

COLLEGE OF LAW

The library, housed in a dramatic and functional building that opened in August 1993, is also a selective U.S. government depository. The building provides accessible shelving for the expanding collections and comfortable study space at carrels, tables, and lounge seating located throughout the library. Additionally, the law library has a 30-station computer lab as well as LEXIS and WESTLAW rooms which contain 10 stations each; 27 meeting and study rooms; a microforms facility; and a classroom.

Students also have ready access to the other campus libraries, including the Charles Trumbull Hayden Library, the Daniel E. Noble Science and Engineering Library, the Architecture and Environmental Design Library, and the Music Library. The collections maintained in all university libraries comprise more than 3 million volumes.

Special Programs

Center for the Study of Law, Science, and Technology.

The ASU Center for the Study of Law, Science, and Technology is a multidisciplinary research center founded by the Arizona Board of Regents in 1984. The center publishes research studies, sponsors seminars and symposia, and houses visiting scholars and teachers. Through these programs, the center seeks to contribute to

1. the formulation and improvement of law and public policy affecting science and technology; and
2. the wise application of science and technology in the legal system.

The College of Law offers a substantial number of courses in the law, science, and technology area including bioethics, law and psychiatry, environmental law, health care law, intellectual property, land use regulation, law and evolutionary biology, law and medicine, law and social science, mass communication, natural resources law, patent law, regulatory problems in law, science and technology, and water law. Each semester, the center publishes a student guide to other less obvious courses that contain science and technology issues. In recent semesters this guide has listed courses in AIDS and the law, commercial law, employment law, law and the handicapped, antitrust, statistical proof in employment discrimination litigation, and several courses offered by other departments on campus available for registration by law students. In addition to regular course offerings, students can arrange independent studies with supervising faculty on topics of special interest to them. The center also invites guest speakers from legal or scientific fields to visit with interested law students, generally during the noon hour.

In cooperation with the American Bar Association Section on Science and Technology and under the leadership of a faculty editor, second- and third-year students edit *Jurimetrics: The Journal of Law, Science and Technology*. Student editors both edit submitted works and write original articles for publication in the journal.

Clinical Programs. The College of Law's Clinical Program is a rigorous in-house program that provides third-year students, under the close supervision of an ASU faculty member, the opportunity to represent clients in court. Four live-client clinics, the Civil Practice Clinic, the Criminal Practice

Clinic, the Public Defender Clinic, and the Mediation Clinic, provide students with an opportunity to choose from civil or criminal representation or to serve as mediators in disputes that are resolved outside the court system.

The Civil Practice Clinic operates as a functioning law firm within the college, while Criminal Practice and Public Defender Clinic students work in offices located within agencies or courthouses. Second-year students are offered "simulation-based" courses in Lawyering Theory and Practice in preparation for enrollment in a live-client clinic. Other simulation courses include Trial Advocacy, Pre-Trial Practice, and Negotiation.

Indian Legal Program. The College of Law offers an Indian Legal Program intended to serve tribal courts and governments by providing information on legal issues. The program also provides education and generates scholarship on Indian law. Through a Certificate in Indian Law, the college provides its students with a quality legal education and an opportunity to gain specific knowledge and expertise in Indian law.

Students at the College of Law have the opportunity to participate in all phases of the Indian Legal Program and gain an in-depth understanding of the legal issues affecting Indian tribes and people. Courses on Federal Indian law and seminars on advanced Indian law topics such as tribal law, economic development, American Indian cultural resources protection, and tribal environmental law are part of the curriculum. Students also have the opportunity to participate in internships with local tribal courts, the Native American Rights Fund, the U.S. Department of the Interior, or the Senate Committee on Indian Affairs in Washington, D.C. This variety of academic and work experience provides the students with an outstanding legal education and a firm grounding in both the theoretical and practical aspects of Indian law.

ADMISSION

First-year students are admitted only for the fall semester. The formal requirements for admission to the College of Law are (1) an undergraduate degree from an accredited four-year college or university and (2) a score on the Law School Admission Test (LSAT), administered by Law Services, Box 2000, Newtown, Pennsylvania 18940, in centers throughout the country.

For more information regarding admission, call 480/965-1474 or write

ADMISSIONS OFFICE
COLLEGE OF LAW
ARIZONA STATE UNIVERSITY
PO BOX 877906
TEMPE AZ 85287-7906

Retention Standards

To be eligible to continue in the College of Law, students must maintain a cumulative weighted GPA of 70 or higher at the end of each semester or summer session. Any student who fails to achieve a 70 GPA in any one semester, regardless of the cumulative GPA, is automatically placed on probation. Continuation of enrollment by probationary students

is upon such terms and conditions as the college may impose.

A student whose cumulative GPA falls below the required level or whose semester GPA is less than 70 in two consecutive semesters is dismissed but may apply to the Office of the Dean for readmission. The Office of the Dean refers the application to a faculty Committee on Readmission. Cases in which the GPA deficiency is slight and evidence of extenuating circumstances is convincing, readmission may be granted on a probationary status after a review of the reasons contributing to unsatisfactory performance and a finding that there is substantial prospect for acceptable academic performance. Continuation in school thereafter may be conditioned on achieving a level of performance higher than the overall 70 GPA. Further detailed information concerning the college's retention standards can be found in the *Bulletin of the College of Law*.

Honor Code. The legal profession, a self-regulating association, depends on the integrity, honor, and personal morality of each member. Similarly, the integrity and value of an ASU College of Law degree depends on a reputation for fair competition. The college's *Honor Code* is intended as a measure to preserve the integrity of the school's diploma and to create an arena in which students can compete fairly and confidently. Copies of the *Honor Code* are available from the assistant dean in the college's Student Services Office.

ACCREDITATION

The college is fully accredited by the American Bar Association and is a member of the Association of American Law Schools.

JURIS DOCTOR DEGREE

The College of Law offers a three-year program of professional studies at the graduate level leading to the degree of Juris Doctor.

For more information on the degree and courses, see the *Graduate Catalog*.

Course of Study

The program of study in the College of Law is designed for full-time students. In the first year of the three-year program, the course of study is prescribed and incorporates the time-proven techniques of legal education. This first year gives students—by the “case method,” by the “problem method,” by “moot court,” and through other techniques—an intensive exposure to the basic legal processes.

As a part of the program, first-year students are assigned to small sections. In the Legal Research and Writing program, first-year students prepare legal briefs and memoranda and receive feedback through the use of practice examinations. The program focuses on the development of writing and organizational skills necessary for success in law school and in the practice of law. The second and third years cover a wide range of courses varying in format as well as subject matter, allowing students to pursue both the basic subjects of law study and more specialized interests. By offering great freedom in the selection of subjects, the educational experience of the second and third years is in

sharp contrast to the curriculum of the first year. In addition, the college offers a number of faculty-supervised clinical education programs and a program of supervised externships.

MORE INFORMATION

Further detailed information concerning the course of study, admission practices, expenses, and financial assistance can be found in the *Bulletin of the College of Law*. To request the bulletin or application forms, call 480/965-7207 or write

ADMISSIONS OFFICE
COLLEGE OF LAW
ARIZONA STATE UNIVERSITY
PO BOX 877906
TEMPE AZ 85287-7906

For general information about the College of Law, call 480/965-1474 or access the college's Web site at www.law.asu.edu.

Law

law.asu.edu
480/965-6181
LAW 201

Patricia D. White, Dean

Regents' Professors: Kaye, Murphy

Professors: Arterian, Bartels, Bender, Berch, Brennan, Calleros, Clinton, Ellman, Feller, Furnish, Gorman, Grey, Guerin, Jones, Kader, Karjala, Leshy, Lowenthal, Lynk, Matheson, O'Grady, Rose, Saks, Schatzki, Schroeder, Stanton, Strouse, Tesón, Tsosie, Tucker, Weinstein, White, Winer, Woodley

Associate Professor: Marchant

Senior Clinical Professional: Dauber

Clinical Professional: Dallyn

DIRECTORS

Center for the Study of Law, Science, and Technology: Marchant

Clinical Programs: O'Grady

Indian Legal Program: Tsosie

Legal Research and Writing and Academic Support: Stinson

LAW (LAW)

See the *Graduate Catalog* for the LAW courses.

College of Liberal Arts and Sciences

www.asu.edu/clas

David A. Young, Ph.D., Dean

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PURPOSE

Like all major research universities, Arizona State University provides the means for undergraduates to acquire a liberal education, an education that broadens students' understanding in the major areas of human knowledge while providing students with in-depth knowledge in their chosen areas of focus. While the professional schools and colleges can and do provide for important dimensions of a liberal education, the central academic setting for accomplishing this basic university purpose is the College of Liberal Arts and Sciences (CLAS). The college provides a particularly rich and varied set of opportunities for students to gain the kind of liberal education that helps to prepare them for a lifetime of continued learning and application of knowledge in a diverse and ever-changing world.

As a consequence of the wide range of subjects CLAS offers in the humanities, the natural sciences and mathematics, and the social and behavioral sciences, instruction is provided in a number of core areas for undergraduate students from all of the other colleges. Students with majors in business, education, engineering, nursing, and other professional colleges rely on CLAS for basic foundation courses. CLAS also offers the majority of courses meeting the General Studies requirement.

CLAS initiated and continues to participate actively with the Barrett Honors College. It also offers advising to undergraduates who are working out their undergraduate programs or are planning for graduate studies.

Most of the university faculty's engagement in the discovery and creation of knowledge and its dissemination occurs in CLAS. As an integral part of this activity, CLAS offers a wide range of graduate training programs leading to a master's or doctoral degree. For graduate degree application information, see the *Graduate Catalog* and contact either the Graduate College or the academic unit in which the degree of interest would be earned, the latter in order to receive detailed information on particular degree requirements.

ORGANIZATION

CLAS consists of 23 academic departments, several interdisciplinary programs, seven centers, and several research institutes and laboratories. The college offers 37 programs leading to a bachelor's degree, 31 programs leading to a master's degree, 21 programs leading to a doctoral degree, and interdisciplinary graduate programs in cooperation with other colleges. Undergraduate customized interdisciplinary degrees are also available in the college.

For more information, access the college's Web site at www.asu.edu/clas.

ADMISSION

Any entering ASU student who has met the minimum university entrance requirements can be admitted to CLAS. Students with fewer than 50 earned hours of credit can, if they wish, be admitted as “no preference” students. Students with 50 or more hours must declare a major to be accepted into the college.

Any student with a cumulative GPA of at least 2.00 who is currently registered in good standing in another college at ASU and who wishes to major in a subject offered by CLAS and to follow a program of study in the major may transfer into the college. (Students wishing to transfer into the major of Economics must have an ASU cumulative GPA of at least 2.50.) The student transfers by applying and being initially advised in the Office for Academic Programs in SS 111. Students admitted from other ASU colleges are under mandatory advising during the first semester and must take courses leading directly to a degree in CLAS. Failure to follow mandated advice on course selection can result in enrollment and registration problems, including cancellation and holds.

Transfer Students. The university standards for evaluation of transfer credit are listed under [“Transfer Credit,” page 61](#). All students who meet the university standards are admissible to CLAS, but students desiring to major in Economics must have transfer GPAs of at least 2.50. Transfer students are urged to contact the relevant academic department or the Office for Academic Programs in SS 111, to ensure a smooth transition to CLAS. Students who have transferred courses from institutions other than Arizona community colleges must have their transcripts evaluated by an advisor in SS 111. Students who have attended only Arizona community colleges have evaluations performed in the department of the major.

Courses transferred from two-year (community) colleges are accepted as lower-division credit only. Students are urged to choose their community college courses carefully, in view of the fact that a minimum of 45 semester hours of work taken at the university must be upper-division credit (see [“Community Colleges,” page 61](#)).

“Undecided” or “Undeclared” Majors. Students in CLAS are not required to select a major upon entering the college as freshmen or at any time thereafter until the semester in which 60 semester hours are earned. Until such “no preference” students have chosen a major, they are advised through Academic Advising Services, in the Undergraduate Academic Services Building. It is important to consult an academic advisor before any enrollment activity. Before or during the semester in which they earn 60 semester hours, students *must* select their major and transfer into the appropriate department.

Note: Students who wish to enter a program of study that has a rigidly structured curriculum should be aware that delay in choosing a major could result in added time and cost in the completion of requirements.

ADVISING

All students are urged to seek advising in the appropriate college unit before registration. Students must follow the

calendar published in the *Schedule of Classes* each semester for information regarding enrollment, adding/dropping classes, and withdrawals.

In addition to information provided by an advisor, students must read the requirements for university General Studies, college graduation, and major degree requirements in this edition of the ASU *General Catalog*. See [“General Studies,” page 83](#), [“University Graduation Requirements,” page 79](#), [“CLAS Graduation Requirements,” 331](#), and the section of the department offering the major. The ASU *General Catalog* is the governing source for all degree requirements.

Regular Advising. All students are strongly urged to seek advising in the appropriate college unit before registration.

Advising Locations. CLAS students should seek routine advising at the locations shown in the [“Advising Locations” table, on this page](#).

The Office for Academic Programs, in SS 111, is the central resource center for academic information in the college. Requests from students, departmental advisors, and faculty for clarification of rules, procedures, and advising needs of the college and university should be directed to that office.

Advising Locations

Student	Location
Declared majors	Department of major
No preference;	Academic Advising Services,
no preference, prelaw	UASB (480/965-4464)
No preference,	Pre-Health Professions,
premedical	LSC 206C (480/965-2365)

Mandatory Advising. The following categories of Liberal Arts and Sciences students *must* receive advising and *must* be cleared on the Mandatory Advising Computer System (MACS) before their classes are scheduled:

1. students in their first semester at ASU;
2. students on probation;
3. students with a cumulative GPA of less than 2.00;
4. students who have admissions deficiencies;
5. other students with “special admissions” status; and
6. students who have been disqualified (these students are allowed to attend ASU summer and winter sessions only and must be advised in the Office for Academic Programs in SS 111).

Students in the above mandatory advising categories should consult an advisor in the appropriate advising location listed in the previous section. Students with admission deficiencies are carefully monitored to ensure that they take courses that eliminate their deficiencies. Students are encouraged to check their mandatory advising status each semester before attempting registration transactions.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

COLLEGE OF LIBERAL ARTS AND SCIENCES

Advising for Preprofessional Programs. Special advising is available for students planning to enter the fields listed in the [“Advising for Preprofessional Programs” table, on this page](#). The professional programs shown in the table are not majors in themselves; that is, there are no majors called “premedical,” “prelaw,” etc. In each program, the student must eventually select an established major in CLAS or in one of the other colleges.

Advising for Preprofessional Programs

Professional Field	Office Where Advisor Is Located
Dentistry ^{1,2}	Pre-Health Professions, LSC 206C
Foreign service	Department of chosen major
Health physics	Pre-Health Professions, LSC 206C
Law	Office for Academic Programs, SS 111
Medicine ¹	Pre-Health Professions, LSC 206C
Ministry	Department of Religious Studies, LL 641
Occupational therapy ¹	Pre-Health Professions, LSC 206C
Optometry ^{1,2}	Pre-Health Professions, LSC 206C
Osteopathy ¹	Pre-Health Professions, LSC 206C
Pharmacy ¹	Pre-Health Professions, LSC 206C
Physical therapy ¹	Pre-Health Professions, LSC 206C
Podiatry ^{1,2}	Pre-Health Professions, LSC 206C

¹ Students preparing for a career in these areas should register in the Pre-Health Professions office, 480/965-2365.

² No school in Arizona offers a program in dentistry, optometry, or podiatry. Students interested in pursuing these professions should confer with the Pre-Health Professions advisor concerning out-of-state schools where they may complete their training.

Pre-Health Professions. Students pursuing professional schools in the health professions must choose a major offered by ASU. However, certain specific courses must be taken to prepare the student to take the MCAT or other entrance examinations and to succeed in postbaccalaureate training. Therefore, students who plan to pursue a health profession should meet regularly with the Pre-Health Professions office for guidance. While this guidance does not replace the need to meet with an advisor in the department of the student’s major, pre-health advising is a necessary supplement. To schedule a meeting with Pre-Health Professions, located in LSC 206, call 480/965-2365.

Prelaw. The American Bar Association does not recommend any specific major for students who wish to apply to law school upon graduation. ASU does not have a “prelaw” degree program. Therefore, students should select a major that interests them. Recent surveys of law school graduates indicate that students would be well advised to take one or two semesters of accounting as a supplement to their major curriculum. In addition, the American Bar Association recommends a variety of courses in the classics, in economics, and in mathematical reasoning. Courses that engage the student in intense critical analysis and a substantial amount of writing are also recommended. As the student approaches the second semester of his or her junior year, the student should contact the prelaw advisor in the college or depart-

ment of his or her major to obtain information regarding the procedure to apply to law school.

DEGREES

Majors. Programs leading to the B.A. and B.S. degrees are offered by CLAS, with majors in the subjects listed in the [“College of Liberal Arts and Sciences Baccalaureate Degrees and Majors” table, page 329](#). Each major is administered by the academic department indicated.

Minors. Although not required for graduation, special college-approved minors are available in most departments. Check department program descriptions for details. Minors offered by departments must have at least 18 hours of designated courses, including at least 12 hours of upper-division work. The college requires a grade of at least “C” in all upper-division courses in the minor. Some departments have stricter requirements. A minimum of six upper-division hours in the minor must be taken in residence at ASU Main.

University policies prohibit the “double-counting” of courses from the major for the minor. Specific questions concerning double-counting, as well as general questions about the approval processes for minors, should be taken up with an academic advisor in the department offering the minor or the Office for Academic Programs in SS 111.

Refer to the CLAS portion of the [“ASU Minors” table, page 109](#).

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges, and the College of Liberal Arts and Sciences to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university’s three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning. The Extended Campus also offers a variety of professional continuing education and community outreach programs.

For more information, see [“ASU Extended Campus,” page 703](#), or access the Web site at www.asu.edu/xed.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements. For complete information, see [“University Graduation Requirements,” page 79](#).

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35 hours of approved course work in General Studies, as described in [“General Studies,” page 83](#). Note that all three

College of Liberal Arts and Sciences Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
African American Studies	B.A.	Humanities/arts, politics and society, social and behavioral sciences	African American Studies Program
Anthropology	B.A.	—	Department of Anthropology
Asian Languages (Chinese/Japanese)	B.A.	—	Department of Languages and Literatures
Biochemistry	B.S.	—	Department of Chemistry and Biochemistry
Biology	B.S.	Biology and society	Department of Biology
Chemistry	B.A., B.S.	—	Department of Chemistry and Biochemistry
Chicana and Chicano Studies	B.A.	Humanities/cultural sciences, social sciences/policy	Department of Chicana and Chicano Studies
Clinical Laboratory Sciences	B.S.	—	Department of Microbiology
Computational Mathematical Sciences	B.S.	—	Department of Mathematics and Statistics
Conservation Biology	B.S.	—	Department of Biology
Economics	B.A., B.S.*	—	Department of Economics
English	B.A.	Linguistics, literature	Department of English
Exercise Science/Physical Education	B.S.	Exercise science, physical education	Department of Exercise Science and Physical Education
Family and Human Development	B.S.	Family studies/child development	Department of Family and Human Development
French	B.A.	—	Department of Languages and Literatures
Geography	B.A., B.S.	Meteorology-climatology, urban studies	Department of Geography
Geological Sciences	B.S.	—	Department of Geological Sciences
German	B.A.	—	Department of Languages and Literatures
History	B.A.	—	Department of History
Humanities	B.A.	—	Interdisciplinary Humanities Program
Integrated Studies	B.A., B.S.	—	College of Liberal Arts and Sciences
Italian	B.A.	—	Department of Languages and Literatures
Mathematics	B.A.	—	Department of Mathematics and Statistics
	B.S.	Statistics	Department of Mathematics and Statistics
Microbiology	B.S.	—	Department of Microbiology
Molecular Biosciences/ Biotechnology	B.S.	—	Departments of Microbiology and Plant Biology
Philosophy	B.A.	—	Department of Philosophy
Physics	B.S.	—	Department of Physics and Astronomy
Plant Biology	B.S.	Environmental science and ecology, plant biochemistry and molecular biology, urban horticulture	Department of Plant Biology
Political Science	B.A.	—	Department of Political Science
	B.S.	Public policy advocacy and lobbying, public policy analysis	Department of Political Science
Psychology	B.A., B.S.	—	Department of Psychology
Religious Studies	B.A.	—	Department of Religious Studies
Russian	B.A.	—	Department of Languages and Literatures

* The department is in the College of Business, which also offers this major, with different requirements.

College of Liberal Arts and Sciences Baccalaureate Degrees and Majors (continued)

Major	Degree	Concentration	Administered By
Sociology	B.A.	—	Department of Sociology
Spanish	B.A.	—	Department of Languages and Literatures
Speech and Hearing Science	B.S.	—	Department of Speech and Hearing Science
Women's Studies	B.A.	—	Women's Studies Program

* The department is in the College of Business, which also offers this major, with different requirements.

General Studies awareness areas are required. Consult your advisor for an approved list of courses.

General Studies courses are listed in the [“General Studies Courses” table, page 86](#), in the course descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*.

COLLEGE DEGREE REQUIREMENTS

CLAS degree requirements are more extensive than the General Studies requirement. Additional course work in the humanities, natural sciences and mathematics, and social and behavioral sciences is required. Students are encouraged to consult with an academic advisor in planning a program to ensure that they meet all necessary requirements.

To graduate from CLAS, a student must satisfy college requirements in addition to university General Studies requirements. These requirements consist of *major requirements* which involve concentrated course work in a selected field; and *CLAS graduation requirements* which ensure that the student demonstrates proficiency in a second language while exposing the student to other liberal arts and sciences outside the major field.

I. Major Requirements. Each student is required to select a major from among the fields of study offered by CLAS. The requirements for completion of the major are described under departmental listings.

- A. The major department may require up to 45 semester hours of course work. The minimum is 30 hours. A maximum of 15 additional hours may be required in related courses and prerequisites. No more than 60 semester hours of course work may be required to complete the major, related courses, and prerequisites. Some departments require calculus-level mathematics; up to five of these semester hours may be excluded from the 60-hour maximum because they satisfy the mathematics proficiency requirement. A minimum of 12 upper-division hours in the major must be taken in residence at ASU Main.
- B. No credit is granted toward fulfilling major or minor requirements in any upper-division course in that subject field unless the grade in that course is at least a “C.” In CLAS, the assignment of a grade of “Y” indicates a level of performance that would have resulted in a grade of at least “C” had the normal grading scheme been used.
See the individual departments for other mini-

mum grade requirements.

C. Major fields of study are classified into the following three divisions:

- 1. Humanities:
 - African American Studies (AFH)
 - Asian Languages (Chinese/Japanese) (CHI/JPN)
 - Chicana and Chicano Studies (CSH)
 - English (Linguistics students must take two upper-division literature or film courses to meet CLAS graduation requirements in humanities.) (ENG)
 - French (FRE)
 - German (GER)
 - Humanities (HUM)
 - Italian (ITA)
 - Philosophy (HPS, PHI)
 - Religious Studies (REL)
 - Russian (Only meets CLAS graduation requirements in humanities if at least two upper-division literature or civilization courses are taken.) (RUS)
 - Spanish (SPA)
 - Women's Studies (WSH)
- 2. Natural sciences and mathematics:
 - Biochemistry (BCH)
 - Biology (BIO)
 - Chemistry (CHM)
 - Clinical Laboratory Sciences (CLS)
 - Computational Mathematical Sciences (MAT)
 - Conservation Biology (BIO)
 - Geological Sciences (GLG)
 - Mathematics (MAT)
 - Microbiology (MIC)
 - Molecular Biosciences/Biotechnology (MBB)
 - Physics (AST, PHS, PHY)
 - Plant Biology (PLB)
- 3. Social and behavioral sciences:
 - African American Studies (AFS)
 - Anthropology (ASB, ASM)
 - Chicana and Chicano Studies (CSS)
 - Economics (ECN)
 - Exercise Science/Physical Education (Students majoring in this field must satisfy the CLAS

- graduation requirements in all three divisions.) (EPE)
- Family and Human Development (Students majoring in this field must satisfy the CLAS graduation requirements in all three divisions.) (CDE, FAS)
- Geography (GCU)
- History (HST)
- Political Science (POS)
- Psychology (PGS, PSY)
- Sociology (SOC)
- Speech and Hearing Science (Students majoring in this field must satisfy the CLAS graduation requirements in all three divisions.) (SHS)
- Women's Studies (WST)

II. CLAS Graduation Requirements. The purpose of the CLAS graduation requirements is to ensure that the student is introduced to disciplines outside the division of the major. A list of major fields and their respective divisions is given under I.C.

Unless the major field notes otherwise in I.C., students are considered to have fulfilled the CLAS graduation requirements in the division of the major.

Students majoring in Exercise Science/Physical Education, Family and Human Development, and Speech and Hearing Science must satisfy CLAS graduation requirements in social behavioral sciences as well as in the other two divisions. Students majoring in African American Studies or Chicana and Chicano Studies satisfy either the CLAS graduation requirements in the humanities or the social and behavioral sciences, depending upon their concentrations.

Students majoring in Anthropology, Geography, or Psychology may not use ASM courses in the case of Anthropology majors, GPH courses in the case of Geography majors, or PSY courses in the case of Psychology majors to satisfy the CLAS graduation requirements in the natural sciences and mathematics.

Note: Courses used to fill the university General Studies requirement in Humanities and Fine Arts (HU), Social and Behavioral Sciences (SB), or laboratory sciences (SQ or SG) may not be used to fill CLAS graduation requirements in the humanities, social and behavioral sciences, and the natural sciences and mathematics.

A. Humanities (six semester hours). Each student is required to complete two upper-division courses of at least three semester hours each. Course prefixes are identified in the following section.

Course prefixes for the CLAS graduation requirement in the Humanities:

1. AFH (African American Studies Program)
2. CSH (Department of Chicana and Chicano Studies)
3. ENG (Department of English; any literature course, including ENG 200 and 218)

4. CHI, FLA, FRE, GER, GRK, HEB, ITA, JPN, LAT, POR, RUS, SCA, SPA (Department of Languages and Literatures; FLA 150 or any literature or "civilization" course at the 200 level or above that is not also used to meet the language proficiency requirement)
5. HUM (Interdisciplinary Humanities Program)
6. HPS, PHI (Department of Philosophy)
7. REL (Department of Religious Studies) religion, Bible, or theology courses from sectarian institutions may not be used to fill any CLAS Humanities requirement. Such courses may be used only for elective credit toward a student's graduation.
8. WSH (Women's Studies Program)

B. Natural sciences and mathematics (six semester hours). Each student is required to complete two courses of at least three semester hours each.

Course prefixes for the CLAS graduation requirements in the natural sciences and mathematics:

1. ASM (Department of Anthropology)
 2. BIO (Department of Biology)
 3. BCH, CHM (Department of Chemistry and Biochemistry)
 4. CSE (Department of Computer Science and Engineering)
 5. GPH (Department of Geography)
 6. GLG (Department of Geological Sciences)
 7. MAT, STP (Department of Mathematics and Statistics)
- Note:* Only mathematics courses for which MAT 117 or a higher-level mathematics course is a prerequisite may be used to satisfy the CLAS graduation requirements in Natural Sciences and Mathematics.
8. MIC (Department of Microbiology)
 9. AST, PHS, PHY (Department of Physics and Astronomy)
 10. PLB, MBB (Department of Plant Biology)
 11. PSY (Department of Psychology)

C. Social and behavioral sciences (six semester hours). Each student is required to complete two upper-division courses of at least three semester hours each. Course prefixes of approved courses are identified in the following section.

Course prefixes for the CLAS graduation requirements in the social and behavioral sciences:

1. AFS (African American Studies Program)
2. ASB (Department of Anthropology)

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

3. CSS (Department of Chicana and Chicano Studies)
4. ECN (Department of Economics)
5. GCU (Department of Geography)
6. HST (Department of History)
7. PGS (Department of Psychology)
8. POS (Department of Political Science)
9. SOC (Department of Sociology)
10. WST (Women's Studies Program)
Note: Before the 1999–2000 edition of the *General Catalog*, all Women's Studies courses were listed as WST. Consult an advisor to verify if an earlier WST course should be considered WSH or WST.

- D. Bridge course requirement (three semester hours). Each student is required to complete one CLAS bridge course of at least three semester hours. Bridge courses contain substantial content that bridges at least two of the areas of inquiry noted in sections A., B., and C. Bridge courses cannot be double-counted to fill any other CLAS graduation requirement or the HU, SB, SQ, or SG portions of the General Studies requirement. Bridge courses may be double-counted with the major or Literacy and Critical Inquiry, Mathematical Studies, or any of the awareness areas when applicable.

The following courses have been approved as CLAS bridge courses (see an advisor for any additional bridge courses approved after the *General Catalog* was published):

- ASB 240 Introduction to Southeast Asia
(Cross-listed as GCU 240/
HST 240/POS 240/REL 240)
- ASB 326 Human Impacts on Ancient
Environments
- ASB 350 Anthropology and Art
- ASB 353 Death and Dying in Cross-Cultural
Perspective
- ASB 462 Medical Anthropology: Culture
and Health
- ASM 248 Bioarchaeology of Cannibalism,
Violence, and Social Pathology
- ASM 345 Disease and Human Evolution
- BIO 311 Biology and Society
(Cross-listed as HPS 340)
- BIO 316 History of Biology: Conflicts and
Controversies
(Cross-listed as HPS 330)
- BIO 427 Fire
- ENG 312 English in Its Social Setting
- ENG 494 ST: Science and Literature Across
the Cultural Divide
- EPE 452 Exercise Psychology
- GCU 344 Geography of Hispanic Americans
- GPH 314 Global Change
- GPH 405 Energy and Environment
- GPH 422 Plant Geography
(Cross-listed as PLB 422)
- HPS 322 History of Science

- HPS 330 History of Biology: Conflicts and
Controversies
(Cross-listed as BIO 316)
- HPS 331 History of Medicine
(Cross-listed as BIO 318)
- HST 460 History of Fire
- HUM294 ST: Introduction to Southeast Asia
- HUM420 Interpreting Latin America
- MIC 394 ST: Disease and AIDS in America
- PGS 394 ST: Disease and AIDS in America
- PLB 320 Environmental Science
(Cross-listed as BIO 319)
- PSY 424 Genetic Psychology
- PSY 425 Biological Bases of Behavior
- PSY 426 Neuroanatomy
- PSY 470 Psychopharmacology
- REL 379 Religion, Nationalism, and Ethnic
Conflict
- REL 382 Religion, Magic, and Science
- REL 390 Women and Religion
- REL 480 Religion and Global Politics
- SCA 250 Introduction to Scandinavian
Culture
- SHS 394 ST: Brain, Memory, and Language
- SOC 334 Technology and Society
- SOC 390 Social Statistics I
- SOC 420 Sociology of Religion
- SOC 451 Comparative Sociology
- SOC 483 History of Social Thought
- WST 394 ST: Women and Religion

- E. Each student is required to demonstrate proficiency by completing courses in a second language. Each student must demonstrate proficiency by completing the courses specified below with a grade of "C" or higher in each course. Second language course requirements consist of
1. completion of second language course work at the intermediate level (202 or equivalent, though some languages require both semesters at the intermediate level to be taken to demonstrate proficiency; see the Department of Languages and Literatures listings for greater specification);
 2. a foreign language course at the 300 level or higher taught in the foreign language and having 202 or its equivalent as a prerequisite;
 3. completion of secondary education at a school in which the language of instruction is not English; or
 4. completion of SHS 202 American Sign Language IV or its equivalent.
- F. Students are required to take a minimum of MAT 114 or higher. A grade of "C" or higher must be earned in the chosen Mathematics course.

III. General Electives. Most CLAS majors can meet all of the above requirements with fewer than 120 semester hours required for graduation. The remaining hours are general electives that may be selected from any of the

departments of CLAS and from the offerings of the other colleges.

Declaration of Graduation. The declaration of graduation, which is required by university regulations during the semester in which an undergraduate earns the 87th hour, must be filed and approved at least two weeks before the preregistration period for the subsequent semester. Students should run a new DARS report every semester to gauge how well they are meeting all requirements for graduation. Students should contact the Office for Academic Programs, in SS 111, regarding college graduation rules and deadlines. Deadlines for filing the declaration of graduation after enrolling in the 87th hour are March 1 and October 1 of each year. Students with 87 hours must have a college-approved declaration of graduation before registering for the next semester.

Credit Requirement. All candidates for graduation in the B.A. and B.S. degree curricula are required to complete at least 120 semester hours, of which at least 45 hours must consist of upper-division courses. A minimum ASU cumulative GPA of 2.00 is required for graduation.

Concurrent Degrees. Students who wish to obtain concurrent degrees must realize that there are certain combinations that would not be approved because there is too great an overlap between the courses required for each major. For example, students may not obtain concurrent degrees in two life sciences. Students who wish to obtain concurrent degrees may not double-count courses from one major to the next, but must have at least 30 different semester hours in each major.

Course Load. The normal course load is 15–16 semester hours. First-semester freshmen and entering transfer students are not permitted to register for more than 18 semester hours in the initial semester. Other students who wish to register for more than 18 hours must have a GPA of at least 3.00 and must file a petition in the Office for Academic Programs, in SS 111, before registration. Any petition for an overload in excess of 21 hours must be presented to the Standards Committee of the college. No student should assume that his or her petition will be granted for overload.

SPECIAL CREDIT OPTIONS

Pass/Fail Grade Option. The pass/fail grade option is intended to broaden the education of Liberal Arts and Sciences undergraduates by encouraging them to take advanced courses outside their specialization. A mark of “P” contributes to the student’s earned hours but does not affect the GPA. A failing grade is computed into the GPA.

Only CLAS students with at least 60 semester hours may take courses under the pass/fail option. The option may be used under the following conditions:

1. enrollment for pass/fail needs the approval of the instructor and the college;
2. enrollment under this option must be indicated during registration and may not be changed after the late registration period; and

3. a maximum of 12 hours taken for pass/fail may be counted toward graduation.

Students may not enroll under the pass/fail option in the following courses:

1. those taken to satisfy the second language or First-Year Composition requirements;
2. those in the student’s major, minor, or certificate program;
3. those counted toward or required to supplement the major;
4. those counted as 499 Individualized Instruction;
5. those taken for honors credits; or
6. those counted toward satisfying the CLAS graduation requirements or the General Studies requirement.

Audit Grade Option. A student may choose to audit a course in which he or she attends regularly scheduled class sessions but earns no credit. The student should obtain the instructor’s approval before registering for the course. For more information, see [“Grading System,” page 72.](#)

Note: This grade option may not be changed after the drop/add period.

Independent Learning. Study by Independent Learning is not a normal part of a degree program; special circumstances must exist for a degree-seeking student to take Independent Learning courses. Any enrollment in such courses must have the prior approval of the college.

ACADEMIC STANDARDS

The standards for GPA and the terms of probation, disqualification, reinstatement, and appeal are identical to those of the university as set forth under [“Retention and Academic Standards,” page 75,](#) except that the disqualified student in CLAS is suspended for at least two regular semesters at the university. When students are placed on probation, one of three things can happen:

1. the student may raise his or her cumulative GPA to a 2.00 or better by taking new classes and be removed from probation after the fall or spring semester;
2. the student may receive the required semester GPA, but not raise the cumulative GPA to the 2.00 level in which case, the student may continue on probation, earning the required semester GPA, for as many semesters as it takes to raise the cumulative GPA above 2.00; or
3. the student may fail to achieve the required semester GPA and be disqualified.

Students with cumulative GPAs of less than 2.00 who leave the university for a semester or more are not automatically readmitted. Such students, as well as all disqualified students, should contact the Office for Academic Programs in SS 111, regarding procedures and guidance for

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

COLLEGE OF LIBERAL ARTS AND SCIENCES

College of Liberal Arts and Sciences Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Anthropology	M.A. ¹	Archaeology, bioarchaeology, linguistics, medical anthropology, museum studies, physical anthropology, social-cultural anthropology	Department of Anthropology
	Ph.D.	Archaeology, physical anthropology, social-cultural anthropology	Department of Anthropology
Asian Languages and Civilizations—Chinese/Japanese	M.A.	—	Department of Languages and Literatures
Biology ²	M.S., Ph.D.	Ecology	Department of Biology
Chemistry	M.S., Ph.D.	Analytical chemistry, biochemistry, geochemistry, inorganic chemistry, organic chemistry, physical chemistry, solid-state chemistry	Department of Chemistry and Biochemistry
Communication Disorders	M.S.	—	Department of Speech and Hearing Science
Computational Biosciences	M.S.	—	College of Liberal Arts and Sciences
Creative Writing	M.F.A. ³	—	Creative Writing Committee
English	M.A.	Comparative literature, English linguistics, literature and language, rhetoric and composition	Department of English
	Ph.D.	Literature, rhetoric/composition and linguistics	Department of English
Exercise Science	Ph.D. ³	Biomechanics, motor behavior/sport psychology, physiology of exercise	Committee on Exercise Science
Exercise Science/Physical Education	M.S.	—	Department of Exercise Science and Physical Education
Family and Human Development	M.S.	Family studies	Department of Family and Human Development
Family Science ²	Ph.D.	Marriage and family therapy	Department of Family and Human Development
French	M.A.	Comparative literature, linguistics, literature	Department of Languages and Literatures
Geography	M.A., Ph.D.	—	Department of Geography
Geological Sciences	M.S., Ph.D.	—	Department of Geological Sciences
German	M.A.	Comparative literature, language and culture, literature	Department of Languages and Literatures
History	M.A.	Asian history, British history, European history, Latin American history, public history, U.S. history, U.S. Western history	Department of History
	Ph.D.	Asian history, British history, European history, Latin American history, U.S. history	Department of History
Humanities	M.A.	—	Graduate Committee on Humanities
Materials Science ³	M.S.	—	Committee on Science and Engineering of Materials
Mathematics	M.A., Ph.D.	—	Department of Mathematics and Statistics
Microbiology	M.S., Ph.D.	—	Department of Microbiology
Molecular and Cellular Biology	M.S., Ph.D.	—	Interdisciplinary Committee on Molecular and Cellular Biology

¹ Graduate students in the School of Justice Studies and the Department of Anthropology are able to receive a concurrent M.S. degree in Justice Studies and M.A. degree in Anthropology.

² This major has formalized concentration(s); other areas of study are available.

³ This program is administered by the Graduate College.

College of Liberal Arts and Sciences Graduate Degrees and Majors (continued)

Major	Degree	Concentration	Administered By
Natural Science	M.N.S.	Biology Chemistry Geological sciences Mathematics Microbiology Physics Plant biology	Department of Biology Department of Chemistry and Biochemistry Department of Geological Sciences Department of Mathematics and Statistics Department of Microbiology Department of Physics and Astronomy Department of Plant Biology
Philosophy	M.A., Ph.D.	—	Department of Philosophy
Physical Education	M.P.E.	—	Department of Exercise Science and Physical Education
Physics	M.S., Ph.D.	—	Department of Physics and Astronomy
Plant Biology ²	M.S., Ph.D.	Ecology, photosynthesis	Department of Plant Biology
Political Science	M.A., Ph.D.	American politics, comparative politics, international relations, political theory	Department of Political Science
Psychology	Ph.D.	Behavioral neuroscience, clinical psychology, cognitive/behavioral systems, developmental psychology, environmental psychology, quantita- tive research methods, social psychology	Department of Psychology
Religious Studies	M.A.	—	Department of Religious Studies
Science and Engineering of Materials	Ph.D. ³	High-resolution nanostructure analysis, solid-state device materials design	Committee on the Science and Engineering of Materials
Sociology	M.A., Ph.D.	—	Department of Sociology
Spanish	M.A.	Comparative literature, language and culture, linguistics, literature	Department of Languages and Literatures
	Ph.D.	Cultural studies, literature	Department of Languages and Literatures
Speech and Hearing Science	Ph.D. ³	Developmental neurolinguistic disor- ders, neuroauditory processes, neurogerontologic communication disorders	Committee on Speech and Hearing Science
Statistics	M.S. ³	—	Committee on Statistics
Teaching English as a Second Language	M.TESL	—	Department of English

¹ Graduate students in the School of Justice Studies and the Department of Anthropology are able to receive a concurrent M.S. degree in Justice Studies and M.A. degree in Anthropology.

² This major has formalized concentration(s); other areas of study are available.

³ This program is administered by the Graduate College.

reinstatement and returning to good standing. By following recommendations and meeting established standards for summer school work or course work at other institutions, the possibility of successful reinstatement is enhanced. Academic discipline is one of the functions of the Office for Academic Programs. All students having academic difficulties of any kind should contact this office. Also available in this office is information on policies and procedures of the college on academic honesty, student grievances with

respect to grades, and various petitions regarding college standards and graduation requirements.

Academic honesty is expected of all students in all examinations, papers, academic transactions, and records. The possible sanctions include, but are not limited to, appropri-

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

ate grade penalties, loss of registration privileges, disqualification, and dismissal.

STUDENT RESPONSIBILITIES

Any student enrolling in courses offered by CLAS is expected to follow the rules and deadlines specified in this catalog and the current *Schedule of Classes*. Students are urged to meet with their departmental academic advisors before registration. Students with additional questions or problems are also urged to meet with advisors in the Office for Academic Programs, in SS 111, regarding the academic rules of the college and the university.

SPECIAL PROGRAMS

Barrett Honors College. CLAS works closely with the Barrett Honors College, which affords qualified undergraduates opportunities for enhanced educational experiences. For a complete description of requirements and opportunities, see [“The Barrett Honors College,” page 118](#).

Integrated Studies. An Integrated Studies major leading to the B.A. or B.S. degree provides students of outstanding ability in the humanities, natural sciences and mathematics, and social and behavioral sciences opportunities to pursue courses of studies that cut across departmental boundaries and focus on specific topics or problem areas. Completion of 32 semester hours at ASU with a GPA of at least 3.25 and three letters of recommendation from ASU faculty members are required for admission. For more information about degree requirements, visit the Office for Academic Programs in SS 111.

Washington Semester Program. Students have a variety of opportunities for practicum and internship experiences that enable them to meld classroom learning with practical application. Among the several individual departmental programs that provide internships for majors, the Department of Political Science is the ASU sponsor of the Washington Semester Program. The program provides students a one-semester opportunity to study in Washington, D.C., through any one of several programs sponsored by the American University. The program is available to outstanding juniors or seniors and requires careful planning with an academic advisor early in the student’s career. For more information, call the Department of Political Science at 480/965-6551.

Military Officer Training. The Departments of Aerospace Studies and Military Science offer programs leading to commissions in the armed forces, but they do not offer majors or minors. For more information, see the appropriate department descriptions in this catalog.

Certificate Programs and Areas of Emphasis

Certificates are available from numerous units in CLAS, and one collegewide Enriched College Degree Certificate is available to any major in the college as shown in the [“CLAS Certificates” table, page 337](#). Areas of emphasis are also available in some of the same subjects (e.g., Latin American Studies).

Enriched College Degree. CLAS offers an Enriched College Degree Certificate, available to any student within the university.

The Enriched College Degree Certificate consists of a minimum of 15 semester hours of a minimum of “C” grade credit. The certificate consists of

1. a theme requirement composed of a three-course sequence outside the student’s major, characterized by an identifiable theme of intellectual relevance for students (courses used for the theme requirement cannot be from one’s major, minor, or another certificate);
2. an approved upper-division bridge course selected to address the relationships among areas of inquiry and means of acquiring knowledge; and
3. an approved upper-division course in spoken English to provide a meaningful opportunity for substantive oral presentations.

For more information, visit the CLAS Office for Academic Programs, in SS 111, or call 480/965-6506.

American Public Policy. See [“Certificate in American Public Policy,” page 453](#).

Asian Studies. An Asian Studies Certificate is offered through the Center for Asian Studies.

Students must complete two years (20 semester hours) of an Asian language plus 30 additional hours of Asian-area studies courses selected from core Asian studies courses or courses with a significant focus on Asia chosen in consultation with the Center for Asian Studies advisor. Students whose native language is an Asian language or who have otherwise mastered an Asian language may elect to take four additional Asian studies courses in place of the elementary and intermediate language classes. Language requirements may be selected from Chinese, Indonesian, Japanese, Korean, Thai, and Vietnamese.

An East Asian Studies Certificate is also available. Students must complete two years (20 semester hours) of Chinese, Japanese, or Korean plus 30 additional semester hours of East Asian area studies courses; these courses must be selected from the core East Asian curriculum or must be courses with a significant focus on East Asia chosen in consultation with the Center for Asian Studies advisor.

Note: Students whose native language is Chinese or Japanese or who have otherwise mastered these languages may elect to take four additional East Asian studies courses in place of the elementary and intermediate language courses.

The center houses a comprehensive library and is involved in student and faculty exchange programs with several Asian universities as well as serving as a liaison with various Asian organizations.

For more information, contact the Center for Asian Studies in WHALL 105, or call 480/965-7184.

Civic Education. See [“Certificate in Civic Education,” page 453](#).

Classical Studies. Students admitted to undergraduate degree programs in any field are eligible for the Classical Studies certificate program. In addition to the course work

CLAS Certificates

Certificate Program	Administered By	Page
Enriched College Certificate	CLAS	336
African American Studies Certificate	African American Studies Program	343
American Public Policy Certificate	Department of Political Science	453
Asian Studies Certificate ¹	Center for Asian Studies	336
Civic Education Certificate	Department of Political Science	453
Classical Studies	Department of Languages and Literatures, and Interdisciplinary Humanities Program	336
East Asian Studies Certificate	Center for Asian Studies	336
Ethics Certificate	Department of Philosophy	337
Geographic Information Science, Interdisciplinary Certificate in ²	CLAS	—
Health Physics Certificate	Pre-Health Professions Office	337
History and Philosophy of Science Certificate	Department of Philosophy	338
International Studies Certificate	Department of Political Science	453
Jewish Studies Certificate	Jewish Studies Committee	338
Latin American Studies Certificate ¹	Latin American Studies Center	338
Medieval and Renaissance Studies Certificate	Arizona Center for Medieval and Renaissance Studies (ACMRS)	338
Medieval Studies Certificate ²	ACMRS	—
Museum Studies Certificate ²	Department of Anthropology	—
Renaissance Studies Certificate ²	ACMRS	—
Russian and East European Studies Certificate ¹	Russian and East European Studies Consortium	338
Scandinavian Studies Certificate	Department of Languages and Literatures	339
Scholarly Publishing Certificate ²	Department of History	—
Southeast Asian Studies Certificate	Program for Southeast Asian Studies	339
Symbolic Systems	Department of Philosophy	339
Translation Certificate	Department of Languages and Literatures	406
Women's Studies Certificate	Women's Studies Program	339
Writing Certificate	Department of English	372

¹ Emphases are also available in these programs.

² For more information, see the *Graduate Catalog*.

and examinations required in the student's major, the student is responsible for fulfilling the following minimum requirements:

1. Five semesters of ancient Greek (17 semester hours; GRK 301 and 302 may be repeated for credit) or Latin (19 semester hours) language and literature instruction;
2. Two semesters (six semester hours), in courses related to classical studies (to be approved by coordinators of the certificate);
3. a thesis (three semester hours), a Barrett Honors College thesis (six semester hours) or two additional courses at or above the 300 level (six semester hours); and
4. a minimum of a 2.00 average in all course work leading to the certificate.

Students interested in the Classical Studies certificate program need to submit an application before being accepted into the program. For further information call the program coordinators at 480/965-1110 or 727-6512.

Ethics. This certificate is designed to give students a richer understanding of systematic philosophical thinking about

ethics. Students with majors in business, nursing, journalism, and public administration, among others, may well find that training in ethics is beneficial for their career goals. The certificate program permits some flexibility about course selection, thereby facilitating the interests of many students. For more information, visit the Department of Philosophy in PS A524, or call 480/965-3394.

Health Physics. The curriculum of health physics involves work in CLAS and the College of Engineering and Applied Sciences. The purpose of the concentration is to serve undergraduate students who wish to prepare themselves for careers in health physics. To qualify for professional status, a health physicist needs a B.S. degree in one of the physical or life sciences and a group of specialized courses in physics, mathematics, chemistry, engineering, and biology.

A Certificate of Concentration in Health Physics is awarded for the successful completion of a B.S. degree in a physical or life science that follows a prescribed program. For more information, visit the Pre-Health Professions

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

Office in LSC 206C, or call 480/965-2365, where academic advising is available.

History and Philosophy of Science. The Department of Philosophy offers an undergraduate History and Philosophy of Science Certificate. The certificate program is designed to give students an understanding of both traditional philosophic issues surrounding science and the historical development of concrete scientific theories and ideas. The philosophic questions, of the belief-worthiness and interpretation of scientific claims as well as norms within or about science, both enrich and are enriched by their combination with historical study. Such philosophic and historical study will also often include the examination of contemporary sciences and their place within the larger society.

The certificate requires 18 semester hours bearing a PHI or HPS prefix of which 12 semester hours must be upper-division. Included within the 18 semester hours, at least nine must bear the HPS prefix. PHI 314 Philosophy of Science is also required. All courses counting toward the certificate must be approved for this purpose by a Department of Philosophy undergraduate advisor and passed with a grade of “C” or higher.

For more information, visit the Department of Philosophy in PS A524, or call 480/965-3394.

International Studies. See [“Certificate in International Studies,” page 453.](#)

Jewish Studies. The Jewish studies program is designed with the following goals in mind:

1. to examine the history and culture of the Jews;
2. to provide a model for interdisciplinary teaching and research;
3. to generate and facilitate research on Judaica;
4. to provide the community with programs, courses, and research furthering the understanding of Judaica; and
5. to stand as an example of the university’s commitment to a program of meaningful ethnic studies on a firm academic base.

The Certificate of Concentration in Jewish Studies may be combined with a major in any college. For information about the program, refer to the Department of History or the Department of Religious Studies.

Latin American Studies. The Latin American Studies Certificate program is designed to give students an understanding of culture, economics, political structures, and the history of Latin American nations. The Departments of Anthropology, Economics, Geography, History, Languages and Literatures (Spanish and Portuguese), Political Science, and the College of Business offer courses that combine to make up the interdisciplinary certificate. Students must complete 30 semester hours of upper-division courses from the above departments/colleges with a concentration in Latin America—15 semester hours in the major subject and 15 semester hours in other disciplines. The certificate requires Spanish or Portuguese proficiency through the 313 level of conversation and composition. Only language courses above 313 in literature and civilization will count

toward a major or interdisciplinary areas of preparation. Spanish and Portuguese courses above 313 in grammar and phonology will not count toward the major requirements.

The Latin American Studies Center offers the area of emphasis for students who do not wish to attain a high level of language proficiency.

For more information, visit the Latin American Studies Center in SS 213, or call 480/965-5127.

Medieval and Renaissance Studies. An undergraduate Certificate in Medieval and Renaissance Studies is offered by the Arizona Center for Medieval and Renaissance Studies (ACMRS). In addition to the course work and examinations required in a student’s major field of interest, the following minimum requirements must be fulfilled to earn the certificate:

1. six to eight semester hours of classical Latin and six to eight semester hours of Latin (classical and/or medieval) or of a vernacular language of the period (e.g., Old English, Old Norse, Old French, Renaissance Italian);
2. six to eight semester hours of course work in medieval and renaissance studies outside the major discipline;
3. three semester hours of thesis on a topic concerning the Middle Ages or Renaissance. The thesis may be used to fulfill the Honors College thesis requirement for students enrolled in the Barrett Honors College; and
4. a minimum of a “C” average in all course work leading to the certificate.

Students interested in the certificate program need to complete an application form before being accepted into the program. Applications are available by calling ACMRS at 480/965-5900.

See the *Graduate Catalog* for information about the Certificate in Medieval Studies and the Certificate in Renaissance Studies, and [“Arizona Center for Medieval and Renaissance Studies \(ACMRS\),” page 33,](#) for information about the center.

Museum Studies. See the *Graduate Catalog* or contact the Department of Anthropology for more information.

Russian and East European Studies. Undergraduate students may complete an interdisciplinary certificate program leading to a bachelor’s degree with a major in the chosen field with an emphasis in Russian and East European studies. The requirements for the Russian and East European Studies Certificate comprise (1) three years (22 hours) of Russian or another Eurasian or East European language and (2) 30 upper-division semester hours in Russian/East European area-related course work.

At least three disciplines must be represented in the area-related course work, and at least 12 hours must be outside the Department of Languages and Literatures (i.e., non-RUS and non-FLA courses). Fulfillment of these requirements is certified by the Russian and East European Studies Consortium and is recognized on the transcript by a bachelor’s degree with “Major in [Discipline], Emphasis in Russian and East European Studies.” The purpose of this undergrad-

uate certificate program is to encourage students majoring in a chosen discipline to develop special competency in Russian or East European language and area studies. A major in any department may elect this emphasis.

For further information, contact the program coordinator of the Russian and East European Studies Consortium at 480/965-4188.

Scandinavian Studies. Students admitted to undergraduate degree programs in any field are eligible for the Scandinavian Studies Certificate program. In addition to the course work and examinations required in the student's major, the student is responsible for fulfilling the following minimum requirements (21 semester hours) before the certificate is issued:

1. six semester hours of Norwegian or Swedish at the 200 level or above;
2. three semester hours in SCA 250 Introduction to Scandinavian Culture;
3. nine semester hours of upper-division course work in Scandinavian Studies outside the student's major discipline;
4. a minimum of a "C" average in all course work leading to the certificate; and
5. three semester hours in an independent study thesis on a topic concerning Scandinavian Studies. The thesis may be used to fulfill the Barrett Honors College thesis requirement for students enrolled in the Barrett Honors College.

Students who test out of the basic language courses would under advisement take other approved courses to fulfill the minimum requirement of 21 semester hours.

For more information, call the Department of Languages and Literatures at 480/965-6281.

Scholarly Publishing. See the *Graduate Catalog* for information on this certificate program.

Southeast Asian Studies. A Certificate in Southeast Asian Studies is available to any undergraduate student. The certificate program offers two options: (1) an area studies specialization emphasizing courses in the social sciences and humanities and requiring one year of Indonesian, Thai, or Vietnamese and (2) a language specialization requiring a two-year sequence in a Southeast Asian language and a proportional number of area studies courses.

Students wishing to study a Southeast Asian language other than those offered on campus may transfer credits earned at the Southeast Asian Studies Summer Institute, a consortium for intensive language and area studies, or at other accredited programs. Qualified students may request placement testing on other national languages of the region, administered in accordance with the national American Council of Teachers in Foreign Languages (ACTFL) guidelines.

The ASU curriculum includes

1. language instruction in Indonesian, Thai, or Vietnamese;
2. ASB/GCU/HST/POS/REL 240 Introduction to Southeast Asia;

3. HST 308 Modern Southeast Asia;
4. electives in the social sciences and humanities on the history, geography, culture, politics, and religion of the region; and
5. a culminating capstone seminar in which the students share multidisciplinary approaches to the region and integrate knowledge of Southeast Asia with their respective disciplinary orientations.

Courses counting toward the Certificate in Southeast Asian Studies fulfill requirements for undergraduate majors and General Studies in the social and behavioral sciences, humanities, literacy, and global and historical awareness areas. A two-year sequence in Southeast Asian language study meets the foreign language requirement for undergraduates in CLAS.

For more information, contact the Program for Southeast Asian Studies in LL 9 (basement), 480/965-4232 or 480/965-0118.

Symbolic Systems. The Department of Philosophy offers a Certificate in Symbolic Systems. The certificate program takes an interdisciplinary approach to cognition, computation, and meaning. Course work is divided evenly between philosophy, psychology, and computer science in order to expose students to the subject matter from a conceptual, empirical, and practical point of view. The certificate may interest students with majors in any of the three disciplines on topics of common interest.

The certificate consists of 28 semester hours approved by an advisor in the Department of Philosophy and divided evenly between computer science and engineering, psychology, and philosophy as follows:

1. CSE 200, 210, and 240;
2. PSY 230 and 290 and either PSY 323, 324, or 437; and
3. either PHI 319, or 333, either PHI 315 or 317, and either PHI 312 or 314.

Students must satisfy the prerequisites for the listed courses. With written approval from the director of undergraduate studies in the Department of Philosophy, one substitution of a course from outside this list may be made. All courses must be passed with a minimum grade of "C."

For more information, visit the Department of Philosophy in PS A524, or call 480/965-3394.

Translation. See "[Translation Certificate \(Spanish/English\)](#)," [page 406](#), for information about the Certificate in Translation.

Women's Studies. Women's Studies provides students with an intensive interdisciplinary liberal arts education that enables them to write well, think critically, and analyze problems effectively.

The certificate program is equivalent to an interdisciplinary minor, consisting of 18 credit hours, and is open to

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," [page 83](#).



An eastward view down Tyler Mall toward the Bateman Physical Sciences Center

Tim Trumble photo

graduate as well as undergraduate students. Students pursuing a certificate in Women's Studies must consult with the Women's Studies advisor to select appropriate courses and fulfill requirements.

A Certificate of Concentration in Women's Studies is awarded for the successful completion of WST 100 (or 300) and WST 377 or 378 and an additional 12 semester hours from the list of approved Women's Studies courses.

Inquiries about the certificate program should be addressed to the Women's Studies Program academic advisor in ECA 209, 480/965-2358, where the current list of approved courses is available.

GENERAL INFORMATION

Research Centers. To expand educational horizons and to enrich the curriculum, CLAS maintains the following research centers:

Arizona Center for Medieval and Renaissance Studies
Cancer Research Institute
Center for Asian Studies
Center for Meteorite Studies
Center for Solid State Science

Center for the Study of Early Events in Photosynthesis
Exercise and Sport Research Institute
Hispanic Research Center
Institute of Human Origins
Joan and David Lincoln Center for Applied Ethics
Latin American Studies Center

CLAS also participates with the College of Education and the College of Engineering and Applied Sciences in maintaining the Center for Research on Education in Science, Mathematics, Engineering, and Technology. See "[Research Centers, Institutes, and Laboratories](#)," page 30, for more information.

Courses. The faculty also offer the following LIA course to familiarize students with available resources and services for research purposes.

For information on LIA courses, see the *Schedule of Classes*, visit the Office for Academic Programs in SS 111, or call 480/965-6506.

LIBERAL ARTS AND SCIENCES (LIA)

LIA 191 First-Year Seminar. (1-3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Aerospace Studies

Air Force ROTC

www.asu.edu/clas/afrotc

480/965-3181

TC 324

Col. Ronald Scott Jr., Chair

Professor: Scott

Assistant Professors: Blacklock, Gage, Greensfelder

PURPOSE

The Department of Aerospace Studies curriculum consists of the general military course and history for freshmen and sophomores (AES 101, 103, 201, 203) and the professional officer course for juniors and seniors (AES 301, 303, 401, 403).

General Qualifications. Students entering the Air Force Reserve Officers' Training Corps (AFROTC) must meet the following requirements:

1. be a citizen of the United States (noncitizens may enroll but must obtain citizenship before commissioning);
2. be of sound physical condition; and

3. be at least 17 years of age for scholarship appointment or admittance to the Professional Officer Course (POC).

Additionally, scholarship recipients must be able to fulfill commissioning requirements by age 27. If designated for flying training, the student must be able to complete all commissioning requirements before age 29; persons in other categories must be able to complete all commissioning requirements before age 35.

FOUR-YEAR PROGRAM (GMC AND POC)

A formal application is not required for students entering the four-year program. A student may enter the program by simply registering for one of the general military course (GMC) classes at the same time and in the same manner as other courses. GMC students receive two semester hours for each AES 100- and 200-level class completed for a total of eight semester hours. GMC students not on AFROTC scholarship incur no military obligation. Each candidate for commissioning must pass an Air Force aptitude test and a physical examination and be selected by a board of Air Force officers. If selected, the student then enrolls in the POC the last two years of the AFROTC curriculum. Students attend a four-week field training course at an Air Force base normally between the sophomore and junior years. Upon successful completion of the POC and the college requirements for a degree, the student is commissioned in the U.S. Air Force as a second lieutenant. The new officer then enters active duty or may be granted an educational delay to pursue graduate work.

TWO-YEAR PROGRAM (POC)

The basic requirement for entry into the two-year program is that the student have two academic years of college work remaining, either at the undergraduate or graduate level. Applicants seeking enrollment in the two-year program must pass an Air Force aptitude and medical examination and be selected by a board of Air Force officers. After successfully completing a five-week field training course at an Air Force base, the applicant may enroll in the professional officer course (POC) in the AFROTC program. Upon completion of the POC and the college requirements for a degree, the student is commissioned.

ONE-YEAR PROGRAM (POC)

The basic requirement for entry into the one-year program is that the student have only one academic year of college work remaining, either at the undergraduate or graduate level. Applicants seeking enrollment in the one-year program must pass an Air Force aptitude and medical examination and be selected by a board of Air Force officers. The applicant will enroll in the POC in the AFROTC program. Upon completion of the POC, the college requirements for a degree, and a seven-week field training program at an Air Force base, the student is commissioned.

Qualifications. The following requirements must be met for admittance to the POC:

1. The four-year student must successfully complete the general military course and the four-week field training course.
2. The two-year applicant must complete a five-week field training course.
3. All students must pass the Air Force Officer Qualifying Test (AFOQT).
4. All students must pass the Air Force physical examination.
5. All students must maintain the minimum GPA required by the college.
6. All students must meet the physical fitness requirements.

Pay and Allowances. POC members in their junior and senior years receive \$350 and \$400 respectively per month for a maximum of 20 months of POC attendance. Students are also paid to attend field training. In addition, uniforms, housing, and meals are provided during field training at no cost to the student. Students are reimbursed for travel to and from field training.

Scholarships. AFROTC offers scholarships annually to outstanding young men and women on a nationwide competitive basis. Scholarships can cover college tuition for nonresident students and provide an allowance for books, fees, supplies and equipment, and a monthly tax-free allowance of \$250 to \$400 depending on the year. Scholarships are available on a four-, three-, or two-year basis. To qualify for a four- or three-year scholarship, a student must be a U.S. citizen and submit an application before December 1 of the senior year in high school. Interested students should consult their high school counselors or contact AFROTC at ASU for application forms to be submitted to

HQ AFROTC
MAXWELL AFB
AL 36112-6663

Applications can also be submitted online at www.afrotc.com.

Students enrolled in AFROTC at ASU are eligible for a limited number of three- or two-year scholarships. Those students interested must apply through the Department of Aerospace Studies. Consideration is given to academic grades, the score achieved on the AFOQT, and physical fitness. A board of officers considers an applicant's personality, character, and leadership potential.

AEROSPACE STUDIES (AES)

AES 101 Air Force Today I. (2)

fall

Introduces U.S. Air Force and AFROTC. Topics include: the Air Force mission and organization, customs and courtesies, officer opportunities, officership, and professionalism.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

AES 102 Leadership Lab. (0)

fall

Emphasizes common Air Force customs and courtesies, drill and ceremonies, health and physical fitness through group participation. Corequisite: AES 101.

AES 103 Air Force Today II. (2)

spring

Continuation of AES 101. Topics include: the Air Force mission and organization, customs and courtesies, officer opportunities, officership, and professionalism. Prerequisite: AES 101 or department approval.

AES 104 Leadership Lab. (0)

spring

Continuation of AES 102 with more in-depth emphasis on learning the environment of an Air Force officer. Corequisite: AES 103.

AES 201 The Evolution of USAF Air and Space Power I. (2)

fall

Further preparation of the AFROTC candidate. Topics include: Air Force heritage and leaders, communication skills, ethics, leadership, quality Air Force, and values. Prerequisite: AES 103 or department approval.

AES 202 Leadership Lab. (0)

fall

Application of advanced drill and ceremonies, issuing commands, knowing flag etiquette, and developing, directing, and evaluating skills to lead others. Corequisite: AES 201.

AES 203 The Evolution of USAF Air and Space Power II. (2)

spring

Continuation of AES 201. Topics include: the Air Force mission and organization, customs and courtesies, officer opportunities, officership, and professionalism. Prerequisite: AES 201 or department approval.

AES 204 Leadership Lab. (0)

spring

Continuation of AES 202 with emphasis on preparation for field training. Corequisite: AES 203.

AES 301 Air Force Leadership Studies I. (3)

fall

Study of communication skills, leadership and quality management fundamentals, leadership ethics, and professional knowledge required of an Air Force officer. Prerequisite: AES 203 or department approval. *General Studies: L*

AES 302 Leadership Lab. (0)

fall

Advanced leadership experiences applying leadership and management principles to motivate and enhance the performance of other cadets. Corequisite: AES 301.

AES 303 Air Force Leadership Studies II. (3)

spring

Continuation of AES 301. Topics include: communication skills, ethics, leadership, professional knowledge, and quality management required of an Air Force officer. Prerequisite: AES 203 or department approval. *General Studies: L*

AES 304 Leadership Lab. (0)

spring

Continuation of AES 302 with emphasis on planning the military activities of the cadet corps and applying advanced leadership methods. Corequisite: AES 303.

AES 401 National Security Affairs. (3)

fall

Examines advanced ethics, Air Force doctrine, national security process, and regional studies. Special topics include: civilian control of the military, military justice, and officership. Prerequisite: AES 303 or department approval. *General Studies: L*

AES 402 Leadership Lab. (0)

fall

Advanced leadership experience demonstrating learned skills in planning and controlling the military activities of the corps. Corequisite: AES 401.

AES 403 Preparation for Active Duty II. (3)

spring

Continuation of AES 401. Topics include: civilian control of the military, doctrine, ethics, military justice, the national security process, and officership. Prerequisite: AES 401 or department approval.

AES 404 Leadership Lab. (0)

spring

Continuation of AES 402 with emphasis on preparation for transition from civilian to military life. Corequisite: AES 403.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

African American Studies Program

www.asu.edu/clas/afamstu

480/965-4399

COWDN 227

Leonor Boulin Johnson, Director

CORE FACULTY

Professor: Reyes;

Associate Professors: Bontemps, Boulin Johnson;

Assistant Professor: Usman;

Clinical Associate Professor: Cox

AFFILIATED FACULTY

Anthropology

Senior Lecturer: Winkelman

Art

Professors: Sweeney, Young;

Associate Professor: Umberger

Asian Pacific American Studies

Assistant Professor: Rosa

Dance

Faculty Associate: Ganyo

Education

Associate Professor: Hood

English

Professor: Lester;

Associate Professors: Chancy, DeLamotte, Miller;

Assistant Professor: Fuse

Family and Human Development

Associate Professor: Wilson

History

Associate Professor: Barnes;

Assistant Professor: Whitaker

Human Communication

Professors: Jain, Martin;

Associate Professor: Davey;

Assistant Professor: Davis

Humanities

Assistant Professor: Lund

Journalism and Mass Communication

Associate Professor: Bramlett-Solomon

Justice Studies

Professors: Figueria-McDonough, Jurik, Romero, Zatz;
Faculty Associates: Oliverio, Tibbs

Life Sciences (ASU West)

Associate Professor: Graves

Music

Professors: Pilafian, Sunkett;
Associate Professors: Smith, Solís

Political Science

Professor: McGowan;
Associate Professor: Mitchell

Psychology

Faculty Associate: Cota

Recreation Management and Tourism

Associate Professor: Teye

Religious Studies

Associate Professor: Moore

Sociology

Professor: Cobas;
Associate Professor: Keith;
Instructor: Williams

Theatre

Associate Professor: Edwards

Women's Studies

Professor: Rothschild;
Assistant Professors: Anderson, Leong

African American Studies (AAS) is interdisciplinary and focuses on people of African descent throughout the world. Focus is given to the diversity of past and present experiences of those who live in the United States as well as in Africa, the Caribbean, South America, and Central America. As an institutional program with a bidisciplinary emphasis, AAS is structured to

1. prepare students of all ethnicities to better understand, value, and more effectively participate in our increasingly diverse society;
2. combine knowledge of the African diaspora with intellectual and practical training in specific areas for the purpose of creating more effective community and global partnerships; and
3. provide students with a foundation for advanced studies in a variety of fields. While the program is dedicated to scholarly research, teaching, and creative activities, it also seeks to build partnerships with community based programs and organizations within Arizona and utilize channels for informing policies which affect the life of Blacks in the diaspora.

AFRICAN AMERICAN STUDIES—B.A.

Course Requirements. The major in African American Studies requires 45 semester hours of course work. A minimum of 30 semester hours must be AFH, AFR, and AFS courses. The remaining course work must be in a related field approved by an AAS advisor. All majors must take 21 hours in the following core courses:

AFH 353	African American Literature: Beginnings Through the Harlem Renaissance <i>LHU, C</i>	3
AFH 354	African American Literature: Harlem Renaissance to the Present <i>LHU, C</i>	3
AFR 210	Introduction to African American Studies <i>C</i>	3
AFR 429	African American Studies Theory and Methods	3
AFR 490	Field Studies in the Diaspora	3
	or AFR 498 Pro-Seminar (3)	
AFS 363	African American History to 1865 <i>SB, C, H</i>	3
AFS 364	African American History since 1865 <i>SB, C, H</i>	3

Within the 45 semester hours, AAS majors must also take 12 semester hours in one of three concentrations: social and behavioral sciences, humanities/arts, or politics and society. These courses are in addition to the required 21 core course semester hours. Of the remaining course work, 12 hours must be taken in related courses (i.e., non-African American Studies' prefixes). In addition to course work within the student's chosen concentration, six additional hours are required. Students should consult with an advisor.

In addition, AAS majors are required to take a minor or a certificate program of a minimum of 18 hours in another academic field.

CERTIFICATE IN AFRICAN AMERICAN STUDIES

Course Requirements. The certificate requires 24 semester hours. Fifteen core hours must be taken from the following courses:

AFH 353	African American Literature: Beginnings Through the Harlem Renaissance <i>LHU, C</i>	3
	or AFH 354 African American Literature: Harlem Renaissance to the Present <i>LHU, C</i> (3)	
AFR 210	Introduction to African American Studies <i>C</i>	3
AFR 429	African American Studies Theory and Methods	3
AFS 363	African American History to 1865 <i>SB, C, H</i>	3
AFS 364	African American History Since 1865 <i>SB, C, H</i>	3

In addition, one course from each of the three concentrations (i.e., social and behavioral sciences, humanities/arts, politics and society) must be taken. These courses are in addition to the required core courses. Courses should be selected in consultation with the major advisor.

MINOR IN AFRICAN AMERICAN STUDIES

Course Requirements. The minor requires 18 semester hours. All African American Studies minors must take nine core hours from the following courses:

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

- AFH 353 African American Literature: Beginnings Through the Harlem Renaissance *L/HU, C*3
or AFH 354 African American Literature: Harlem Renaissance to the Present *L/HU, C* (3)
- AFR 210 Introduction to African American Studies *C*3
- AFS 363 African American History to 1865 *SB, C, H*3
or AFS 364 African American History Since 1865 *SB, C, H* (3)

In addition, one course from each of the three concentrations (i.e., social and behavioral sciences, humanities/arts, politics and society) must be taken. These courses are in addition to the required core courses. A minimum of 12 semester hours of upper-division courses is required. Courses should be selected in consultation with the major advisor.

AFRICAN AMERICAN STUDIES HUMANITIES (AFH)

AFH Note 1. Completion of the First-Year Composition requirement (ENG 101 and 102 [or 105] or ENG 107 and 108 with a grade of "C" or higher) is a prerequisite for all English courses above the 100 level.

AFH Note 2. A term paper or equivalent out-of-class written work is required in all upper-division (300- and 400-level) ENG courses.

AFH Note 3. English majors and minors are expected to have completed ENG 200 before taking 400-level literature courses.

AFH 202 Art of Africa, Oceania, and the Americas. (3)

spring

History of art of Africa, Oceania, and the New World. Meets non-Western art history requirement. Lecture, discussion. Cross-listed as ARS 202. Credit is allowed for only AFH 202 or ARS 202.

General Studies: HU, G, H

AFH 225 African American Religion. (3)

selected semesters

Introduces the history and development of the African American religious tradition. Lecture, discussion. Cross-listed as REL 225. Credit is allowed for only AFH 225 or REL 225.

General Studies: HU, C

AFH 322 Malcolm and Martin. (3)

selected semesters

Examines and contrasts the lives, ministries, contributions, and legacies of Malcolm X and Martin Luther King, Jr. Cross-listed as REL 322. Credit is allowed for only AFH 322 or REL 322.

General Studies: HU, C

AFH 323 Black Religion: A Biographical Approach. (3)

selected semesters

Examines the experiences, motivations, and contributions of a number of figures associated with African American religion. Cross-listed as REL 323. Credit is allowed for only AFH 323 or REL 323.

General Studies: HU, C

AFH 333 American Ethnic Literature. (3)

once a year

Examines America's multiethnic identity through works of literature that depict American ethnic, gender, and class sensibilities. Cross-listed as ENG 333. Credit is allowed for only AFH 333 or ENG 333. See AFH Notes 1, 2.

General Studies: L/HU, C

AFH 347 Jazz in America. (3)

fall, spring, summer

Current practices employed by contemporary jazz musicians; the historical development of jazz techniques. Credit not applicable toward any Music degree. Lecture, discussion. Cross-listed as MUS 347. Credit is allowed for only AFH 347 or MUS 347.

General Studies: HU

AFH 353 African American Literature: Beginnings Through the Harlem Renaissance. (3)

fall

Historical survey of African American literary traditions and cultural contexts from slavery through the 1930s. Cross-listed as ENG 353. Credit is allowed for only AFH 353 or ENG 353. See AFH Notes 1, 2.

General Studies: L/HU, C

AFH 354 African American Literature: Harlem Renaissance to the Present. (3)

spring

Historical survey of African American literary traditions and cultural contexts from the 1920s to the present. Cross-listed as ENG 354.

Credit is allowed for only AFH 354 or ENG 354. See AFH Notes 1, 2.

General Studies: L/HU, C

AFH 401 Focus on Multiethnic Film. (3)

selected semesters

Specialized study of major ethnic films and prominent film artists. Emphasizes the creative process. Lecture, film viewing, papers. Prerequisite: ENG 101.

AFH 459 Studies in African American/Caribbean Literatures. (3)

selected semesters

Studies in African American or Caribbean literatures according to genre, period, theory, or selected authors. May be repeated for credit when topics vary. Cross-listed as ENG 459. Credit is allowed for only AFH 459 or ENG 459. See AFH Notes 1, 2, 3.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

AFRICAN AMERICAN STUDIES (AFR)

AFR Note 1. For Justice Studies students to take a nonrequired 300-level JUS course, they must have at least a "C" in each of the required JUS courses—JUS 105 (or 305), 301, 302, and 303—and a minimum average GPA of 2.50 for these four classes. For non-Justice Studies students to take a 300-level JUS course, they must have a minimum of 56 earned semester hours (junior status) and a minimum cumulative GPA of 2.00. Non-Justice Studies students may take JUS 301, 302, and 303 with school approval.

AFR 105 Introduction to Justice Studies. (3)

fall, spring, summer

Introductory overview to the study of justice from a social science perspective. Primary topics include justice theories and justice research. Credit is allowed for only AFR 105 or 305 (or JUS 305). Appropriate for freshmen and sophomores. Lecture, discussion. Cross-listed as JUS 105. Credit is allowed for only AFR 105 or JUS 105.

AFR 191 First Year Seminar. (1–3)

selected semesters

AFR 194 Special Topics. (1–4)

selected semesters

AFR 210 Introduction to African American Studies. (3)

fall

Examines the political, historical, and cultural origins of African American studies as an academic discipline. Lecture, discussion.

General Studies: C

AFR 263 Elements of Intercultural Communication. (3)

fall, spring, summer

Basic concepts, principles, and skills for improving communication between persons from different minority, racial, ethnic, and cultural backgrounds. Lecture, discussion. Cross-listed as COM 263. Credit is allowed for only AFR 263 or COM 263. Prerequisite: 2.25 GPA.

General Studies: SB, C, G

AFR 294 Special Topics. (1–4)

selected semesters

AFR 298 Honors Directed Study. (1–6)

selected semesters

AFR 305 Principles of Justice Studies. (3)

fall, spring, summer

Introductory overview to the study of justice from a social science perspective. Primary topics include justice theories and justice research. Credit is allowed for only AFR 305 or 105 (or JUS 105). Appropriate

for juniors and seniors. Lecture, discussion. Cross-listed as JUS 305. Credit is allowed for only AFR 305 or JUS 305. See AFR Note 1.

AFR 317 Genes, Race, and Society. (3)

spring

Examines history of biological and social constructions of “race” in western society. Lecture, discussion.

General Studies: SB, C, H

AFR 321 Wealth Distribution and Poverty. (3)

once a year

Examines wealth and income distribution in the United States and analyzes ideological and political forces producing an increasingly unequal society. Lecture, discussion. Cross-listed as JUS 321. Credit is allowed for only AFR 321 or JUS 321. See AFR Note 1.

General Studies: SB, C

AFR 371 Language, Culture, and Communication. (3)

fall and spring

Cultural influences of language on communication, including social functions of language, bilingualism, biculturalism, and bidialectism. Lecture, discussion. Cross-listed as COM 371. Credit is allowed for only AFR 371 or COM 371. Prerequisites: COM 263 (or AFR 263); minimum cumulative ASU GPA of 2.50.

General Studies: SB, C, G

AFR 375 Race, Gender, and Sport. (3)

fall and spring

Interdisciplinary examination of the social concepts of race and gender and their economic impact on sports in America. Lecture, discussion. Prerequisite: ENG 102 (or its equivalent) or instructor approval.

General Studies: SB, C

AFR 394 Special Topics. (1–4)

selected semesters

AFR 428 Critical Race Theory. (3)

spring

Examines ways in which race has been historically utilized, constructed, and contested in American civil society. Lecture, discussion.

AFR 429 African American Studies Theory and Methods. (3)

spring

Examines social and behavioral science theories and methodological procedures pertaining to African Americans. Prerequisite: senior standing.

AFR 460 Race, Gender, and Media. (3)

spring

Reading seminar designed to give a probing examination of the interface between AHANA Americans and the mass media in the United States. Lecture, discussion. Cross-listed as MCO 460. Credit is allowed for only AFR 460 or MCO 460.

General Studies: C

AFR 463 Intercultural Communication Theory and Research. (3)

fall, spring, summer

Surveys and analyzes major theories and research dealing with communication between people of different cultural backgrounds, primarily in international settings. Lecture, discussion, small group work. Cross-listed as COM 463. Credit is allowed for only AFR 463 or COM 463. Prerequisites: COM 263 (or AFR 263), 308; minimum cumulative ASU GPA of 2.50.

General Studies: SB, G

AFR 484 Internship. (1–12)

selected semesters

AFR 490 Field Studies in the Diaspora. (3)

spring

Introduces methods and principles of research applied to Black communities within and outside Arizona. Involves working with field officer and faculty. Lecture, field study. Prerequisite: senior standing. Pre- or corequisite: AFR 429.

AFR 492 Honors Directed Study. (1–6)

selected semesters

AFR 493 Honors Thesis. (1–6)

selected semesters

General Studies: L

AFR 494 Special Topics. (1–4)

selected semesters

AFR 497 Honors Colloquium. (1–6)

selected semesters

AFR 498 Pro-Seminar. (3)

spring

Topic is selected by instructor in consultation with the student.

Designed to integrate and develop research skills. Required for majors. Prerequisite: senior standing. Pre- or corequisite: AFR 429.

AFR 499 Individualized Instruction. (1–3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

AFRICAN AMERICAN STUDIES SOCIAL SCIENCE (AFS)

AFS 202 Ethnic Relations in the United States. (3)

fall and spring

Processes of intercultural relations; systems approach to history of U.S. interethnic relations; psychocultural analysis of contemporary U.S. ethnic relations. Lecture, discussion. Cross-listed as ASB 202. Credit is allowed for only AFS 202 or ASB 202.

General Studies: C, H

AFS 210 Introduction to Ethnic Studies in the U.S. (3)

fall and spring

Covers diversity of experiences and relations among racial and ethnic groups in the United States. Lecture, discussion. Cross-listed as APA 210/CCS 210. Credit is allowed for only AFS 210 or APA 210 or CCS 210.

General Studies: C

AFS 310 African/African American Psychology. (3)

fall and spring

Historical and contemporary overview of the development of African/Black psychology and African American frame of reference. Lecture, discussion.

AFS 363 African American History to 1865. (3)

once a year

The African American in American history, thought, and culture from slavery to 1865. Cross-listed as HST 333. Credit is allowed for only AFS 363 or HST 333.

General Studies: SB, C, H

AFS 364 African American History Since 1865. (3)

once a year

The African American in American history, thought, and culture from 1865 to the present. Cross-listed as HST 334. Credit is allowed for only AFS 364 or HST 334.

General Studies: SB, C, H

AFS 366 African Civilization Before 1850. (3)

fall and spring

African culture history and precolonial civilization. Meets non-Western requirement. Lecture, discussion. Cross-listed as ASB 366. Credit is allowed for only AFS 366 or ASB 366.

General Studies: SB, G, H

AFS 370 Family, Ethnic, and Cultural Diversity. (3)

fall and spring

Integrative approach to understanding historical and current issues related to the structure and internal dynamics of diverse American families. Lecture, discussion. Cross-listed as FAS 370. Credit is allowed for only AFS 370 or FAS 370. Prerequisite: PGS 101 or SOC 101.

General Studies: SB, C

AFS 466 Peoples and Cultures of Africa. (3)

fall and spring

Survey of African peoples and their cultures, external contact, and changes. Meets non-Western requirement. Lecture, discussion. Cross-listed as ASB 466. Credit is allowed for only AFS 466 or ASB 466.

General Studies: SB, G, H

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

Department of Anthropology

www.asu.edu/clas/anthropology

480/965-6213

ANTH 233

John K. Chance, Chair

Regents' Professors: Clark, Turner

Professors: Bahr, Barton, Brandt, Carr, Chance, Cowgill, Eder, Hudak, Johanson, Kintigh, Koss-Chioino, Marean, Martin, Marzke, Merbs, Nash, B. Nelson, M. Nelson, Redman, Spielmann, Stark, Williams

Associate Professors: Falconer, Hegmon, Kimbel, Rice, Welsh

Assistant Professors: Baker, Haenn, Jonsson, Lockwood, Reed, Steadman

Senior Lecturer: Winkelman

Associate Research Professors: Simon, Sugiyama

ANTHROPOLOGY—B.A.

Course Requirements. The Anthropology major consists of 45 semester hours, of which 39 must be in anthropology and six in related fields. At least 18 of the semester hours must be in upper-division courses (300–400 level). Three of the six hours in related fields must be in statistics. Related fields are determined by the students in consultation with their advisor. No ASU course is automatically classified as being either related or unrelated. Course requirements for the major are distributed as follows:

Required Introductory Courses

ASB 102 Introduction to Cultural and Social Anthropology <i>SB, G</i>	3
ASB 222 Buried Cities and Lost Tribes: Our Human Heritage <i>HU/SB, G, H</i>	3
or ASB 223 Buried Civilizations of the Americas <i>HU/SB, G, H</i> (3)	
ASM 101 Bones, Stones, and Human Evolution <i>SB</i>	3

Distribution Requirements

Archaeology	6
Geographic area course in archaeology or physical anthropology	3
Geographic area course in ethnography.....	3
Upper-division linguistics	3
Physical anthropology.....	6
Social/cultural	6

Elective

Anthropology	3
--------------------	---

Related Fields

Statistics	3
Approved course	3
Total	45

Consultation with the undergraduate advisor and a faculty mentor in the Department of Anthropology is recommended each semester. The anthropology undergraduate advising office is located in ANTH 208.

Course work in anthropology completed at other institutions is evaluated by the undergraduate advisor. The College of Liberal Arts and Sciences requires that transfer students complete at least 12 semester hours of upper-division course work at ASU in the department of their major in order to be eligible for graduation.

In addition to a cumulative GPA of 2.00 or higher, all anthropology students must obtain a minimum grade of “C” in all upper- and lower-division anthropology courses and all related fields.

Each student’s Declaration of Graduation and Degree Audit Report, or Program of Study, must be reviewed and approved by the anthropology undergraduate advisor.

Introductory, Distribution, and Related Fields Requirements

Consult with an anthropology undergraduate advisor for semester course description booklets and semester schedules, which indicate the regular and omnibus courses being offered. No courses may be used to fulfill more than one Anthropology major or minor requirement.

Required Introductory Courses

ASB 102 Introduction to Cultural and Social Anthropology <i>SB, G</i>	3
ASB 222 Buried Cities and Lost Tribes <i>HU/SB, G, H</i>	3
or ASB 223 Buried Civilizations of the Americas <i>HU/SB, G, H</i> (3)	
ASM 101 Bones, Stones, and Human Evolution <i>SB</i>	3

Distribution Requirements

Linguistics

One course chosen from the following list*	3
ASB 480 Introduction to Linguistics <i>SB</i> (3)	
ASB 481 Language and Culture <i>SB</i> (3)	
ASB 483 Sociolinguistics and the Ethnography of Communication <i>SB</i> (3)	

Sociocultural

Two courses chosen from the following list* (minimum hours)	6
ASB 202 Ethnic Relations in the United States <i>C, H</i> (3)	
ASB 211 Women in Other Cultures <i>HU/SB, G</i> (3)	
ASB 311 Principles of Social Anthropology <i>SB</i> (3)	
ASB 314 Comparative Religion (3)	
ASB 350 Anthropology and Art (3)	
ASB 351 Psychological Anthropology <i>SB</i> (3)	
ASB 353 Death and Dying in Cross-Cultural Perspective <i>HU/SB, G</i> (4)	
ASB 411 Kinship and Social Organization (3)	
ASB 412 History of Anthropology <i>L/SB</i> (3)	
ASB 416 Economic Anthropology <i>L/SB</i> (3)	
ASB 417 Political Anthropology (3)	

Archaeology

Two courses chosen from the following list* (minimum hours)	6
ASB 231 Archaeological Field Methods <i>SG</i> (4)	
ASB 326 Human Impacts on Ancient Environments <i>SB, H</i> (3)	
ASB 330 Principles of Archaeology <i>SB</i> (3)	
ASB 335 Prehistory of the Southwest <i>SB, C, H</i> (3)	
ASB 337 Pre-Hispanic Civilization of Middle America <i>HU/SB, G, H</i> (3)	
ASB 338 Archaeology of North America <i>SB, H</i> (3)	
ASB 361 Old World Prehistory <i>I H</i> (3)	

- ASB 362 Old World Prehistory II *H* (3)
- ASM 338 Anthropological Field Session (2–8)
- ASM 365 Laboratory Methods in Archaeology (4)
- ASM 435 Archaeological Pollen Analysis (3)
- ASM 472 Archaeological Ceramics (3)

Physical Anthropology

Two courses chosen from the following list* (minimum hours)6

- ASM 246 Human Origins (3)
- ASM 301 Peopling of the World *SB* (3)
- ASM 341 Human Osteology (4)
- ASM 342 Human Biological Variation *SG* (3)
- ASM 343 Primatology (3)
- ASM 344 Fossil Hominids *H* (3)
- ASM 345 Disease and Human Evolution (3)
- ASM 348 Social Issues in Human Genetics *SB* (3)
- ASM 452 Dental Anthropology *SG* (4)
- ASM 454 Comparative Primate Anatomy (4)
- ASM 455 Primate Behavior Laboratory *L* (3)

Geographic Area Courses

Archaeology or Physical Anthropology

One course chosen from the following list*3

- ASB 333 New World Prehistory *L/SB* (3)
- ASB 335 Prehistory of the Southwest *SB, C, H* (3)
- ASB 337 Pre-Hispanic Civilization of Middle America *HU/SB, G, H* (3)
- ASB 338 Archaeology of North America *SB, H* (3)
- ASB 361 Old World Prehistory I *H* (3)
- ASB 362 Old World Prehistory II *H* (3)
- ASM 301 Peopling of the World *SB* (3)

Ethnographic

One course chosen from the following list*3

- ASB 319 The North American Indian (3)
- ASB 321 Indians of the Southwest *L/SB, C, H* (3)
- ASB 322 Indians of Mesoamerica *SB, G* (3)
- ASB 323 Indians of Latin America *SB, G* (3)
- ASB 324 Peoples of the Pacific *G* (3)
- ASB 325 Peoples of Southeast Asia *G* (3)
- ASB 485 U.S.-Mexico Border in Comparative Perspective (3)

Related Fields (six semester hours)

- One lower- or upper-division statistics course in mathematics, sociology, psychology, political science, or history3
- One course from a field related to but outside of anthropology chosen with advisor3

Anthropology Elective

Any anthropology course (minimum).....3

Total45

* Consult with an anthropology undergraduate advisor for courses not listed above that may fulfill distribution requirements.

MINOR IN ANTHROPOLOGY

The Anthropology minor requires 18 semester hours. Two of the introductory courses—from ASB 102, ASM 101, and ASB 222 or 223—are required. The particular introductory courses selected may limit the anthropology courses available in the upper division however. The other 12 semester hours must be upper division and represent at least two of the three subfields of anthropology. The three subfields are:

1. sociocultural anthropology (with linguistics);
2. archaeology; and
3. physical anthropology.

The courses chosen to represent two of the three subfields must be drawn from the [“Distribution Requirements” table, page 346](#), of those two subfields. A minimum grade of “C” is required for all courses taken for the minor in Anthropology.

The minor in Anthropology provides students with a great deal of flexibility in selecting courses. The program has been designed to allow students to focus on areas within the discipline which articulate well with their major. All students interested in the Anthropology minor are encouraged to discuss the options available with an anthropology undergraduate advisor.

CONCENTRATION IN ANTHROPOLOGY FOR B.I.S. MAJORS

For students pursuing the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a concentration in anthropology requires 24 semester hours. All three of the introductory courses—ASB 102, ASM 101, and ASB 222 or 223—are required. The other 15 semester hours must be upper division and represent two of the three subfields:

1. sociocultural anthropology (with linguistics);
2. archaeology; and
3. physical anthropology.

The courses chosen to represent the two subfields must be drawn from the [“Distribution Requirements” table, page 346](#). A minimum grade of “C” is required for all courses taken for the minor in Anthropology for B.I.S. students.

Latin American Studies Certificate or Emphasis. Students majoring in Anthropology may elect to pursue a Latin American Studies Certificate or emphasis, combining courses from the major with selected outside courses of wholly Latin American content. For more information, see [“Latin American Studies,” page 338](#).

Certificate in Museum Studies. See the *Graduate Catalog* or contact the Department of Anthropology for more information.

GRADUATE PROGRAM

The faculty in the Department of Anthropology offer programs leading to the M.A. and Ph.D. degrees. See the *Graduate Catalog* for requirements.

SECONDARY EDUCATION—B.A.E.

Social Studies. The major teaching field consists of 63 semester hours, of which 30 hours must be in the anthropology courses required for the B.A. degree. Of the remaining hours, two groups of 15 hours are to be taken in related social sciences. Psychology or a single natural science may be used as one of the 15-hour fields. SED 480 is taken to provide the remaining three hours.

SED 480 Special Methods of Teaching Social Studies.....	3
Anthropology	30

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Social sciences	15
Social sciences, natural sciences, or psychology	15
Total	63

The minor teaching field consists of 24 semester hours in anthropology. Courses ASB 102 and ASM 101 and two upper-division courses in each subfield (archaeology, physical anthropology, and sociocultural anthropology) are required.

For more information, call the Office of Student Services in the College of Education at 480/965-5555.

ANTHROPOLOGY (SOCIAL AND BEHAVIORAL) (ASB)

ASB 102 Introduction to Cultural and Social Anthropology. (3)

fall and spring

Principles of cultural and social anthropology, with illustrative materials from a variety of cultures. The nature of culture. Social, political, and economic systems; religion, aesthetics, and language.

General Studies: SB, G

ASB 202 Ethnic Relations in the United States. (3)

fall and spring

Processes of intercultural relations; systems approach to history of U.S. interethnic relations; psychocultural analysis of contemporary U.S. ethnic relations. Lecture, discussion. Cross-listed as AFS 202. Credit is allowed for only AFS 202 or ASB 202.

General Studies: C, H

ASB 210 Sex, Marriage, and Evolution. (3)

selected semesters

Examines the sexual nature and behavior of humans from both a biological and an anthropological point of view.

ASB 211 Women in Other Cultures. (3)

selected semesters

Cross-cultural analysis of the economic, social, political, and religious factors that affect women's status in traditional and modern societies.

General Studies: HU/SB, G

ASB 222 Buried Cities and Lost Tribes: Our Human Heritage. (3)

spring

Archaeology through its most important discoveries: human origins, Pompeii, King Tut, the Holy Land, Southwest Indians, and methods of field archaeology.

General Studies: HU/SB, G, H

ASB 223 Buried Civilizations of the Americas. (3)

fall and spring

Archaeology through examination of several ancient civilizations of Meso-, South, and North America.

General Studies: HU/SB, G, H

ASB 231 Archaeological Field Methods. (4)

spring

Excavation of archaeological sites and recording and interpretation of data. Includes local field experience. 2 hours lecture, 8 hours lab. Prerequisite: ASM 101 or instructor approval.

General Studies: SG

ASB 240 Introduction to Southeast Asia. (3)

fall

Interdisciplinary introduction to the cultures, religions, political systems, geography, and history of Southeast Asia. Cross-listed as GCU 240/HST 240/POS 240/REL 240. Credit is allowed for only ASB 240 or GCU 240 or HST 240 or POS 240 or REL 240.

General Studies: G

ASB 242 Asian American Experiences: An Anthropological Perspective. (3)

fall

Historical and contemporary experiences of Asian Americans in terms of the anthropological concepts of culture, ethnicity, and adaptation. Prerequisite: ENG 101 or 105.

General Studies: L, C

ASB 250 Anthropology Topics. (3)

selected semesters

Covers five areas of anthropological inquiry. Emphasizes library research, critical analysis, and communication skills relevant to upper-

division anthropology course work. Prerequisites: ASB 102; ASM 101 (or its equivalent); completion of the First-Year Composition requirement.

General Studies: L

ASB 252 Anthropology of Sports. (3)

fall and spring

Cross-cultural examination of symbolic and social dimensions of sports past and present.

ASB 302 Ethnographic Field Study in Mexico. (3)

summer

Fieldwork study of cultural adaptation, Mexican culture, United States-Mexican cultural conflict, ethnographic research methods, and local culture. Lecture, discussion, field research. Pre- or corequisite: SPA 101 (or its equivalent).

General Studies: L/SB, G

ASB 311 Principles of Social Anthropology. (3)

spring

Comparative analysis of domestic groups and economic and political organizations in primitive and peasant societies.

General Studies: SB

ASB 314 Comparative Religion. (3)

fall and spring

Origins, elements, forms, and symbolism of religion; a comparative survey of religious beliefs and ceremonies; the place of religion in the total culture. Prerequisite: ASB 102 or instructor approval.

ASB 319 The North American Indian. (3)

once a year

Archaeology, ethnology, and linguistic relationship of the Indians of North America. Does not include Middle America. Prerequisite: ASB 102 or instructor approval.

ASB 320 Indians of Arizona. (3)

selected semesters

Traditional cultures and the development and nature of contemporary political, economic, and educational conditions among Arizona Indians.

ASB 321 Indians of the Southwest. (3)

spring

Cultures of the contemporary Indians of the southwestern United States and their historic antecedents. Prerequisite: ASB 102 or instructor approval.

General Studies: L/SB, C, H

ASB 322 Indians of Mesoamerica. (3)

spring

Historic tribes and folk cultures. Prerequisite: ASB 102 or instructor approval.

General Studies: SB, G

ASB 323 Indians of Latin America. (3)

fall

Indigenous cultures of the Amazon, the Andean region, Central America, and southern Mexico. Lecture, discussion. Prerequisite: ASB 102 or instructor approval.

General Studies: SB, G

ASB 324 Peoples of the Pacific. (3)

selected semesters

Peoples and cultures of Oceania focusing particularly on societies of Melanesia, Micronesia, and Polynesia. Prerequisite: ASB 102 or instructor approval.

General Studies: G

ASB 325 Peoples of Southeast Asia. (3)

fall

Cultural-ecological perspective on the peoples of mainland and insular Southeast Asia. Subsistence modes, social organization, and the impact of modernization. Prerequisite: ASB 102 or instructor approval.

General Studies: G

ASB 326 Human Impacts on Ancient Environments. (3)

spring

World survey of successful and unsuccessful ancient societies and their impacts on the environment.

General Studies: SB, H

ASB 327 Action Anthropology. (3)

fall

Explores contemporary issues and problem solving in Cuna, Micronesia, Mayan, and U.S. Latino communities, through applied anthropology and community initiatives.

ASB 330 Principles of Archaeology. (3)

fall and spring

Methods and theories for reconstructing and explaining the lifeways of prehistoric peoples. Prerequisite: 3 hours in archaeology.

General Studies: SB

ASB 333 New World Prehistory. (3)

fall

Variety of archaeological patterns encountered in the Western Hemisphere. Covers the period from the appearance of humans in the New World to European contact; covers the area from Alaska to Tierra del Fuego. Prerequisite: completion of the First-Year Composition requirement. Pre- or corequisite: 1 upper-division ASU course.

General Studies: L/SB

ASB 335 Prehistory of the Southwest. (3)

fall and spring

Anthropological understandings of major cultural processes and events in the prehistory of the American Southwest using evidence from archaeology.

General Studies: SB, C, H

ASB 337 Pre-Hispanic Civilization of Middle America. (3)

spring

Preconquest cultures and civilizations of Mexico. The Aztecs, Mayas, and their predecessors. Prerequisite: ASM 101 or instructor approval.

General Studies: HU/SB, G, H

ASB 338 Archaeology of North America. (3)

selected semesters

Origin, spread, and development of the prehistoric Indians of North America up to the historic tribes. Does not include the Southwest. Prerequisite: ASM 101 or instructor approval.

General Studies: SB, H

ASB 350 Anthropology and Art. (3)

once a year

Art forms of people in relationship to their social and cultural setting. Prerequisite: ASB 102 or instructor approval.

ASB 351 Psychological Anthropology. (3)

spring

Approaches to the interrelations between the personality system and the sociocultural environment. Prerequisite: ASB 102 or instructor approval.

General Studies: SB

ASB 353 Death and Dying in Cross-Cultural Perspective. (4)

fall

Humanistic and scientific study of aging, sickness, dying, death, funerals, and grief and their philosophy and ecology in non-Western and Western cultures. 3 hours lecture, 1 hour discussion.

General Studies: HU/SB, G

ASB 355 Shamanism, Healing, and Consciousness. (3)

spring

World views, practices, and roles of shamans and traditional and contemporary healers; explanatory biopsychological models of consciousness.

General Studies: HU/SB

ASB 361 Old World Prehistory I. (3)

fall

Biosocial evolution in the Pleistocene, emphasizing technological achievements and the relationship between technology and environment in western Europe, sub-Saharan Africa. Prerequisite: ASM 101 or instructor approval.

General Studies: H

ASB 362 Old World Prehistory II. (3)

spring

Transition from hunting and collecting societies to domestication economies; establishment of settled village life, emphasizing the Near East, Egypt, Southwest Europe. Prerequisite: ASM 101 or instructor approval.

General Studies: H

ASB 366 African Civilization Before 1850. (3)

fall and spring

African culture history and precolonial civilization. Meets non-Western requirement. Lecture, discussion. Cross-listed as AFS 366. Credit is allowed for only AFS 366 or ASB 366.

General Studies: SB, G, H

ASB 400 Cultural Factors in International Business. (3)

spring

Anthropological perspectives on international business relations; applied principles of cross-cultural communication and management; regional approaches to culture and business.

General Studies: G

ASB 411 Kinship and Social Organization. (3)

selected semesters

Meanings and uses of concepts referring to kinship, consanguinity, affinity, descent, alliance, and residence in the context of a survey of the varieties of social groups, marriage, rules, and kinship terminological systems. Prerequisite: 6 hours in anthropology or instructor approval.

ASB 412 History of Anthropology. (3)

fall

Historical treatment of the development of the culture concept and its expression in the chief theoretical trends in anthropology between 1860 and 1950. Prerequisite: ASB 102 or instructor approval.

General Studies: L/SB

ASB 416 Economic Anthropology. (3)

fall

Economic behavior and the economy in preindustrial societies; description and classification of exchange systems; relations between production, exchange systems, and other societal subsystems. Prerequisite: ASB 102 or instructor approval.

General Studies: L/SB

ASB 417 Political Anthropology. (3)

selected semesters

Comparative examination of the forms and processes of political organization and activity in primitive, peasant, and complex societies. Prerequisite: ASB 102 or instructor approval.

ASB 462 Medical Anthropology: Culture and Health. (3)

fall

Role of culture in health, illness, and curing; health status, provider relations, and indigenous healing practices in United States ethnic groups. Lecture, discussion.

General Studies: C

ASB 466 Peoples and Cultures of Africa. (3)

fall and spring

Survey of African peoples and their cultures, external contact, and changes. Meets non-Western requirement. Lecture, discussion. Cross-listed as AFS 466. Credit is allowed for only AFS 466 or ASB 466.

General Studies: SB, G, H

ASB 471 Introduction to Museums. (3)

fall

History, philosophy, and current status of museums. Explores collecting, preservation, exhibition, education, and research activities in different types of museums. Prerequisites: both ASB 102 and ASM 101 or only instructor approval.

General Studies: L

ASB 480 Introduction to Linguistics. (3)

fall

Descriptive and historical linguistics. Survey of theories of human language, emphasizing synchronic linguistics.

General Studies: SB

ASB 481 Language and Culture. (3)

spring

Applies linguistic theories and findings to nonlinguistic aspects of culture; language change; psycholinguistics. Prerequisite: ASB 102 or instructor approval.

General Studies: SB

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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ASB 483 Sociolinguistics and the Ethnography of Communication. (3)

selected semesters

Relationships between linguistic and social categories; functional analysis of language use, maintenance, and diversity; interaction between verbal and nonverbal communication. Prerequisites: both ASB 480 and ENG 213 (or FLA 400) or only instructor approval.

General Studies: SB

ASB 485 U.S.-Mexico Border in Comparative Perspective. (3)

spring in odd years

Explores the multicultural and social dimensions of communities along the U.S.-Mexico border, emphasizing social organization, migration, culture, and frontier ideology. Prerequisite: 6 hours in anthropology or instructor approval.

ASB 501 Applied Medical Anthropology. (3)

fall

Overview of anthropology's applications in medicine and its adaptations to U.S. ethnic populations. Requires research project in medical setting. Lecture, seminar. Prerequisite: graduate standing or instructor approval.

ASB 502 Health of Ethnic Minorities. (3)

spring

Prevalence of illness, risk factors, health ecology, and medical and indigenous treatments. Lecture, seminar. Prerequisite: graduate standing or instructor approval.

ASB 503 Advanced Medical Anthropology. (3)

fall

Theory in medical anthropology and cross-cultural studies that illustrate particular theories. Lecture, seminar. Prerequisite: graduate standing or instructor approval.

ASB 504 Ethnic Relations. (3)

fall

Structural processes of intergroup relations, methods for investigating psychocultural dimensions of ethnicity with focus upon U.S. ethnic groups. Lecture, seminar. Prerequisite: graduate standing or instructor approval.

ASB 506 Gender, Emotions, and Culture. (3)

spring

Relationships among gender and emotion across cultures. Lecture, seminar. Prerequisite: graduate standing or instructor approval.

ASB 529 Culture and Political Economy. (3)

selected semesters

Origin and spread of Western capitalism and its impact on non-Western societies. Utilizes ethnographic and historical case studies. Prerequisite: graduate standing.

ASB 530 Ecological Anthropology. (3)

once a year

Relations among the population dynamics, social organization, culture, and environment of human populations, with special emphasis on hunter-gatherers and extensive agriculturalists.

ASB 532 Graduate Field Anthropology. (2–8)

spring

Independent research on a specific anthropological problem to be selected by the student in consultation with the staff. May be repeated for credit. Prerequisites: ASM 338 (or its equivalent); instructor approval.

ASB 536 Ethnohistory of Mesoamerica. (3)

selected semesters

Indigenous societies of southern Mexico and Guatemala at Spanish contact and their postconquest transformation. Emphasizes the Aztec Empire. Prerequisite: graduate standing.

ASB 537 Topics in Mesoamerican Archaeology. (3)

selected semesters

Explores changing organization of pre-Columbian civilizations in Mesoamerica through interpretive issues, such as regional analysis, chiefdoms, urbanism, and exchange. Prerequisite: instructor approval.

ASB 540 Method and Theory of Sociocultural Anthropology and Archaeology. (3)

fall

Basic issues concerning concepts of social and ethnic groups, cultural and sociological theory, and the nature of anthropological research. Prerequisite: instructor approval.

ASB 541 Method and Theory of Social and Cultural Anthropology. (3)

spring

Continuation of ASB 540. Prerequisite: ASB 540 or instructor approval.

ASB 542 Method and Theory of Archaeology I. (3)

spring

Models of human evolution, culture change, and interpretation of hunter-gatherer and tribal societies, ceramic, lithic, and faunal materials. Prerequisite: instructor approval.

ASB 543 Method and Theory of Archaeology II. (3)

fall

Covers concepts of social complexity along with economy, demography, and social dynamics, followed by archaeological research design. Prerequisite: instructor approval.

ASB 544 Settlement Patterns. (3)

selected semesters

Spatial arrangement of residences, activity sites, and communities over landscape. Emphasizes natural and cultural factors influencing settlement patterns. Prerequisite: instructor approval.

ASB 546 Pleistocene Prehistory. (3)

fall

Development of society and culture in the Old World during the Pleistocene epoch, emphasizing technological change through time and the relationship of people to their environment. Prerequisite: ASB 361 (or its equivalent).

ASB 547 Issues in Old World Domestication Economies. (3)

spring

Archaeological evidence for transitions in Old World subsistence economies from hunting and gathering to dependence on domesticated plants and animals. Prerequisite: ASB 362 (or its equivalent).

ASB 550 Economic Archaeology. (3)

selected semesters

Prehistoric economies in hunter-gatherer, tribal, and complex societies. Covers subsistence strategies, craft production and specialization, and exchange. Prerequisite: instructor approval.

ASB 551 Prehistoric Diet. (3)

selected semesters

Critical review of techniques for recovering dietary information and theoretical models concerned with explaining diet and nutrition. Prerequisite: instructor approval.

ASB 555 Complex Societies. (3)

spring

Examines structural variations in hierarchically organized societies, along with origins, dynamics, and collapse. Seminar.

ASB 559 Archaeology and the Ideational Realm. (3)

selected semesters

"Postprocessual" and other views concerning relevance of mental phenomena for understanding sociocultural change. Various approaches to inferring prehistoric meanings.

ASB 563 Hunter-Gatherer Adaptations. (3)

selected semesters

Evolution of prehistoric hunter-gatherer societies in the Old and New Worlds from the most ancient times through protohistoric chiefdoms. Prerequisite: instructor approval.

ASB 567 Southwestern Archaeology. (3)

spring

Broad coverage of Southwestern cultural developments focusing on current debates and rigorous use of archaeological data in making cultural inferences.

ASB 568 Intrasite Research Strategies. (3)

fall

Research issues within a single site context. Topics include quantitative spatial analysis, site definition, sampling, distributional analysis, and substantive interpretation.

ASB 571 Museum Principles. (3)

fall

History, philosophy, and current status of museums. Explores collecting, preservation, exhibition, education, and research activities in different types of museums. Prerequisites: both ASB 102 and ASM 101 or only instructor approval.

ASB 572 Museum Collection Management. (3)*spring*

Principles and practices of acquisition, documentation, care, and use of museum collections; registration, cataloging, and preservation methods; legal and ethical issues. Prerequisite: ASB 571 or instructor approval.

ASB 573 Museum Administration. (3)*spring*

Formal organization and management of museums, governance, personnel matters, fund raising and grantsmanship, legal and ethical issues. Prerequisite: ASB 571 or instructor approval.

ASB 574 Exhibition Planning and Design. (3)*spring*

Exhibition philosophies and development; processes of planning, designing, staging, installing, evaluating, and disassembling temporary and long-term exhibits. Prerequisites: both ASB 571 and 572 or only instructor approval.

ASB 575 Computers and Museums. (3)*fall*

Basics of museum computer application; hardware and software; fundamentals of database management; issues of research, collections management, and administration.

ASB 576 Museum Interpretation. (3)*fall*

Processes of planning, implementing, documenting, and evaluating educational programs in museums for varied audiences—children, adults, and special interest groups. Lecture, discussion. Prerequisite: ASB 571.

ASB 577 Principles of Conservation. (3)*spring*

Preservation of museum objects: nature of materials, environmental controls, and causes of degradation; recognizing problems, damage, and solutions; proper care of objects. Prerequisites: both ASB 571 and 572 or only instructor approval.

ASB 579 Critical Issues in Museum Studies. (3)*fall*

Current debates of museum practice from an anthropological perspective. Addresses issues of collection, presentation, authenticity, and authority. Seminar. Prerequisite: ASB 571 or instructor approval.

ASB 591 Seminar. (1–12)*selected semesters*

Selected topics in archaeology, linguistics, and social-cultural anthropology. Topics may include the following:

- Archaeological Ceramics. (3)
- Archaeology of North America. (3)
- Cultural Anthropology. (3)
- Culture and Personality. (3)
- Evolution and Culture. (3)
- Historical Archaeology. (3)
- Interdepartmental Seminar. (3)
- Language and Culture. (3)
- Linguistics. (3)
- Museum Studies. (3)
- Problems in Southwestern Archaeology. (3)
- Problems in Southwestern Ethnology. (3)
- Social Anthropology. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

ANTHROPOLOGY (SCIENCE AND MATHEMATICS) (ASM)

ASM 101 Bones, Stones, and Human Evolution. (3)*fall and spring*

Physical anthropology and archaeology. Evidence and processes of human evolution and of culture change. Primates. Fossil hominids and their tools. Race, variation, and heredity. Environment and human biology. Prehistoric culture and society. Corequisite: ASM 103.

General Studies: SB/SG (if credit also earned in ASM 103)

ASM 103 Bones, Stones, and Human Evolution—Laboratory. (1)*fall and spring*

Hands-on laboratory exercises addressing human biological variation, evolutionary mechanisms, nonhuman and human primate morphology and behavior, and the fossil record. Lab exercises, small-group discussion. Corequisite: ASM 101.

General Studies: SG (if credit also earned in ASM 101)

ASM 241 Biology of Race. (3)*fall and spring*

Human variation and its interpretation in an evolutionary context.

ASM 246 Human Origins. (3)*fall*

History of discoveries and changing interpretations of human evolution. Earliest ancestors to emergence of modern humans. Humanity's place in nature.

ASM 248 Bioarchaeology of Cannibalism, Violence, and Social Pathology. (3)*spring*

Worldwide review of claims of severely abnormal behavior in prehistory based on perimortem bone taphonomy, analogues, and comparative cases. Lecture, class demonstrations.

ASM 301 Peopling of the World. (3)*spring*

Reviews all evidence for human dispersal during the last 100,000 years, origins of language, cultures, races, and beginnings of modern humans. Prerequisite: ASM 101.

General Studies: SB

ASM 338 Anthropological Field Session. (2–8)*spring*

Anthropological field techniques, analysis of data, and preparation of field reports. May be repeated for credit. Prerequisite: instructor approval.

ASM 341 Human Osteology. (4)*fall*

Osteology, human paleontology, and osteometry. Description and analysis of archaeological and contemporary human populations. 3 hours lecture, 3 hours lab. Prerequisite: ASM 101 or instructor approval.

ASM 342 Human Biological Variation. (4)*spring*

Evolutionary interpretations of biological variation in living human populations, with emphasis on anthropological genetics and adaptation. Nutrition and disease and their relation to genetics and behavior. 3 hours lecture, 3 hours lab. Prerequisites: both ASM 101 and MAT 106 (or its equivalent) or only instructor approval.

General Studies: SG

ASM 343 Primatology. (3)*fall*

Evolution and adaptations of nonhuman primates, emphasizing social behavior. Includes material from fossil evidence and field and laboratory studies in behavior and biology. Prerequisite: ASM 101 or instructor approval.

ASM 344 Fossil Hominids. (3)*once a year*

Ancient African, Asian, and European human and primate skeletal, dental, and cultural remains. Human biological, behavioral, and cultural evolution. Prerequisite: ASM 101 or instructor approval.

General Studies: H

ASM 345 Disease and Human Evolution. (3)*fall*

Interaction of people and pathogens from prehistoric times to the present, with emphasis on disease as an agent of genetic selection. Prerequisite: ASM 101 or instructor approval.

ASM 348 Social Issues in Human Genetics. (3)*spring*

Moral and social implications of developments in genetic science, particularly as they affect reproduction, medicine, and evolution.

General Studies: SB

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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ASM 365 Laboratory Methods in Archaeology. (4)

selected semesters

Techniques of artifact analysis. Basic archaeological research techniques; methods of report writing. May be repeated for credit for total of 8 hours. Prerequisite: ASM 101 or instructor approval.

ASM 435 Archaeological Pollen Analysis. (3)

selected semesters

Theory, methodology, and practice of pollen analytic techniques. Compares uses in botany, geology, and archaeology. 2 hours lecture, 3 hours lab, possible field trips. Prerequisite: instructor approval.

ASM 448 Geoarchaeology. (3)

fall and spring

Geologic context relevant to archaeological research. Topics include sediments, deposition environments, soils, anthropogenic and biogenic deposits, and quaternary chronology. Lecture, discussion, field experiences. Prerequisites: ASB 222 (or 223) or GLG 101 (or 103) or GPH 111; instructor approval.

ASM 450 Bioarchaeology. (3)

spring

Surveys archaeological and physical anthropological methods and theories for evaluating skeletal and burial remains to reconstruct bio-cultural adaptation and lifeways. Prerequisite: ASM 101 or instructor approval.

ASM 452 Dental Anthropology. (4)

fall

Human and primate dental morphology, growth, evolution, and genetics. Within- and between-group variation. Dental pathology and behavioral-cultural-dietary factors. 3 hours lecture, 3 hours lab. Prerequisite: instructor approval.

General Studies: SG

ASM 454 Comparative Primate Anatomy. (4)

spring

Functional anatomy of the cranial, dental, and locomotor apparatus of primates, including humans, emphasizing the relation of morphology to behavior and environment. 3 hours lecture, 3 hours lab, dissections, demonstrations. Prerequisite: instructor approval.

ASM 455 Primate Behavior Laboratory. (3)

selected semesters

Instruction and practice in methods of observation and analysis of primate behavior. Discussion of the relationship between class work on captive animals and field techniques for studying free-ranging groups. Directed readings, 6 hours lab. Prerequisites: ASM 343; instructor approval.

General Studies: L

ASM 456 Infectious Disease and Human Evolution. (3)

once a year

Study of infectious disease and humanity, using evidence from anthropology, history, medicine, and ancient skeletons. Prerequisite: ASM 345.

ASM 465 Quantification and Analysis for Anthropologists. (3)

spring

Statistical, quantitative, and geometric strategies for envisioning and exploring archaeological, physical anthropological, bioarchaeological, and sociocultural data. Univariate and multivariate methods. Prerequisites: introductory statistical course; instructor approval.

ASM 472 Archaeological Ceramics. (3)

selected semesters

Analysis and identification of pottery wares, types, and varieties. Systems for ceramic classification and cultural interpretation. 2 hours lecture, 3 hours lab. Prerequisite: instructor approval.

ASM 548 Geoarchaeology. (3)

fall

Geologic context relevant to archaeological research. Topics include sediments, deposition environments, soils, anthropogenic and biogenic deposits, and quaternary chronology. Prerequisite: instructor approval.

ASM 555 Advanced Human Osteology. (3)

selected semesters

Laboratory and field techniques in dealing with the human skeleton. Emphasizes preparation, identification, radiography, sectioning, microscopy, and data processing. 1 hour lecture, 6 hours lab. Prerequisite: ASM 341 or instructor approval.

ASM 565 Quantitative Archaeology. (3)

spring

Formal methods of structuring, codifying, and analyzing data for archaeological problems. Designing research to yield data amenable to productive analysis.

ASM 566 Advanced Topics in Quantitative Archaeology. (3)

fall

Archaeological issues associated with quantitative analysis, e.g., Bayesian and Monte Carlo approaches, simulation, diversity. May be repeated for credit. Prerequisite: ASM 565 or instructor approval.

ASM 573 Lithic Analysis. (3)

selected semesters

Analysis and interpretation of chipped stone artifacts. Focuses on both techniques and underlying concepts and their application to real collections. Prerequisite: instructor approval.

ASM 591 Seminar. (1–12)

selected semesters

Selected topics in archaeology and physical anthropology. Topics may include the following:

- Bioarchaeology. (3)
- Evolution and Culture. (3)
- Interdepartmental Seminar. (3)
- Physical Anthropology. (3)
- Primates and Behavior. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Biology

lifesciences.asu.edu/biology

480/965-3571

LSC 226

James P. Collins, Chair

Regents' Professors: Alcock, Maienschein

Professors: Capco, Chandler, Church, Collins, Dowling, Elser, Faeth, Fisher, Grimm, Hazel, Hedrick, Lawson, McGaughey, Moore, Ohmart, Pyne, Rutowski, Satterlie, Smith, Walsberg

Associate Professors: Deviche, Fewell, Fouquette, Goldstein, Harrison, Orchinik

Assistant Professors: DeNardo, Fagan, Gerber, Hofmann, Kinzig, Kumar, Laubicher, Lorson, Newfeld, Rawls, Sabo, Wilson-Rawls

Senior Research Professional: Kazilek

Research Professors: Davidson, Pearson

Assistant Research Professors: Hope, Neuer

Assistant Research Scientist: Lyubchenko

Curator of Collections: Douglas

BIOLOGY—B.S.

The major in Biology consists of a minimum of 33 semester hours in biology, and a minimum of 20 semester

hours in related fields, plus a three-semester-hour mathematics proficiency. Required major courses are as follows:

BIO 187 General Biology I <i>SQ</i>	4
BIO 188 General Biology II <i>SG</i>	4
Choose one of the courses below.....	3–4
BIO 320 Fundamentals of Ecology (3)	
BIO 331 Animal Behavior (3)	
BIO 370 Vertebrate Zoology (4)	
BIO 385 Comparative Invertebrate Zoology (4)	
MIC 220 Biology of Microorganisms (3)	
PLB 300 Comparative Plant Diversity <i>L/SG</i> (4)	
BIO 340 General Genetics.....	4
BIO 345 Organic Evolution.....	3
Choose one of the courses below.....	3–4
BIO 351 Developmental Anatomy (3)	
BIO 353 Cell Biology (3)	
MIC 360 Bacterial Physiology (3)	
PLB 308 Plant Physiology (4)	
Total	21–23

The remaining hours (from 10–12) to bring the total to 33 are selected from among upper-division courses, approved for major credit, in BIO, MIC, PLB, and approved BCH courses, in consultation with a Department of Biology advisor. The major must include at least three upper-division laboratory courses. Required courses in related fields plus math proficiency are as follows:

CHM 113 General Chemistry <i>SQ</i>	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i>	5
Choose between the combinations of organic chemistry courses below	4 or 8
CHM 231 Elementary Organic Chemistry <i>SQ</i> ¹ (3)	
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> ¹ (1)	
or	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
MAT 251 Calculus for Life Sciences <i>MA</i>	3
or MAT 210 Brief Calculus <i>MA</i> (3)	
or any other calculus	
Choose between the combinations of introduction to physics courses below	4 or 8
PHY 101 Introduction to Physics <i>SQ</i> (4)	
or	
PHY 111 General Physics <i>SQ</i> ² (3)	
PHY 112 General Physics <i>SQ</i> ² (3)	
PHY 113 General Physics Laboratory <i>SQ</i> ² (1)	
PHY 114 General Physics Laboratory <i>SQ</i> ² (1)	
STP 226 Elements of Statistics.....	3
Total	23 or 31

¹ Both CHM 231 and 235 must be taken to secure SQ credit.

² Both PHY 111 and 113 or PHY 112 and 114 must be taken to secure SQ credit.

CONSERVATION BIOLOGY—B.S.

The major in Conservation Biology consists of a minimum of 37 semester hours in the required major courses and a minimum of 16 hours in related fields, plus a three-semester-hour mathematics proficiency. Required courses are as follows:

BIO 187 General Biology I <i>SQ</i>	4
BIO 188 General Biology II <i>SG</i>	4
BIO 317 Conservation Biology	3
BIO 320 Fundamentals of Ecology	3
BIO 340 General Genetics.....	4
or BIO 341 Genetic Analysis (5)	
BIO 360 Animal Physiology.....	3
BIO 410 Techniques in Wildlife Conservation Biology <i>L</i>	3
BIO 411 Advanced Conservation Biology I.....	3
BIO 412 Advanced Conservation Biology II.....	3
Total	30 or 31

The remaining hours to bring the total to 37 are selected from among relevant upper-division courses in BIO and PLB courses or in related departments, in consultation with a Department of Biology advisor. Required courses in related fields plus math proficiency are as follows:

CHM 113 General Chemistry <i>SQ</i>	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i>	5
Choose between the combinations of organic chemistry courses below	4 or 8
CHM 231 Elementary Organic Chemistry <i>SQ</i> * (3)	
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> * (1)	
or	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
MAT 251 Calculus for Life Sciences <i>MA</i>	3
or MAT 210 Brief Calculus <i>MA</i> (3)	
or any other calculus	
STP 226 Elements of Statistics.....	3
Total	19 or 23

* Both CHM 231 and 235 must be taken to secure SQ credit.

Concentration in Biology and Society

The major in Biology with a concentration in biology and society is intended for students with a strong interest in life sciences and in the interaction between life sciences and the society within which science is done. This option consists of a minimum of 44 semester hours in life sciences and societal interface courses, and 12 hours in related fields, plus a three-semester-hour mathematics proficiency. Required courses are as follows:

BIO 187 General Biology I <i>SQ</i>	4
BIO 188 General Biology II <i>SG</i>	4
BIO 311 Biology and Society.....	3
BIO 320 Fundamentals of Ecology	3
or BIO 345 Organic Evolution (3)	
BIO 340 General Genetics.....	4
or BIO 341 Genetic Analysis (5)	
BIO 419 Research Colloquium in Biology and Society <i>L</i>	3
BIO 484 Internship	3
or BIO 493 Honors Thesis <i>L/HU</i> (3)	
or BIO 495 Undergraduate Thesis (3)	
or BIO 499 Individualized Instruction (3)	
or approved hours in research (3)	

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See "General Studies," page 83.

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MAT 251 Calculus for Life Sciences <i>MA</i>	3
or MAT 210 Brief Calculus <i>MA</i> (3) or any other calculus	
Total	27

The remaining courses to complete the major are determined by the student in consultation with a Department of Biology advisor and must be distributed in the following areas:

- 12 hours of upper-division electives from BIO, MIC, PLB;
- 12 hours of upper-division interface courses from an approved list. At least three semester hours in each of these areas: ethics, history and philosophy of science, and contemporary societal issues;
- 11 hours of physical sciences (CHM recommended); and
- three to four hours of an approved course in statistics.

MINOR IN BIOLOGY

The Biology minor consists of 24 semester hours, including BIO 187 General Biology I and BIO 188 General Biology II, and 16 hours selected with approval of an advisor in the Department of Biology; at least 12 hours must be in the upper division. Courses not available for credit in the Life Sciences major (BIO, MBB, MIC, and PLB) cannot be used for the minor (e.g., BIO 100 The Living World and BIO 201 Human Anatomy and Physiology I). This minor is not available to students majoring in the life sciences.

SECONDARY EDUCATION—B.A.E.

Biological Sciences. The major teaching field consists of a minimum of 40 semester hours and at least 22 hours in supporting courses. Required major courses are as follows:

BIO 187 General Biology I <i>G</i>	4
BIO 188 General Biology II <i>Q</i>	4
BIO 320 Fundamentals of Ecology	3
BIO 340 General Genetics	4
or BIO 341 Genetic Analysis (5)	
BIO 345 Organic Evolution	3
BIO 360 Animal Physiology	3
BIO 370 Vertebrate Zoology	4
or BIO 385 Comparative Invertebrate Zoology (4) or PLB 300 Comparative Plant Diversity <i>L/SG</i> (4) or PLB 310 The Flora of Arizona (4)	
MIC 205 Microbiology <i>SG</i>	3
or MIC 220 Biology of Microorganisms (3)	
MIC 206 Microbiology Laboratory <i>SG*</i>	1
PLB 308 Plant Physiology	4
Total	33 or 34

* Both MIC 205 and 206 must be taken to secure SG credit.

The remaining courses in the major (six hours minimum) should be selected to reflect a balance between BIO, MIC, and PLB courses. Required supporting courses are as follows:

BIO 316 History of Biology: Conflicts and Controversies <i>H</i>	3
or HPS 330 History of Biology: Conflicts and Controversies <i>H</i> (3)	
CHM 113 General Chemistry <i>SQ</i>	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i>	5
or CHM 116 General Chemistry <i>SQ</i> (4)	
GLG 102 Introduction to Geology II (Historical) <i>SG</i> , ¹ <i>H</i>	3
or GLG 300 Geology of Arizona (3)	
MAT 170 Precalculus <i>MA</i>	3
PHY 101 Introduction to Physics <i>SQ</i>	4
or PHY 111, 112 General Physics <i>SQ</i> ² (6) and PHY 113, 114 General Physics Laboratory <i>SQ</i> ² (2)	
Minimum total	22

¹ Both GLG 102 and 104 must be taken to secure SG credit.

² Both PHY 111 and 113 or PHY 112 and 114 must be taken to secure SQ credit.

BIO 480 Methods of Teaching Biology and BIO 482 Advanced Methods of Teaching Biology are required in the professional education program.

The minor teaching field consists of 24 semester hours as follows: BIO 187, 188; 16 additional hours in BIO, MIC, and PLB courses selected to reflect a balance across the disciplines and subdisciplines in biology. BIO 480 is required in addition to the 24 semester hours in biological sciences.

GRADUATE PROGRAM

The faculty in the Department of Biology offer programs leading to the degrees of Master of Natural Science, M.S., and Ph.D. (with a concentration in ecology for the M.S. and the Ph.D.). See the *Graduate Catalog* for requirements.

The department participates in the interdisciplinary program for the M.S. and Ph.D. degrees in Molecular and Cellular Biology. See the *Graduate Catalog* for more information.

Departmental Assessment. The Department of Biology works continuously on assessing and improving the effectiveness of its academic programs. To accomplish this, the department conducts, coordinates, and manages research designed to measure the degree to which courses, curricula, and academic programs impart knowledge to students. This research is conducted through student surveys, interviews, review of student records, and other common educational research methods. The results of these studies, or assessments, are used to enhance the intellectual integrity of a Department of Biology education.

BIOLOGY (BIO)

BIO 100 The Living World. (4)

fall, spring, summer

Principles of biology. Cannot be used for major credit in the biological sciences. 3 hours lecture, 3 hours lab.

General Studies: SQ

BIO 120 Human Physiology. (4)

selected semesters

Discusses basic concepts of general science using current issues and basic concepts of human physiology as a focus. Cannot be used for major credit in biological sciences. 3 hours lecture, 3 hours lab.

General Studies: SG

BIO 187 General Biology I. (4)*fall, spring, summer*

Biological concepts emphasizing principles and interplay of structure and function at the organismal, population, and community levels; includes ecology, evolution. Lecture, lab. Prerequisite: life science or health-related sciences major.

*General Studies: SG***BIO 188 General Biology II. (4)***fall, spring, summer*

Biological concepts emphasizing principles and interplay of structure and function at the molecular, cellular, and organismal levels; includes genetics, cell biology, physiology. Lecture, lab. Prerequisite: BIO 187 recommended.

*General Studies: SQ***BIO 193 The Nature of Biological Science. (4)***selected semesters*

Creative and critical thinking skills in biological research; nature of biological knowledge; role of experimentation, predictions, hypotheses, theories, values. Lecture, lab, discussion. Fee. Prerequisite: high school biology.

*General Studies: SQ***BIO 201 Human Anatomy and Physiology I. (4)***fall, spring, summer*

Structure and dynamics of the human mechanism. Cannot be used for major credit in the Department of Biology. 3 hours lecture, 3 hours lab.

*General Studies: SG***BIO 202 Human Anatomy and Physiology II. (4)***fall, spring, summer*

Continuation of BIO 201. Cannot be used for major credit in the Department of Biology. 3 hours lecture, 3 hours lab. Fee. Prerequisite: BIO 201 or instructor approval.

BIO 218 Medical History. (1)*selected semesters*

Brief survey of humankind's important inventions and discoveries in the art and science of medicine, illustrating interrelationships of medical ideas.

BIO 241 Human Genetics. (4)*fall*

Introduces basic concepts in genetics as they are applied to human heredity. Cannot be used for major credit in the Department of Biology. 3 hours lecture, 3 hours lab. Prerequisite: a course in the life sciences.

*General Studies: SG***BIO 300 Natural History of Arizona. (3)***selected semesters*

Plant and animal communities of Arizona. Cannot be used for major credit in the biological sciences. Prerequisite: junior standing.

BIO 301 Field Natural History. (1)*selected semesters*

Organisms and their natural environment. Cannot be used for major credit in the biological sciences. 2 weekend field trips, field project. Fee. Pre- or corequisite: BIO 300.

BIO 302 Cancer and Heart Disease. (3)*fall*

Incidence and mortality statistics for cancer and heart disease; host and environmental risk factors; diagnosis, treatment and prevention strategies. Cannot be counted toward a Biology major. Prerequisites: a combination of CHM 231 (or its equivalent) and 12 hours in life sciences and a General Studies L course or only instructor approval.

*General Studies: L***BIO 303 Radiation and Life. (3)***spring*

Benefits and risks of radiation exposure in society; medical applications, food irradiation, nuclear power, solar UV, population health effects. Cannot be counted toward a Biology major. Prerequisites: a combination of CHM 231 (or its equivalent) and 12 hours in life sciences and a General Studies L course or only instructor approval.

*General Studies: L***BIO 304 Radiation Medicine and Biology. (3)***fall*

Uses of radiation in medicine, including CT, diagnostic x rays, MRI, nuclear medicine, ultrasound; biological effects of radiation with emphasis on cancer. Prerequisites: a combination of PHY 112 and 12

hours in life sciences and a General Studies L course or only instructor approval.

*General Studies: L***BIO 310 Special Problems and Techniques. (1-3)***fall and spring*

Qualified undergraduates may investigate a specific biological problem under the direction of a faculty member. May be repeated for a total of 6 semester hours. Prerequisites: formal conference with the instructor; approval of the problem by the instructor and department chair.

BIO 311 Biology and Society. (3)*spring*

Explores interactions between biological sciences and society, e.g., biomedical, environmental, ethical, historical, legal, philosophical, political, and social issues. Lecture, discussion. Cross-listed as HPS 340. Credit is allowed for only BIO 311 or HPS 340. Prerequisites: both BIO 187 and 188 or only BIO 193 (or 100).

BIO 316 History of Biology: Conflicts and Controversies. (3)*selected semesters*

Focuses on 19th and 20th centuries, considering biology as a discipline. Evolution, problems of heredity, development, and cell theory. Cross-listed as HPS 330. Credit is allowed for only BIO 316 or HPS 330.

*General Studies: H***BIO 317 Conservation Biology. (3)***fall*

Scientific and technical means for management, maintenance, protection, and restoration of biological resources on this planet. Prerequisite: 8 hours in biology.

BIO 318 History of Medicine. (3)*once a year*

Scientific study of the human body, changing theories of disease, evolution of practical opinions on treatment, and the emerging institutionalization of medical practice. Cross-listed as HPS 331. Credit is allowed for only BIO 318 or HPS 331.

*General Studies: H***BIO 319 Environmental Science (Nonmajor). (3)***fall*

Environmental and biological concepts used to understand ecological systems with specific references to problems caused by humans. Cannot be used for major credit in the biological sciences. Cross-listed as PLB 320. Credit is allowed for only BIO 319 or PLB 320.

*General Studies: G***BIO 320 Fundamentals of Ecology. (3)***fall and spring*

Organization, functioning, and development of ecological systems; energy flow; biogeochemical cycling; environmental relations; population dynamics. Prerequisite: BIO 187 or instructor approval.

BIO 321 Introductory Ecology Laboratory. (3)*once a year*

Laboratory and field observations and experiments to test current concepts and theories in ecology. Lab. Fee. Pre- or corequisite: BIO 320.

*General Studies: L***BIO 331 Animal Behavior. (3)***fall*

Evolutionary, genetic, physiological, and ecological bases of animal behavior. Prerequisite: BIO 187 (or its equivalent).

BIO 336 Sociobiology. (3)*selected semesters*

Survey of animal and human social behavior examined from an evolutionary perspective. Suitable for nonmajors. Prerequisite: BIO 331 recommended.

BIO 340 General Genetics. (4)*fall, spring, summer*

Science of heredity and variation. 3 hours lecture, 1 hour recitation. Prerequisite: BIO 187.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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BIO 341 Genetic Analysis. (5)

selected semesters

General genetics: science of heredity and variation using critical inquiry. Not open to students with credit for BIO 340. 3 hours lecture, 6 hours lab. Prerequisites: BIO 187 and 193 (or their equivalents).

BIO 342 General Genetics Laboratory. (2)

fall

Explores general principles of inheritance with special reference to Mendelian, molecular, and computational genetics via laboratory experiments. Lab. Pre- or corequisite: BIO 340.

BIO 343 Genetic Engineering and Society. (4)

fall

Introduces genetic engineering, with emphasis on applications (gene therapy, DNA fingerprinting, bioremediation, transgenic animals and plants). 3 hours lecture, 3 hours lab. Cross-listed as MBB 343. Credit is allowed for only BIO 343 or MBB 343. Prerequisites: preferably both MBB 245 and 246 or only BIO 188 (or its equivalent).

General Studies: L

BIO 344 Origins, Evolution, and Creation. (3)

selected semesters

Examines scientific, mythic, and religious ideas relating to origins (particularly human). Place of antievolutionism and "scientific creationism" in American culture. Lecture, discussion. Cross-listed as HPS 311/HUM 371/REL 383. Credit is allowed for only BIO 344 or HPS 311 or HUM 371 or REL 383.

BIO 345 Organic Evolution. (3)

spring

Processes of adaptive change and speciation in sexual populations. Prerequisite: BIO 187.

BIO 346 The Darwinian Revolution. (3)

selected semesters

Intellectual and cultural history of Darwinism and modern evolutionary theory and their impact on 19th- and 20th-century thought. Lecture, discussion. Cross-listed as HPS 332/HUM 372. Credit is allowed for only BIO 346 or HPS 332 or HUM 372.

BIO 351 Developmental Anatomy. (3)

fall

General developmental biology (embryology) and comparative structure of organ systems, illustrated mainly by vertebrate examples. Prerequisite: BIO 187.

BIO 352 Laboratory in Vertebrate Developmental Anatomy. (2)

fall

Morphology of representative embryonic and adult vertebrates. 2 3-hour labs. Fee. Prerequisites: BIO 187; BIO 351 recommended.

BIO 353 Cell Biology. (3)

fall, spring, summer

Survey of major topics in cell biology, including structural, biochemical, and molecular aspects of cell function. Prerequisite: BIO 187.

BIO 360 Animal Physiology. (3)

fall and spring

Physiological mechanisms of the higher vertebrates. Fee. Prerequisites: BIO 187; CHM 115; MAT 117.

BIO 361 Animal Physiology Laboratory. (2)

fall and spring

Experimental laboratory studies of physiological mechanisms in animals and model systems. Lab, recitation. Prerequisites: CHM 115; MAT 117. Pre- or corequisite: BIO 360.

BIO 370 Vertebrate Zoology. (4)

fall and spring

Characteristics, classification, evolution, and natural history of the major groups of vertebrate animals. 3 hours lecture, 3 hours lab. Fee. Prerequisite: BIO 187.

BIO 385 Comparative Invertebrate Zoology. (4)

fall

Characteristics, life cycles, adaptations, and evolution of invertebrate animals. 3 hours lecture, 3 hours lab. Fee. Prerequisite: BIO 187 or instructor approval.

BIO 386 General Entomology. (4)

selected semesters

Form, activities, and classification of insects. 3 hours lecture, 3 hours lab. Fee. Prerequisite: BIO 187.

BIO 394 Special Topics. (2–3)

selected semesters

Topics of current or special interest in one or more aspects of biology. Topics vary. Prerequisite: junior standing.

BIO 406 Computer Applications in Biology. (3)

fall

Computer analysis techniques in biology emphasizing data entry, management and analysis, and graphic portrayal. Employs mainframe and microcomputers. 2 hours lecture, 3 hours lab. Cross-listed as PLB 432. Credit is allowed for only BIO 406 or PLB 432. Prerequisites: both BIO 187 and MAT 117 (or 210) or only instructor approval.

General Studies: CS

BIO 410 Techniques in Wildlife Conservation Biology. (3)

fall

Field and analytical techniques used in evaluating population structure, viability and environmental impacts. Lecture, lab. Fee. Prerequisites: both BIO 317 and 320 or only instructor approval.

General Studies: L

BIO 411 Advanced Conservation Biology I. (3)

fall

Principles of conservation science, biology of threatened species, management principles that meet conservation goals, emphasizing North American ecosystems. Prerequisites: BIO 317, 320.

BIO 412 Advanced Conservation Biology II. (3)

spring

Global biodiversity patterns, processes, and conservation; global environmental change; sustainable use of natural resources; emphasizing international approaches to conservation biology. Prerequisites: BIO 317, 320.

BIO 415 Biometry. (4)

fall

Statistical methods applied to biological problems, design of experiments, estimation, significance, analysis of variance, regression, correlation, chi square, and bioassay; the use of computers. Does not satisfy laboratory requirements for the College of Liberal Arts and Sciences' General Studies program. 3 hours lecture, 3 hours lab. Prerequisite: MAT 210 (or its equivalent).

General Studies: CS

BIO 416 Professional Values in Science. (3)

once a year

Considers issues related to values in science such as collaboration, finances, legal issues, media, mentoring, ownership of ideas, scientific integrity. Discussion, student projects. Cross-listed as HPS 410. Credit is allowed for only BIO 416 or HPS 410.

General Studies: L

BIO 417 Experimental Design. (3)

spring

Fixed, random, mixed models; crossed and nested factorial designs; balanced and unbalanced data; completely randomized, blocked, repeated measure designs; ANCOVA. Prerequisite: BIO 415 (or its equivalent).

BIO 419 Research Colloquium in Biology and Society. (3–6)

fall and spring

Develops critical thinking abilities, research methods, and writing skills for research in the interactions between biological sciences and society. Discussion. Prerequisite: BIO 311 or instructor approval.

General Studies: L

BIO 420 Field Zoology. (3)

selected semesters

Experience in zoological field techniques. Weekend or longer field trips. Prerequisite: instructor approval.

BIO 423 Population and Community Ecology. (3)

selected semesters

Organization and dynamics of population and communities, emphasizing animals. Theoretical and empirical approaches. Prerequisite: BIO 320 or instructor approval.

BIO 424 Mathematical Models in Ecology. (4)

selected semesters

Mathematical modeling of populations, communities, and ecosystems, including case studies and student-designed projects. 3 hours lecture, 3 hours lab. Prerequisites: BIO 320; a course in calculus.

BIO 425 Animal Ecology. (3)*selected semesters*

Physiological and behavioral adaptations of individual animals to both abiotic and biotic environments. Prerequisite: BIO 320.

BIO 426 Limnology. (4)*selected semesters*

Structure and function of aquatic ecosystems, with emphasis on freshwater lakes and streams. 3 hours lecture, 3 hours lab or field trip. Fee. Prerequisite: BIO 320 or instructor approval.

*General Studies: L***BIO 427 Fire. (3)***spring in odd years*

Interdisciplinary survey of fire on Earth—its history, ecology, and management. Prerequisite: BIO 187.

BIO 428 Biogeography. (3)*fall*

Environmental and historical processes determining distributional patterns of animals and plants, emphasizing terrestrial life. Prerequisites: BIO 187 (or its equivalent); junior standing.

*General Studies: L***BIO 431 Human Development and Fertility. (3)***selected semesters*

Global influences of human population development on the human environment, including understanding human fertility and clinical influences on fertility. Discussion, presentation. Prerequisite: general biology.

BIO 435 Research Techniques in Animal Behavior. (3)*selected semesters*

Experimental and field studies of animal behavior; description and quantification of animal behavior and interpretation of behavior within an evolutionary framework. 1 hour lecture, 6 hours lab. Prerequisite: BIO 331.

*General Studies: L***BIO 441 Cytogenetics. (3)***selected semesters*

Chromosomal basis of inheritance. Cross-listed as PLB 412. Credit is allowed for only BIO 441 or PLB 412. Prerequisite: BIO 340.

BIO 442 Cytogenetics Laboratory. (2)*selected semesters*

Microscopic analysis of meiosis, mitosis, and aberrant cell division. 6 hours lab. Cross-listed as PLB 413. Credit is allowed for only BIO 442 or PLB 413. Pre- or corequisite: BIO 441 or PLB 412.

BIO 446 Principles of Human Genetics. (3)*once a year*

Molecular and cellular analysis of the human genome. Prerequisite: BIO 340.

*General Studies: L***BIO 450 Advanced Developmental Biology. (3)***spring*

Current concepts and experimental methods involving differentiation and biosynthetic activities of cells and organisms, with examples from microorganisms, plants, and animals. Prerequisite: BIO 351.

BIO 453 Animal Histology. (4)*spring*

Microscopic study of animal tissues. 3 hours lecture, 3 hours lab. Fee. Prerequisite: BIO 187 or instructor approval.

BIO 454 Aquatic Insects. (3)*selected semesters*

Systematics and ecology of aquatic insects. Prerequisite: BIO 386.

BIO 464 Photobiology. (3)*selected semesters*

Principles underlying the effects of light on growth, development, and behavior of plants, animals, and microorganisms. Cross-listed as PLB 440. Credit is allowed for only BIO 464 or PLB 440. Prerequisites: CHM 231 (or 331); 12 hours in life sciences.

BIO 465 Neurophysiology. (3)*spring in even years*

Detailed treatment of cellular and organismal neurophysiology and nervous system function. Prerequisite: BIO 360.

BIO 466 Neurophysiology Laboratory. (2)*selected semesters*

Intracellular and extracellular electrophysiological recording techniques, histological preparations, and dye-filling techniques. 6 hours lab. Pre- or corequisite: BIO 465.

BIO 470 Systematic Zoology. (4)*spring in odd years*

Philosophy, theory, practice of interpreting animal diversity, including species concepts speciation, nomenclature, and evolutionary and phylogenetic classification emphasizing phylogenetics. 3 hours lecture, 3 hours lab. Prerequisites: junior standing; 18 hours in life sciences.

*General Studies: L***BIO 471 Ornithology. (3)***spring in odd years*

Biology of birds. 2 hours lecture, 3 hours lab, weekend field trips. Fee. Prerequisite: BIO 370 or instructor approval.

BIO 472 Mammalogy. (4)*fall in odd years*

Classification, structure, habits, ecology, and distribution of mammals, emphasizing North American forms. 3 hours lecture, 3 hours lab or field trip, weekend field trips. Fee. Prerequisite: BIO 370 or instructor approval.

BIO 473 Ichthyology. (3)*spring in odd years*

Systematics and biology of recent and extinct fishes. 2 hours lecture, 3 hours lab or field trip, weekend field trips. Fee. Prerequisites: both BIO 370 and 425 or only instructor approval.

BIO 474 Herpetology. (3)*spring in even years*

Systematics and biology of recent and extinct reptiles and amphibians. 2 hours lecture, 3 hours lab or field trip. Fee. Prerequisite: BIO 370.

BIO 480 Methods of Teaching Biology. (3)*spring*

Methods of instruction, experimentation, organization, and presentation of appropriate content in biology. Prerequisite: 20 hours in the biological sciences.

BIO 482 Advanced Methods of Teaching Biology. (3)*fall in odd years*

Design, delivery, and evaluation of student-centered, inquiry-based lessons for high school biology students. Learning cycle. Prerequisite: BIO 480.

BIO 484 Internship. (3)*selected semesters***BIO 493 Honors Thesis. (1–6)***fall, spring, summer**General Studies: L***BIO 494 Special Topics. (1–4)***selected semesters*

Topics may include the following:

- Cell Biotechnology. (4)

BIO 495 Undergraduate Thesis. (3)*fall, spring, summer*

Guided research culminating in the preparation of an undergraduate thesis based on supervised research done in this and previous semesters. Prerequisites: at least 3 hours of BIO 310 (or 499); formal conference with instructor; instructor and department chair approval.

BIO 499 Individualized Instruction. (1–3)*fall and spring***BIO 502 Transmission Electron Microscopy. (3)***selected semesters*

Theory, use, and methods of preparing biological materials for transmission electron microscopy. Lecture, lab. Materials fee. Prerequisite: instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

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BIO 505 Scanning Electron Microscopy. (3)

selected semesters

Theory, use, and methods of preparing biological materials for scanning electron microscopy. 2 hours lecture, 3 hours lab. Materials fee. Prerequisite: instructor approval.

BIO 508 Scientific Data Presentation. (2)

spring

Techniques necessary for presentation of scientific data used in journal publications, grant proposals, and visual presentations. Lecture, lab. Prerequisite: instructor approval.

BIO 520 Biology of the Desert. (2)

selected semesters

Factors affecting plant and animal life in the desert regions and adaptations of the organisms to these factors. Prerequisite: 10 hours in biological sciences or instructor approval.

BIO 522 Populations: Evolutionary Ecology. (3)

selected semesters

Principles of population biology and community ecology within an evolutionary framework. 2 hours lecture, 2 hours recitation. Prerequisites: BIO 320, 415 (or MAT 210), 545.

BIO 524 Ecosystems. (3)

selected semesters

Structure and function of terrestrial and aquatic ecosystems, with emphasis on productivity, energetics, biogeochemical cycling, and systems integration. Prerequisite: BIO 320 (or its equivalent).

BIO 526 Quantitative Ecology. (3)

selected semesters

Sampling strategies, spatial pattern analysis, species diversity, classification, and applications of multivariate techniques to ecology. 2 hours lecture, 3 hours lab. Prerequisites: BIO 415 (or its equivalent); a course in ecology.

BIO 529 Advanced Limnology. (3)

selected semesters

Recent literature, developments, methods, and limnological theory; field and lab application to some particular topic in limnology. Prerequisite: BIO 426.

BIO 543 Molecular Genetics. (3)

fall

Nature and function of the gene; emphasis on the molecular basis of inheritance and gene expression in prokaryotes and eukaryotes. Prerequisites: BIO 340; a course in organic chemistry.

BIO 545 Populations: Evolutionary Genetics. (3)

selected semesters

Mathematical models in the description and analysis of the genetics of populations. Prerequisites: a combination of BIO 320 and 345 and 415 or only instructor approval.

BIO 547 Techniques in Evolutionary Genetics. (4)

selected semesters

Practical experience in modern techniques for the study of evolution. Lecture, lab. Prerequisites: BIO 340, 345; instructor approval.

BIO 550 Advanced Cell Biology. (3)

spring

Applications of contemporary electron microscopic and biochemical/molecular techniques for studying eukaryotic cell functions. Mechanisms of intracellular protein trafficking. Prerequisites: BIO 353 (or 360 or its equivalent or PLB 360); CHM 231 (or 331 or its equivalent).

BIO 551 Biomembranes. (3)

selected semesters

Structure and function of biological membranes, emphasizing synthesis, fluidity, exocytosis, endocytosis, and cell responses to hormones and neurotransmitters. Prerequisites: BIO 353 and CHM 231 (or 331) (or their equivalents).

BIO 552 Developmental Genetics. (3)

spring

Genetic approaches to the analysis of development during the life cycle of eukaryotic organisms, and the role of genes in the unfolding of the differentiated phenotype. Prerequisite: BIO 340.

BIO 560 Comparative Physiology. (3)

selected semesters

Analyzes function in invertebrates and vertebrates, emphasizing evolutionary trends in physiological systems. Prerequisite: BIO 360 (or its equivalent).

BIO 566 Environmental Physiology. (3)

selected semesters

Physiological responses and adaptations of animals to various aspects of the physical environment. Prerequisites: BIO 320, 360.

BIO 568 Mammalian Physiology. (3)

selected semesters

Detailed treatment of mammalian organ system functions emphasizing integrative mechanisms. Prerequisite: BIO 360 (or its equivalent).

BIO 569 Cellular Physiology. (3)

selected semesters

Emphasizes the molecular basis for cell structure and function. Prerequisites: BIO 360; a course in organic chemistry.

BIO 583 OTS: Fieldwork in Tropical Biology. (6–8)

spring and summer

Intensive field-orientated classes with Organization for Tropical Studies (OTS) in Costa Rica with emphasis on research in ecology and systematics. Lecture, lab, fieldwork. Cross-listed as PLB 583. Credit is allowed for only BIO 583 or PLB 583. Prerequisites: graduate standing; a course in basic ecology.

BIO 584 Internship. (1–12)

fall and spring

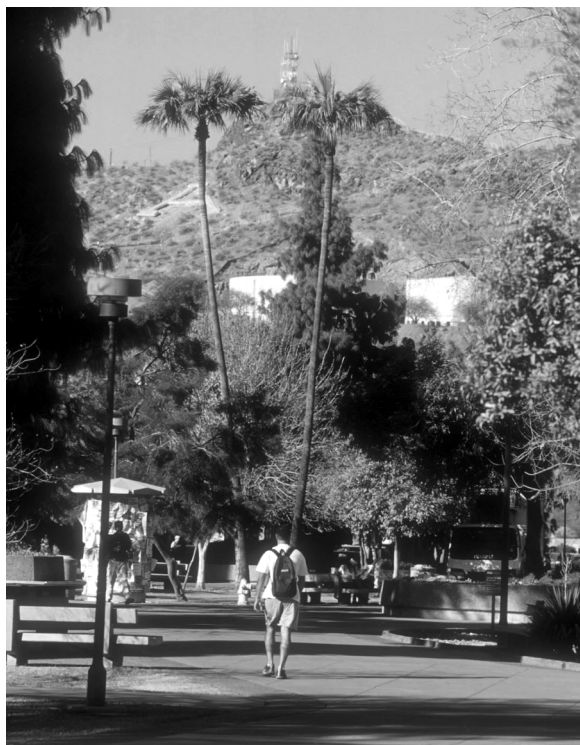
BIO 591 Seminar. (1–12)

fall and spring

May be repeated for credit. Topics may include the following:

- Adaptations. (1–3)
- Behavior. (1–3)
- Cell Biology. (1–3)
- Ecology. (1–3)
- Evolution. (1–3)
- Genetic Engineering. (1–3)
- Genetics. (1–3)
- Physiology. (1–3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)



Forest Mall

Tim Trumble photo

Department of Chemistry and Biochemistry

www.asu.edu/clas/chemistry

480/965-3461

PS D102

J. Devens Gust, Chair

Regents' Professors: Angell, Buseck, Mayer, C. Moore, O'Keefe, Pettit

Professors: Allen, Birk, Blankenship, Fuchs, Glick, Gust, Holloway, Lohr, A. Moore, T. Moore, Munk, Petuskey, Rose, Skibo, Steimle, Williams, Woodbury

Associate Professors: Kouvetakis, Wolf

Assistant Professors: Booksh, Caudle, Francisco, Fromme, Gould, Hayes, Matyushov, Richert, Seo, Wachter

Senior Lecturer: White

Lecturer: Bauer

CHEMISTRY—B.A.

The B.A. degree in Chemistry consists of 46 semester hours. Required courses are as follows:

Choose between the course combinations below.....	9 or 8
CHM 113 General Chemistry <i>SQ</i> (4)	
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i> (5)	
_____ or _____	
CHM 117 General Chemistry for Majors I <i>SQ</i> * (4)	
CHM 118 General Chemistry for Majors II <i>SQ</i> * (4)	
Choose between the course combinations below.....	8
CHM 317 Organic Chemistry for Majors I* (3)	
CHM 318 Organic Chemistry for Majors II* (3)	
CHM 319 Organic Chemistry Laboratory for Majors I* (1)	
CHM 320 Organic Chemistry Laboratory for Majors II* (1)	
_____ or _____	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
CHM 325 Analytical Chemistry	3
CHM 326 Analytical Chemistry Laboratory	1
CHM 341 Elementary Physical Chemistry	3
CHM 343 Physical Chemistry Laboratory.....	1
CHM 453 Inorganic Chemistry.....	3
CHM electives.....	2
Minimum total	30

* CHM 117, 118, 317, 318, 319, and 320 are strongly recommended for qualified students.

Related courses must include the following:

MAT 270 Calculus with Analytic Geometry I <i>MA</i> ¹	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i> ¹	4
PHY 111 General Physics <i>SQ</i> ^{2,3}	3
PHY 112 General Physics <i>SQ</i> ^{2,3}	3
PHY 113 General Physics Laboratory <i>SQ</i> ^{2,3}	1
PHY 114 General Physics Laboratory <i>SQ</i> ^{2,3}	1
Total	16

- ¹ Equivalent courses may be taken in place of MAT 270 and 271.
² More advanced PHY courses may be taken in place of PHY 111, 112, 113, and 114.
³ Both PHY 111 and 113 or PHY 112 and 114 must be taken to secure *SQ* credit.

The remaining courses to complete the major are determined by students in consultation with their advisors.

CHEMISTRY—B.S.

The program consists of 46 semester hours in chemistry and 20 hours of related courses outside the major. Required courses are as follows:

Choose between the course combinations below.....	9 or 8
CHM 113 General Chemistry <i>SQ</i> (4)	
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i> (5)	
_____ or _____	
CHM 113 General Chemistry <i>SQ</i> (4)	
CHM 116 General Chemistry <i>SQ</i> (4)	
_____ or _____	
CHM 117 General Chemistry for Majors I <i>SQ</i> * (4)	
CHM 118 General Chemistry for Majors II <i>SQ</i> * (4)	
Choose between the course combinations below.....	8
CHM 317 Organic Chemistry for Majors I* (3)	
CHM 318 Organic Chemistry for Majors II* (3)	
CHM 319 Organic Chemistry Laboratory for Majors I* (1)	
CHM 320 Organic Chemistry Laboratory for Majors II* (1)	
_____ or _____	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
Total	16 or 17

* CHM 117, 118, 317, 318, 319, and 320 are strongly recommended for qualified students.

Additional required chemistry courses are as follows:

CHM 240 Introduction to Physical Chemistry ¹	3
CHM 325 Analytical Chemistry	3
CHM 326 Analytical Chemistry Laboratory	1
CHM 327 Instrumental Analysis.....	3
CHM 328 Instrumental Analysis Laboratory.....	2
CHM 345 Physical Chemistry I ²	3
CHM 346 Physical Chemistry II ²	3
CHM 348 Physical Chemistry Laboratory I <i>L</i> ²	1
CHM 349 Physical Chemistry Laboratory II <i>L</i> ²	1

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See "General Studies," page 83.

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CHM 452 Inorganic Chemistry Laboratory <i>L</i> ²	1
CHM 453 Inorganic Chemistry	3
CHM 460 Biological Chemistry	3
Chemistry elective (choose from the courses below)	3
CHM 392 Introduction to Research Techniques (1–3)	
CHM 424 Separation Science (3)	
CHM 431 Qualitative Organic Analysis (3)	
CHM 471 Solid-State Chemistry (3)	
CHM 480 Methods of Teaching Chemistry (3)	
CHM 481 Geochemistry (3)	
CHM 485 Meteorites and Cosmochemistry (3)	
Total	29

¹ Completion of MAT 274 and 342 satisfies the CHM 240 requirement.

² CHM 348, 349, and 452 must all be taken to secure L credit.

Additional required related field courses are as follows:

MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122 University Physics Laboratory I <i>SQ</i> ¹	1
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132 University Physics Laboratory II <i>SQ</i> ²	1
Total	20

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

A course in a computer language, such as CSE 181 Applied Problem Solving with Visual BASIC is strongly recommended.

Transfer students are interviewed and advised of possible preparatory work. They must contact the department to arrange for the interview in advance of registration. See [“College Degree Requirements,” page 330](#).

American Chemical Society Certification. A student who satisfactorily completes the B.S. in Chemistry program is certified by the Department of Chemistry and Biochemistry to the American Chemical Society (ACS) as having met the specific requirements for undergraduate professional training in chemistry. Graduates meeting ACS guidelines can receive a certificate to indicate this fact.

BIOCHEMISTRY—B.S.

The program consists of 36 semester hours in chemistry and 31 semester hours of related courses. Required courses are as follows:

Choose between the course combinations below	9 or 8
CHM 113 General Chemistry <i>SQ</i> (4)	
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i> (5)	
_____ or _____	
CHM 113 General Chemistry <i>SQ</i> (4)	
CHM 116 General Chemistry <i>SQ</i> (4)	
_____ or _____	
CHM 117 General Chemistry for Majors I <i>SQ</i> * (4)	
CHM 118 General Chemistry for Majors II <i>SQ</i> * (4)	

Choose between the combinations of courses below	8
CHM 317 Organic Chemistry for Majors I* (3)	
CHM 318 Organic Chemistry for Majors II* (3)	
CHM 319 Organic Chemistry Laboratory for Majors I* (1)	
CHM 320 Organic Chemistry Laboratory for Majors II* (1)	
_____ or _____	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
Total	16 or 17

* CHM 117, 118, 317, 318, 319, and 320 are strongly recommended for qualified students.

Additional required chemistry courses are as follows:

BCH 461 General Biochemistry	3
BCH 462 General Biochemistry	3
BCH 463 Biophysical Chemistry	3
BCH 464 Biophysical Chemistry Laboratory	2
BCH 467 Analytical Biochemistry Laboratory <i>L</i>	3
CHM 341 Elementary Physical Chemistry*	3
Chemistry elective (choose from the courses below)	3
BCH 494 ST: Topics in Nucleic Acids Biochemistry (2)	
BCH 494 ST: Topics in Protein Biochemistry (2)	
CHM 327 Instrumental Analysis (3)	
CHM 424 Separation Science (3)	
CHM 431 Qualitative Organic Analysis (3)	
CHM 453 Inorganic Chemistry (3)	
CHM 471 Solid-State Chemistry (3)	
Total	20

* CHM 345 may be taken in place of CHM 341.

Additional required related field courses are as follows:

BIO 187 General Biology I <i>SQ</i>	4
BIO 188 General Biology II <i>SQ</i>	4
BIO 340 General Genetics	4
BIO 353 Cell Biology	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
PHY 111 General Physics <i>SQ</i> ¹	3
PHY 112 General Physics <i>SQ</i> ²	3
PHY 113 General Physics Laboratory <i>SQ</i> ¹	1
PHY 114 General Physics Laboratory <i>SQ</i> ²	1
Total	31

¹ Both PHY 111 and 113 must be taken to secure SQ credit.

² Both PHY 112 and 114 must be taken to secure SQ credit.

Additional biology courses selected from BIO 343, 351, 360, 441, 450, and 465 are strongly recommended. Other biology courses may be substituted.

Additional biochemistry and chemistry courses, including CHM 392 Introduction to Research Techniques, may be taken by students and should be chosen in consultation with an advisor.

MINOR IN CHEMISTRY

A minor in Chemistry is awarded to students who complete the following required courses:

DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY

CHM 113 General Chemistry <i>SQ</i> ¹	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i> ¹	5
or CHM 116 General Chemistry <i>SQ</i> ¹ (4)	
CHM 325 Analytical Chemistry.....	3
CHM 326 Analytical Chemistry Laboratory.....	1
Choose between the course combinations below.....	8
BCH 361 Principles of Biochemistry (3)	
BCH 367 Elementary Biochemistry Laboratory (1)	
CHM 231 Elementary Organic Chemistry <i>SQ</i> ² (3)	
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> ² (1)	
_____ or _____	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
Choose between the course combinations below.....	4 or 8
CHM 341 Elementary Physical Chemistry (3)	
CHM 343 Physical Chemistry Laboratory (1)	
_____ or _____	
CHM 345 Physical Chemistry I (3)	
CHM 346 Physical Chemistry II (3)	
CHM 348 Physical Chemistry Laboratory I (1)	
CHM 349 Physical Chemistry Laboratory II (1)	
Minimum total.....	24

¹ Equivalent courses may be taken in place of CHM 113, 115, or 116.

² Both CHM 231 and 235 must be taken to secure SQ credit.

SECONDARY EDUCATION—B.A.E.

Chemistry. Students may pursue one of two options for the chemistry major teaching field.

Option One. The academic specialization consists of 43 semester hours in chemistry plus work in related fields. Required courses are as follows:

BCH 361 Principles of Biochemistry.....	3
CHM 113 General Chemistry <i>SQ</i>	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i>	5
CHM 325 Analytical Chemistry.....	3
CHM 326 Analytical Chemistry Laboratory.....	1
CHM 331 General Organic Chemistry.....	3
CHM 332 General Organic Chemistry.....	3
CHM 335 General Organic Chemistry Laboratory.....	1
CHM 336 General Organic Chemistry Laboratory.....	1
CHM 341 Elementary Physical Chemistry.....	3
or CHM 345 Physical Chemistry I (3)	
and CHM 346 Physical Chemistry II (3)	
Total.....	27

The remaining chemistry courses to complete the specialization are determined by students in consultation with their advisors.

Additional required related field courses are as follows:

MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
PHY 111 General Physics <i>SQ</i> *.....	3
PHY 112 General Physics <i>SQ</i> *.....	3
PHY 113 General Physics Laboratory <i>SQ</i> *.....	1

PHY 114 General Physics Laboratory <i>SQ</i> *.....	1
Total.....	16

* Both PHY 111 and 113 or PHY 112 and 114 must be taken to secure SQ credit.

Option Two. The academic specialization consists of 30 semester hours of chemistry, which includes all of the required chemistry courses listed in option one and selection of the corresponding option in either mathematics or physics, that is, completion of an additional 30 semester hours in the chosen area as specified by the department selected.

Minor Teaching Field. The minor teaching field consists of the following required courses:

CHM 113 General Chemistry <i>SQ</i>	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i>	5
Choose between the course combinations below.....	10 or 8
BCH 361 Principles of Biochemistry (3)	
CHM 231 Elementary Organic Chemistry <i>SQ</i> * (3)	
CHM 325 Analytical Chemistry (3)	
CHM 326 Analytical Chemistry Laboratory (1)	
_____ or _____	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
CHM 341 Elementary Physical Chemistry.....	3
Total.....	20 or 22

* Both CHM 231 and 235 must be taken to secure SQ credit.

The remaining courses to complete the specialization are determined by students in consultation with their advisors.

GRADUATE PROGRAMS

The faculty in the Department of Chemistry and Biochemistry offer programs leading to the degrees of Master of Natural Science, M.S., and Ph.D. See the *Graduate Catalog* for requirements.

The department participates in the interdisciplinary program for the M.S. and Ph.D. degrees in Molecular and Cellular Biology. For more information, visit the program office in LSE 411, or call 480/965-0743.

BIOCHEMISTRY (BCH)

BCH 361 Principles of Biochemistry. (3)

fall and summer

Structures, properties, and functions of proteins, enzymes, nucleic acids, carbohydrates, and lipids; the utilization and synthesis of these materials by living systems, and the relationship of these processes to energy production and utilization. Credit is allowed for only BCH 361 or 461. Prerequisite: CHM 231 or 318 or 332.

BCH 367 Elementary Biochemistry Laboratory. (1)

fall and summer

Qualitative/quantitative analyses of constituents of biological systems, enzyme activity measurements and metabolic studies. 1 hour conference, 3 hours lab. Pre- or corequisite: BCH 361 or instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

BCH 392 Introduction to Research Techniques. (1–3)

fall, spring, summer

Instrumental methods and philosophy of research by actual participation in chemical research projects. May be repeated for total of 6 semester hours. Prerequisite: advisor and research supervisor approval.

BCH 461 General Biochemistry. (2)

fall

Structure, chemistry, and metabolism of biomolecules and their role in the biochemical processes of living organisms. Credit is allowed for only BCH 461 or 361. Prerequisite: CHM 318 or 332. Corequisite: CHM 341 or 346.

BCH 462 General Biochemistry. (2)

spring

Continuation of BCH 461. Prerequisite: BCH 461 or instructor approval.

BCH 463 Biophysical Chemistry. (3)

spring

Principles of physical chemistry as applied to biological systems. Prerequisite: CHM 341 or 346.

BCH 464 Biophysical Chemistry Laboratory. (2)

fall

Introduces physical methods in modern biochemistry. Prerequisite: BCH 463.

BCH 467 Analytical Biochemistry Laboratory. (3)

spring

Quantitative analysis, separation and purification of biological molecules. Applies chemical and physical methods to the characterization of biological macromolecules. 1 conference, 1 hour lecture, 5 hours lab. Prerequisite: BCH 461. Corequisite: BCH 462.

General Studies: L

BCH 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Topics in Nucleic Acids Biochemistry. (2)
- Topics in Protein Biochemistry. (2)

BCH 501 Current Topics in Biochemistry. (1)

fall and spring

May be repeated for credit. Seminar. Prerequisite: instructor approval.

BCH 561 Advanced Topics in Biochemistry. (3)

spring

Topics selected from emerging areas of biochemistry based primarily on current literature. Prerequisite: BCH 462.

BCH 563 Biophysical Chemistry. (3)

selected semesters

Physical chemistry of macromolecules, especially proteins, nucleic acids, and polysaccharides. Thermodynamics, hydrodynamics, and spectroscopy of and their relation to structure. Prerequisites: BCH 462; CHM 346.

BCH 568 Molecular Mechanisms of Photosynthesis. (3)

spring

Structure and function of photosynthetic complexes; mechanism of energy conversion in plants, bacteria, and model systems. Cross-listed as PLB 558. Credit is allowed for only BCH 568 or PLB 558. Prerequisite: instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

CHEMISTRY (CHM)

CHM 101 Introductory Chemistry. (4)

fall, spring, summer

Elements of general chemistry. Adapted to the needs of students in nursing, home economics, agriculture, and physical education. Recommended for General Studies credit. Normally followed by CHM 231. Credit is allowed for only CHM 101 or 107 or 113 or 114 or 117. 3 hours lecture, 1 hour discussion, 2 hours lab. Fee.

General Studies: SQ

CHM 107 Chemistry and Society. (4)

fall and spring

General chemical principles and concepts presented in context of social and technological issues, e.g., energy, pollution, global warm-

ing, and others. Credit is allowed for only CHM 101 or 107 or 113 or 114 or 117. 3 hours lecture, 1 hour discussion, 2 hours lab. Fee.

General Studies: SQ

CHM 113 General Chemistry. (4)

fall, spring, summer

Principles of chemistry. Adapted to the needs of students in the physical, biological, and earth sciences. Credit is allowed for only CHM 101 or 107 or 113 or 114 or 117. 3 hours lecture, 1 hour discussion, 2 hours lab. Fee. Prerequisites: MAT 106 or 3 semesters of high school algebra; 1 year of high school chemistry recommended.

General Studies: SQ

CHM 114 General Chemistry for Engineers. (4)

fall and spring

Emphasis toward engineering. Students without high school chemistry or chemical engineering majors must enroll in the CHM 113, 116 sequence instead of CHM 114. Credit is allowed for only CHM 101 or 107 or 113 or 114 or 117 and for only CHM 114 or 115 or 116 or 118. 3 hours lecture, 1 hour discussion, 2 hours lab. Fee. Prerequisites: MAT 106 (or 3 semesters of high school algebra); 1 year of high school chemistry.

General Studies: SQ

CHM 115 General Chemistry with Qualitative Analysis. (5)

fall, spring, summer

Continuation of CHM 113. Equilibrium theory, chemistry of metals, nonmetals, and metalloids; introduces organic chemistry. Laboratory includes qualitative analysis. Credit is allowed for only CHM 114 or 115 or 116 or 118. 3 hours lecture, 2 hours discussion, 4 hours lab. Fee. Prerequisite: CHM 113 or 2 years of high school chemistry.

General Studies: SQ

CHM 116 General Chemistry. (4)

fall and spring

Continuation of CHM 113. Equilibrium theory, chemistry of metals, nonmetals, and metalloids; **introduces** organic chemistry. Credit is allowed for only CHM 114 or 115 or 116 or 118. 3 hours lecture, 1 hour discussion, 2 hours lab. Fee. Prerequisite: CHM 113 or 2 years of high school chemistry.

General Studies: SQ

CHM 117 General Chemistry for Majors I. (4)

fall

Atomic and molecular structure, properties and physical states of matter, thermodynamics, kinetics, acids and bases, chemical analysis, and stoichiometry. Credit is allowed for only CHM 101 or 107 or 113 or 114 or 117. 3 hours lecture, 1 conference, 2 hours lab. Fee. Prerequisites: 3 years of high school mathematics; minimum of 1 year of high school physics. Prerequisite with a grade of "B" or higher: minimum of 1 year of high school chemistry.

General Studies: SQ

CHM 118 General Chemistry for Majors II. (4)

spring

Continuation of CHM 117. Credit is allowed for only CHM 114 or 115 or 116 or 118. 3 hours lecture, 1 conference, 2 hours lab. Fee. Prerequisite: CHM 117. Corequisite: MAT 270.

General Studies: SQ

CHM 231 Elementary Organic Chemistry. (3)

fall and spring

Survey of organic chemistry, with emphasis on the reactivity of basic functional groups. Credit is allowed for only CHM 231 or 317 or 331. Prerequisite with a grade of "B" or higher: CHM 101 or 114 or 115 or 116 or 117 or 1 year of high school chemistry or instructor approval.

General Studies: SQ (if credit also earned in CHM 235)

CHM 235 Elementary Organic Chemistry Laboratory. (1)

fall and spring

Organic chemistry experiments in synthesis, purification, analysis, and identification. Lab. Fee. Pre- or corequisite: CHM 231.

General Studies: SQ (if credit also earned in CHM 231)

CHM 240 Introduction to Physical Chemistry. (3)

spring

Introduces mathematical/computational methods in chemical kinetics, thermodynamics, quantum chemistry. Mathematical-based computer laboratory. 2 hours lecture, 4 hours lab. Fee. Prerequisite with a grade of "C" or higher: MAT 272.

CHM 302 Environmental Chemistry. (3)*spring*

Explores major environmental issues, problems, and solutions from analytical and chemistry perspectives. Prerequisites: CHM 114 (or 115 or 116 or 118), 231 (or 331).

CHM 317 Organic Chemistry for Majors I. (3)*fall*

Structures, reaction mechanisms and kinetics, and systematic syntheses of organic compounds. Credit is allowed for only CHM 231 or 317 or 331. Prerequisite: CHM 115 or 118. Corequisite: CHM 319.

CHM 318 Organic Chemistry for Majors II. (3)*spring*

Continuation of CHM 317. Credit is allowed for only CHM 318 or 332. Prerequisite: CHM 317. Corequisite: CHM 320.

CHM 319 Organic Chemistry Laboratory for Majors I. (1)*fall*

Emphasizes mechanisms, kinetics, and products of organic reactions. Credit is allowed for only CHM 319 or 335. 1 conference, 3 hours lab. Fee. Pre- or corequisite: CHM 317.

CHM 320 Organic Chemistry Laboratory for Majors II. (1)*spring*

Continuation of CHM 319. Credit is allowed for only CHM 320 or 336. 1 conference, 3 hours lab. Fee. Prerequisite: CHM 319. Corequisite: CHM 318.

CHM 325 Analytical Chemistry. (3)*fall and summer*

Principles and methods of chemical analysis. Prerequisite: CHM 115 or 116.

CHM 326 Analytical Chemistry Laboratory. (1)*fall and summer*

Experiments in chemical analysis. 4 hours lab. Fee. Corequisite: CHM 325.

CHM 327 Instrumental Analysis. (3)*spring*

Principles of instrumental methods in chemical analysis. Electroanalytical and optical techniques. Prerequisites: CHM 325, 326. Pre- or corequisite: CHM 346.

CHM 328 Instrumental Analysis Laboratory. (2)*spring*

Experiments in chemical analysis by electroanalytical and optical techniques. 6 hours lab. Fee. Corequisite: CHM 327.

CHM 331 General Organic Chemistry. (3)*fall, spring, summer*

Chemistry of organic compounds. Credit is allowed for only CHM 231 or 317 or 331. Prerequisite: CHM 115 or 116 or 118.

CHM 332 General Organic Chemistry. (3)*fall, spring, summer*

Continuation of CHM 331. Credit is allowed for only CHM 318 or 332. Prerequisite: CHM 331.

CHM 335 General Organic Chemistry Laboratory. (1)*fall, spring, summer*

Microscale organic chemical experiments in separation techniques, synthesis, analysis and identification, and relative reactivity. Credit is allowed for only CHM 319 or 335. 4 hours lab. Fee. Corequisite: CHM 331.

CHM 336 General Organic Chemistry Laboratory. (1)*fall, spring, summer*

Continuation of CHM 335. Credit is allowed for only CHM 320 or 336. 4 hours lab. Fee. Prerequisite: CHM 335. Corequisite: CHM 332.

CHM 341 Elementary Physical Chemistry. (3)*fall*

Thermodynamics, equilibrium, states of matter, solutions, and chemical kinetics. For students in premedical, biological, and educational curricula. Prerequisites: CHM 115 (or 114 or 118 or 325), 231 (or 331); MAT 271; PHY 112.

CHM 343 Physical Chemistry Laboratory. (1)*fall*

Physical chemistry experiments. Credit is allowed for only CHM 343 or both CHM 348 and 349. 1 hour conference, 3 hours lab. Fee. Corequisite: CHM 341 or 345.

CHM 345 Physical Chemistry I. (3)*fall*

Introduces quantum chemistry with application to electronic structure and dynamics of atoms and molecules. Prerequisite: only CHM 240 or both MAT 272 and 274 (with grades of "C" or higher).

CHM 346 Physical Chemistry II. (3)*spring*

Introduces equilibrium and statistical thermodynamics. Laws of thermodynamics, equations of state, multicomponent chemical and phase equilibria, and electrochemistry. Prerequisite: CHM 345. Corequisite: MAT 274.

CHM 348 Physical Chemistry Laboratory I. (1)*fall*

Laboratory experiments in spectroscopy and computational chemistry. 4 hours lab. Fee. Pre- or corequisite: CHM 345.

General Studies: L (if credit also earned in CHM 349 and 452)

CHM 349 Physical Chemistry Laboratory II. (1)*spring*

Laboratory experiments in thermodynamics, electrochemistry, and computational chemistry. 4 hours lab. Fee. Pre- or corequisite: CHM 346.

General Studies: L (if credit also earned in CHM 348 and 452)

CHM 392 Introduction to Research Techniques. (1–3)*fall, spring, summer*

Instrumental methods and philosophy of research by actual participation in chemical research projects. May be repeated for a total of 6 semester hours. Prerequisite: approval of advisor and research supervisor.

CHM 424 Separation Science. (3)*selected semesters*

Basic theory and practical aspects of gas, liquid, ion-exchange, and gel-permeation chromatographies, and other important industrial and research techniques. 2 hours lecture, 4 hours lab. Fee. Prerequisite: CHM 318 or 332 or 346 or instructor approval.

CHM 431 Qualitative Organic Analysis. (3)*spring*

Systematic identification of organic compounds. 1 hour lecture, 6 hours lab. Fee. Prerequisites: both CHM 118 (or 327) and 320 (or 336) or only instructor approval.

CHM 452 Inorganic Chemistry Laboratory. (1–2)*spring*

Preparation and characterization of typical inorganic substances, emphasizing methods and techniques. 1 conference, 5 hours lab. Fee. Prerequisite: instructor approval.

General Studies: L (if credit also earned in CHM 348 and 349)

CHM 453 Inorganic Chemistry. (3)*fall*

Principles and applications of inorganic chemistry. Prerequisite: CHM 341 or 346.

CHM 460 Biological Chemistry. (3)*spring*

Structure and function of macromolecules and their involvement in the processing of energy and information by living cells. Prerequisites: CHM 318, 346, 453.

CHM 471 Solid-State Chemistry. (3)*fall*

Crystal chemistry, thermodynamics and electrochemistry of solids, nonstoichiometric compounds, diffusion and solid-state reactions, crystal growth, and selected topics. Pre- or corequisite: CHM 346 or instructor approval.

CHM 480 Methods of Teaching Chemistry. (3)*spring*

Organization and presentation of appropriate content of chemistry; preparation of reagents, experiments, and demonstrations; organization of stock rooms and laboratories; experience in problem solving. Fee. Prerequisite: instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

CHM 481 Geochemistry. (3)

spring

Origin and distribution of the chemical elements. Geochemical cycles operating in the earth's atmosphere, hydrosphere, and lithosphere. Cross-listed as GLG 481. Credit is allowed for only CHM 481 or GLG 481. Prerequisite: CHM 341 (or 346) or GLG 321.

CHM 485 Meteorites and Cosmochemistry. (3)

selected semesters

Chemistry of meteorites and their relationship to the origin of the earth, solar system, and universe. Cross-listed as GLG 485. Credit is allowed for only CHM 485 or GLG 485.

CHM 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Chemistry of Global Climate Change. (3)

CHM 501 Current Topics in Chemistry. (1)

fall and spring

May be repeated for credit. Prerequisite: instructor approval.

CHM 521 Chemometrics. (3)

selected semesters

Overview of chemometric tools in analytical chemistry, including multi-variate calibration, spectral deconvolution, and experimental design. 2 hours lecture, 4 hours lab.

CHM 523 Advanced Analytical Chemistry. (3)

once a year

Theoretical principles of analytical instrumentation and measurements. Prerequisites: both CHM 325 and 346 or only instructor approval.

CHM 525 Spectrochemical Methods of Analysis. (4)

selected semesters

Theoretical and practical considerations involving the use of optical instruments for chemical analyses. Emphasis on state-of-the-art trends. 3 hours lecture, 3 hours lab. Prerequisite: CHM 346 or instructor approval.

CHM 526 X-Ray Methods of Analysis. (4)

selected semesters

Theoretical and practical considerations involving the use of x-ray diffraction and spectroscopy for chemical and structural analyses. 3 hours lecture, 3 hours lab. Prerequisite: CHM 346.

CHM 527 Electrical Methods of Chemical Analysis. (4)

selected semesters

Theoretical and practical considerations of polarographic, potentiometric, amperometric techniques, including modern electrochemical methods. 2 hours lecture, 6 hours lab. Prerequisite: CHM 346.

CHM 531 Advanced Organic Chemistry I. (3)

fall

Reaction mechanisms, reaction kinetics, linear free energy relationships, transition state theory, molecular orbital theory, and Woodward-Hoffmann rules. Prerequisites: CHM 318 (or 332), 346.

CHM 532 Advanced Organic Chemistry II. (2)

spring

Continuation of CHM 531. Prerequisite: CHM 531.

CHM 537 Organic Reactions. (3)

spring

Important synthetic reactions of organic chemistry emphasizing recently discovered reactions of preparative value. Prerequisite: CHM 531.

CHM 541 Advanced Thermodynamics. (3)

fall

Equilibrium thermodynamics, chemical reactions, and phase equilibria. Introduces statistical thermodynamics, critical phenomena, and kinetics. Prerequisite: CHM 346.

CHM 545 Quantum Chemistry I. (3)

fall

Basic quantum theory, chemical bonding, and molecular structure. Prerequisite: CHM 346.

CHM 546 Quantum Chemistry II. (3)

spring

Quantum theory of rate processes. Principles of spectroscopy and nonlinear optics. Prerequisite: CHM 545.

CHM 548 Chemical Kinetics. (2)

selected semesters

Kinetic theory and rate processes. Prerequisite: CHM 545.

CHM 553 Advanced Inorganic Chemistry. (3)

spring

Principles of modern inorganic chemistry and their applications over the entire periodic system. Prerequisites: CHM 346 and 453 (or their equivalents).

CHM 556 Topics in Inorganic Chemistry. (3)

selected semesters

May be repeated for credit. Prerequisites: CHM 553; instructor approval.

CHM 579 Topics in Solid-State Chemistry. (3)

selected semesters

May be repeated for credit. Prerequisite: instructor approval.

CHM 582 Topics in Geochemistry and Cosmochemistry. (3)

selected semesters

Topics of current interest for students in chemistry and other fields. Sampling of data and thought concerning phase equilibria, element distribution, meteorites, the Earth, and other planets. May be repeated for credit. Prerequisite: instructor approval.

CHM 583 Phase Equilibria and Geochemical Systems. (3)

selected semesters

Natural reactions at high temperatures and pressures; silicate, sulfide, and oxide equilibria. Prerequisite: instructor approval.

CHM 593 Applied Project. (1–12)

selected semesters

Topics may include the following:

- Glass Blowing
Fee.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Chicana and Chicano Studies

www.asu.edu/clas/chicana

480/965-5091

COWDN 224

Cordelia Candelaria, Chair

Professors: Candelaria, Montiel

Associate Professors: Aldama, Escobar

Assistant Professors: Garcia, Gutiérrez, Magaña

The Chicana and Chicano Studies program is an interdisciplinary degree program that examines the experiences, culture, artistic endeavors, and current status of people of Mexican descent living in the United States. The curriculum focuses on the practical application of Chicana and Chicano Studies (CCS) for career development in selected professions and service to the community based on an understanding of the humanities, social sciences, and the arts.

CHICANA AND CHICANO STUDIES—B.A.

The major in Chicana and Chicano Studies requires 45 semester hours of course work. A minimum of 30 semester hours must be CCS, CSH, and CSS courses. The remaining

course work must be in a related field to be approved by an advisor. All CCS majors must take 15 semester hours in the following core courses:

CCS 101 Introduction to Chicana and Chicano Studies C.....	3
CCS 111 Introduction to Chicana and Chicano Culture C.....	3
CCS 498 Pro-Seminar	3
HST 331 Mexican American History to 1900 SB, H.....	3
HST 332 Mexican American History Since 1900 SB, C, H.....	3

Within the 45 semester hours, CCS majors must also take 18 semester hours in one of two concentrations—humanities/cultural studies or social sciences/policy—and 12 hours in the other concentration for a total of 45 semester hours.

Majors are expected to fulfill the college’s language requirement in Spanish. Although the department advisor can make exceptions on a case by case basis, all majors must demonstrate proficiency in Spanish.

All Chicana and Chicano Studies majors must take an established minor or credential of at least 18 semester hours in another field.

CHICANA AND CHICANO STUDIES MINOR

The Chicana and Chicano Studies minor requires 18 semester hours of course work. All Chicana and Chicano Studies minors must take the following courses:

CCS 101 Introduction to Chicana and Chicano Studies C.....	3
or CCS 111 Introduction to Chicana and Chicano Culture C (3)	
HST 417 Topics in Mexican American History SB, C, H.....	3
Total	6

Students must also take at least three credits in both CCS concentrations: humanities/cultural studies and social sciences/policy.

Within the 18 semester hour requirement, students must take a minimum of 12 semester hours in CCS, CSH, and CSS courses. Any courses taken in a related field must be approved by an advisor.

CHICANA AND CHICANO STUDIES (CCS)

CCS 101 Introduction to Chicana and Chicano Studies. (3)

fall
Historical and contemporary issues in the Chicana and Chicano community; focus on economic, sociological, cultural, and political status of Chicanas and Chicanos in the U.S.
General Studies: C

CCS 111 Introduction to Chicana and Chicano Culture. (3)

spring
Interdisciplinary analysis of customs, values, belief systems, and cultural symbols; special attention is given to cultural continuity and change.
General Studies: C

CCS 210 Introduction to Ethnic Studies in the U.S. (3)

fall and spring
Covers diversity of experiences and relations among racial and ethnic groups in the United States. Lecture, discussion. Cross-listed as AFS 210/APA 210. Credit is allowed for only AFS 210 or APA 210 or CCS 210.
General Studies: C

CCS 300 Chicana and Chicano Culture and Society. (3)

fall
Intensive analysis of how Mexican American writers, artists, film makers, entertainers, and academicians have interpreted aspects of the Chicana and Chicano experience.
General Studies: C

CCS 445 Teaching Chicana and Chicano Studies in Native Language. (3)

once a year
Approaches/techniques for infusion of Chicana and Chicano Studies content into elementary and secondary bilingual curriculum. Taught in Spanish. Prerequisite: proficiency in Spanish.

CCS 446 Teaching Chicana and Chicano Studies in the Schools. (3)

once a year
Approaches/techniques for infusion of Chicana and Chicano Studies content into elementary and secondary curriculum; designed for teachers who work with Chicana and Chicano students.

CCS 498 Pro-Seminar. (3)

once a year
Required courses for majors on topic selected by instructor; writing-intensive course related to the development of interdisciplinary research skills.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

CHICANA AND CHICANO STUDIES HUMANITIES (CSH)

CSH Note 1. Completion of the First-Year Composition requirement (ENG 101 and 102 [or 105] or ENG 107 and 108 with a grade of "C" or higher) is a prerequisite for all English courses above the 100 level.
CSH Note 2. A term paper or equivalent out-of-class written work is required in all upper-division (300- and 400-level) ENG courses.

CSH 210 Chicana and Chicano Poetry. (3)

spring
Writing seminar on Chicana and Chicano poetics and intensive creative writing workshop. Workshop, seminar.

CSH 220 Chicana and Chicano Cultural Expression. (3)

once a year
Interrelation between economic, social, and political status and forms of artistic expression; i.e., music, dance, drama, literature, and graphic arts.

CSH 310 Chicana and Chicano Folklore. (3)

once a year
Analyzes Chicana and Chicano folk beliefs, traditions, and practices.
General Studies: HU, C

CSH 350 Mexican and Mexican American Artistic Production. (3)

once a year
Overview of Mexican and Mexican American artistic production from colonial times to present; emphasis on religious and folk art.

CSH 351 Contemporary Chicana and Chicano Art. (3)

once a year
Intensive analysis of contemporary Chicana and Chicano art movement as appraised within the context of contemporary American art and the art of Mexico.
General Studies: HU, C

CSH 363 Chicana and Chicano Literature. (3)

fall
Development of Chicana and Chicano literature; study of genres and themes; attention to literary antecedents. Cross-listed as ENG 363. Credit is allowed for only CSH 363 or ENG 363. See CSH Notes 1, 2.
General Studies: L/HU, C

CSH 485 Chicana Writers. (3)

once a year
Critical reading of Mexican American women authors; emphasis on contemporary (post-1970) poetry, novels, short stories, and essays.
General Studies: L/HU, C

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

COLLEGE OF LIBERAL ARTS AND SCIENCES

CSH 498 Pro-Seminar. (3)

once a year

Required course for majors on topic selected by instructor; writing-intensive course related to the development of interdisciplinary research skills.

CHICANA AND CHICANO STUDIES SOCIAL SCIENCE (CSS)

CSS 315 Chicano Family Structures and Perceptions. (3)

once a year

Traditional and changing family relationships; emphasis on gender and intergenerational relations and impact of modern society on traditional family values.

CSS 330 Chicana and Chicano Politics and Policy. (3)

once a year

Historical/contemporary analysis of Chicana and Chicano political ideologies, attitudes, strategies, and movements; relations with governmental agencies; and public policy issues.

General Studies: C

CSS 331 Policy Issues in Chicana and Chicano Urban Settings. (3)

spring

Historical, demographic, and sociological overview of the status of Chicanas and Chicanos in urban settings as well as the public policy relevance.

General Studies: C

CSS 336 Issues in Immigration and Migration. (3)

once a year

Historical/contemporary overview of Mexican immigration into and within the U.S.; factors affecting population movement, settlement patterns, and migrants' incorporation into society.

General Studies: C, H

CSS 432 Issues in Chicana and Chicano Gender. (3)

once a year

Analyzes social construction of gender identities; emphasizes impact of American and Mexican cultural values on normative gender relations.

General Studies: C

CSS 490 Field Studies in the Chicana and Chicano Community. (3)

once a year

Introduces principles and methods of qualitative research applied to the Chicana and Chicano community.

CSS 498 Pro-Seminar. (3)

once a year

Required course for majors on topic selected by instructor; writing-intensive course related to the development of interdisciplinary research skills.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Computational Biosciences

Interdisciplinary Master's Degree

www.asu.edu/compbiosci

480/965-3951

PSA 216

Rosemary Renaut, Director

GRADUATE PROGRAMS

The master's degree in Computational Biosciences is administered by an interdisciplinary committee. The faculty participating in this M.S. program are drawn from departments including Biology, Chemistry and Biochemistry, Computer Science Engineering, Mathematics and Statistics, and Plant Biology.

For more information, contact the program office or refer to the *Graduate Catalog*.

COMPUTATIONAL BIOSCIENCES (CBS)

See the *Graduate Catalog* for the CBS courses.

Economics

The College of Liberal Arts and Sciences and the College of Business offer a B.A. or B.S. degree in Economics. Faculty, course descriptions, and the major requirements in the College of Business are listed under "[Department of Economics](#)," page 168. For more information, CLAS Economics majors should call the faculty liaison at 480/965-2128 or visit BAC 655.



A student rides on a powertron

Tim Trumble photo

ECONOMICS—B.A. OR B.S.

The program in Economics consists of 45 semester hours of course work, 24 of which, at a minimum, must be in economics, and the remainder in closely related fields to be selected from the “Approved List of Related Field Courses” in consultation with the faculty advisor.

The following lower-division courses are required and must be counted as part of the 45-hour major:

ECN 111 Macroeconomic Principles <i>SB</i>	3
ECN 112 Microeconomic Principles <i>SB</i>	3
MAT 210 Brief Calculus <i>MA</i>	3
STP 226 Elements of Statistics <i>CS</i>	3
Total	12

While MAT 210 meets the minimum mathematics requirement to major in Economics, all Economics majors who anticipate going on to graduate school in economics or in business or to law school are encouraged to take MAT 270 Calculus with Analytic Geometry I. Majors are encouraged to pursue further course work in mathematics. MAT 270 may be taken in lieu of MAT 210.

To qualify for upper-division course work in economics, the Economics major must earn a minimum grade of “C” in each of the previously listed courses, have junior class standing (56 semester hours), and have a minimum cumulative GPA of 2.50. ECN 313 Intermediate Macroeconomic Theory and ECN 314 Intermediate Microeconomic Theory are required and should be taken after the completion of the previously listed courses and before other upper-division courses in economics.

Credit earned by an Economics major in ECN 484 Economics Internship, whether as a legislative intern or through the Department of Economics Internship Program (and ECN 493 Honors Thesis), may not be used to satisfy the minimum 24 hours of economics course work requirement. However, up to six hours of ECN 484 and 493 may be used to meet the related fields requirement. See [“College Degree Requirements,” page 330](#).

Latin American Studies Certificate or Emphasis. Students majoring in Economics may elect to pursue a Latin American Studies Certificate or emphasis, combining courses from the major with selected outside courses of wholly Latin American content. See [“Latin American Studies,” page 338](#), for more information.

MINOR IN ECONOMICS

Minor in General Economics. The minor in General Economics consists of 18 semester hours of credit which includes ECN 111 and 112 plus any 12 hours of upper-division economics courses for which all prerequisites have been met.

Minors in General Economics are encouraged to take calculus and statistics, which are prerequisites for ECN 313 Intermediate Macroeconomic Theory and ECN 314 Intermediate Microeconomic Theory so that these courses might be included in the minor. The College of Business does not permit its professional program students to enroll in this minor.

Minor in Economics for Students Planning a Career in Law. One of the most dramatic recent developments in law is the integration of economic analysis in legal theory and decision making. Curricula at all major law schools reflect this change. Consequently, future lawyers are being trained with courses that rely increasingly on microeconomic theory and econometrics.

The applications of economics to law have moved beyond the traditional areas of antitrust and regulation. First-year law courses now include microeconomic theory with applications to contracts, torts, criminal law, property, and constitutional law.

The minor in Economics for Students Planning a Career in Law provides an opportunity for prospective law students to take courses that provide them with analytical tools essential for the study of law. The prelaw minor consists of a minimum of 18 semester hours.

Required courses are as follows:

ECN 111 Macroeconomic Principles <i>SB</i>	3
ECN 112 Microeconomic Principles <i>SB</i>	3
ECN 314 Intermediate Microeconomic Theory <i>SB</i>	3
ECN 450 Law and Economics <i>L</i>	3
ECN 453 Government and Business	3
Total	15

Also required is at least one additional course from the following:

ACC 316 Management Uses of Accounting	3
ECN 421 Earnings and Employment <i>L/SB</i>	3
ECN 480 Introduction to Econometrics <i>CS</i>	3
ECN 494 ST: Public Choice	3
FIN 361 Managerial Finance	3

SECONDARY EDUCATION—B.A.E.

The minor teaching field consists of 21 semester hours. ECN 111 Macroeconomic Principles and ECN 112 Microeconomic Principles and MAT 210 Brief Calculus are required. The remainder must be approved by the advisor in consultation with the student.

Social Studies. For more information, call the Office of Student Services in the College of Education at 480/965-5555.

GRADUATE PROGRAMS

The faculty in the Department of Economics offer programs leading to the M.S. and Ph.D. degrees. See the *Graduate Catalog* for requirements.

For faculty and course descriptions see [“Department of Economics,” page 168](#).

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

Department of English

www.asu.edu/clas/english

480/965-3168

LL 542

Daniel Bivona, Chair

Regents' Professors: Dubie, Ríos

Professors: Adams, Bender, Bjork, Boyer, Brack, Brink, Candelaria, Carlson, Crowley, Donelson, Gutierrez, Helms, Kehl, Lester, Lightfoot, Major, A. Nilsen, D. Nilsen, Rhodes, Richard, Roen, Sands, Sensibar, Tobin

Associate Professors: Bates, Bivona, Castle, Chancy, Corse, DeLamotte, M. Goggin, Goldberg, Horan, Lussier, Mahoney, McNally, Miller, Morgan, Nelson, Perry, Pritchard, Ramage, Savard, Schwalm, Tohe, van Gelderen, Voaden

Assistant Professors: Blasingame, Fox, Fuse, P. Goggin, Harris, Johnson, Milun, Webb Peterson

Senior Lecturers: Cook, Cooper, Duerden, Dugan, Dwyer, Heenan, Norton, Sudol, Wheeler

Lecturers: Binkley, Duttagupta, Ray, Stancliff

Academic Professional: Glau

ENGLISH—B.A.

The faculty in the Department of English offer courses in comparative literature, creative writing, English as a second language, English education, English linguistics, literature and language, and rhetoric and composition. Undergraduate degrees include the B.A. degree in English, with a concentration in either linguistics or literature, and a Secondary Education Bachelor of Arts in Education degree. The faculty also offer a Writing Certificate. Students interested in creative writing are encouraged to use electives to pursue a creative writing emphasis. Students should work with advisors to design an individual program of study that takes full advantage of the diversity within the department as well as interdisciplinary and multicultural contexts available in the college and university.

The B.A. degree in English with a concentration in linguistics consists of 42 semester hours. Required courses are as follows:

ENG 200	Critical Reading and Writing About Literature <i>L/HU</i>	3
ENG 213	Introduction to the Study of Language	3
ENG 221	Survey of English Literature <i>HU, H</i>	3
	or ENG 222 Survey of English Literature <i>HU, H</i> (3)	
	or ENG 241 Literatures of the United States to 1860 <i>HU</i> (3)	
	or ENG 242 Literatures of the United States 1860–Present <i>HU</i> (3)	
ENG 312	English in Its Social Setting <i>L, HU/SB</i>	3

ENG 313	Phonology and Morphology <i>L</i>	3
ENG 314	Modern Grammar.....	3
ENG 413	History of the English Language <i>HU</i>	3
ENG 414	Studies in Linguistics (repeated for a total of nine semester hours)	9

Twelve additional hours are electives, chosen in consultation with the student's advisor. These courses must be at the 200 level or above. At least one must be a three-credit course in a modern language other than English at the 400 level or above. A grade of "C" or higher is required in all courses taken for the major. *No course may be used to satisfy more than one requirement.*

The B.A. degree in English with a concentration in literature consists of 45 semester hours. Required courses are as follows:

ENG 200	Critical Reading and Writing About Literature <i>L/HU</i>	3
ENG 221	Survey of English Literature <i>HU, H</i>	3
ENG 222	Survey of English Literature <i>HU, H</i>	3
ENG 241	Literatures of the United States to 1860 <i>HU</i>	3
ENG 242	Literatures of the United States 1860–Present <i>HU</i>	3
ENG 421	Shakespeare <i>HU</i>	3

Courses taken to fulfill the areas and periods listed below can be used to satisfy more than one of these requirements:

- Upper-division course in critical theory (3)
- Upper-division course in gender, American ethnic literatures, and/or postcolonial studies (3)
- Course in the history and/or structure of language (3)
- Upper-division course in literature before 1660, exclusive of ENG 421 (3)
- Upper-division course in literature between 1660 and 1900 (3)
- Upper-division course in literature after 1900 (3)

Additional hours needed to complete the 45 hours are electives chosen from the department's offerings at the 200 level and above. At least 18 of the 45 hours must be taken at the 300 or 400 level. A grade of "C" or higher is required in all courses taken for the major.

MINORS

The minor in English with a concentration in linguistics consists of 24 semester hours. Required courses are as follows:

ENG 200	Critical Reading and Writing About Literature <i>L/HU</i>	3
ENG 213	Introduction to the Study of Language	3
ENG 221	Survey of English Literature <i>HU, H</i>	3
	or ENG 222 Survey of English Literature <i>HU, H</i> (3)	
	or ENG 241 Literatures of the United States to 1860 <i>HU</i> (3)	
	or ENG 242 Literatures of the United States 1860–Present <i>HU</i> (3)	
ENG 312	English in Its Social Setting <i>L, HU/SB</i>	3
ENG 314	Modern Grammar.....	3
ENG 413	History of the English Language <i>HU</i>	3

The six additional hours are electives chosen from the department's offerings, with at least one course (three

hours) required at the 300 or 400 level. A grade of “C” or higher is required in all courses for the minor.

The minor in English with a concentration in literature consists of 24 semester hours. These courses are required:

ENG 200	Critical Reading and Writing About Literature <i>L/HU</i>	3
ENG 221	Survey of English Literature <i>HU, H</i>	3
	or ENG 222 Survey of English Literature <i>HU, H</i> (3)	
ENG 241	Literatures of the United States to 1860 <i>HU</i>	3
	or ENG 242 Literatures of the United States 1860–Present <i>HU</i> (3)	
ENG 321	Introduction to Shakespeare <i>HU</i>	3
	or ENG 421 Shakespeare <i>HU</i> (3)	

Also required are two upper-division courses in literature (six hours) and two electives (six hours) chosen from among the department’s offerings, with at least one course (three hours) at the 300 or 400 level. A grade of “C” or higher is required in all courses taken for the minor.

WRITING CERTIFICATE

The Writing Certificate consists of 19 semester hours. Initial entry into the program requires a minimum GPA of 3.00 in English 101 and 102, 105, or 107 and 108. Students must also have completed at least 30 hours of course work and must have a minimum GPA of 3.00. Required courses are as follows:

ENG 216	Persuasive Writing on Public Issues <i>L</i>	3
	or ENG 412 Creative Nonfiction (3)	
ENG 301	Writing for the Professions <i>L</i>	3
ENG 372	Document Production <i>L</i>	3
ENG 472	Rhetorical Studies <i>L</i>	3
ENG 484	Writing Internship.....	3
ENG 498	PS: Writing Certificate Portfolio.....	1
Total	.....	16

Also required is an additional writing course in English (three hours) or a writing or design course (three hours) selected from an approved list of courses from across campus. All students are required to submit a portfolio before receiving the certificate.

SECONDARY EDUCATION—B.A.E.

The major teaching field consists of 45 semester hours in English. Required courses are as follows:

ENG 200	Critical Reading and Writing About Literature <i>L/HU</i>	3
ENG 212	English Prose Style <i>L</i>	3
	or ENG 215 Strategies of Academic Writing <i>L</i> (3)	
	or ENG 216 Persuasive Writing on Public Issues <i>L</i> (3)	
	or ENG 217 Writing Reflective Essays <i>L</i> (3)	
ENG 221	Survey of English Literature <i>HU, H</i>	3
ENG 222	Survey of English Literature <i>HU, H</i>	3
ENG 241	Literatures of the United States to 1860 <i>HU</i>	3
ENG 242	Literatures of the United States 1860–Present <i>HU</i>	3
ENG 312	English in Its Social Setting <i>L, HU/SB</i>	3
	or ENG 314 Modern Grammar (3)	
ENG 421	Shakespeare <i>HU</i>	3

ENG 471	Literature for Adolescents <i>HU</i>	3
ENG 480	Methods of Teaching English: Composition <i>L</i>	3
ENG 482	Methods of Teaching English: Language.....	3
Total	.....	33

Also required is one course in women’s literature or American ethnic literatures. Nine additional hours are electives chosen from Department of English offerings, six hours of which must be in the upper division. ENG 471, 480, and 482 must be taken before student teaching.

The minor teaching field consists of the following required courses:

ENG 200	Critical Reading and Writing About Literature <i>L/HU</i>	3
ENG 215	Strategies of Academic Writing <i>L</i>	3
	or ENG 216 Persuasive Writing on Public Issues <i>L</i> (3)	
	or ENG 217 Writing Reflective Essays <i>L</i> (3)	
ENG 321	Introduction to Shakespeare <i>L/HU</i>	3
	or ENG 421 Shakespeare <i>HU</i>	
ENG 470	Symbols and Archetypes in Children’s Literature <i>L/HU</i>	3
ENG 471	Literature for Adolescents <i>HU</i>	3
ENG 480	Methods of Teaching English: Composition <i>L</i>	3
ENG 482	Methods of Teaching English: Language <i>L</i>	3
	Choose from among the courses below.....	3
	ENG 221 Survey of English Literature <i>HU/H</i> (3)	
	ENG 222 Survey of English Literature <i>HU/H</i> (3)	
	ENG 241 Literatures of the United States to 1860 <i>HU</i> (3)	
	ENG 242 Literatures of the United States 1860–Present <i>HU</i> (3)	
	ENG 312 English in Its Social Setting <i>HU/SB</i> (3)	
	ENG 352 Short Story <i>HU</i> (3)	
	A course in women’s literature or American ethnic literatures (3)	
Total	.....	24

These courses are also recommended for Elementary Education majors.

GRADUATE PROGRAMS

The faculty in the Department of English offer programs leading to the M.A. degree in English (with concentrations in comparative literature, English linguistics, literature and language, and rhetoric and composition), Master of Fine Arts degree in Creative Writing (options include fiction, nonfiction, poetry, and screenwriting), Master of Teaching English as a Second Language degree, and Ph.D. degree in English with two concentrations, one in literature and one in rhetoric/composition and linguistics. See the *Graduate Catalog* for requirements.

ENGLISH (ENG)

ENG Note 1. Completion of the First-Year Composition requirement (ENG 101 and 102 [or 105] or ENG 107 and 108 with a grade of “C” or higher) is a prerequisite for all English courses above the 100 level.
 ENG Note 2. A term paper or equivalent out-of-class written work is required in all upper-division (300- and 400-level) ENG courses.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

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ENG Note 3. English majors and minors are expected to have completed ENG 200 before taking 400-level literature courses.

ENG 101 First-Year Composition. (3)

fall, spring, summer

Discovering, organizing, and developing ideas in relation to the writer's purpose, subject, and audience. Emphasizes modes of written discourse and effective use of rhetorical principles. Foreign students, see ENG 107. Prerequisite: see "[University Testing Requirements](#)," [page 68](#), and "[First-Year Composition Requirement](#)," [page 79](#).

ENG 102 First-Year Composition. (3)

fall, spring, summer

Critical reading and writing; emphasis on strategies of academic discourse. Requires research paper. Foreign students, see ENG 108. Prerequisite with a grade of "C" or higher: ENG 101.

ENG 105 Advanced First-Year Composition. (3)

fall and spring

Concentrated composition course for students with superior writing skills; intensive reading; research papers; logical and rhetorical effectiveness. Credit is allowed for only ENG 105 or First-Year Composition. Prerequisite: see "[University Testing Requirements](#)," [page 68](#), and "[First-Year Composition Requirement](#)," [page 79](#).

ENG 107 English for Foreign Students. (3)

fall and spring

For students from non-English-speaking countries who have studied English in their native countries, but who require practice in the idioms of English. Intensive reading, writing, and discussion. Satisfies the graduation requirement of ENG 101.

ENG 108 English for Foreign Students. (3)

fall and spring

For foreign students; critical reading and writing; strategies of academic discourse. Requires research paper. Satisfies graduation requirement of ENG 102. Prerequisite with a grade of "C" or higher: ENG 107.

ENG 114 English Grammar and Usage. (3)

fall and spring

Fundamentals of English grammar (word and phrase structure) and of English usage (punctuation, grammatical correctness).

ENG 200 Critical Reading and Writing About Literature. (3)

fall and spring

Introduces the terminology, methods, and objectives of the study of literature, with practice in interpretation and evaluation. See ENG Note 1. Prerequisite: English major or minor.

General Studies: L/HU

ENG 201 World Literature. (3)

fall

Classical and medieval periods. Selections from the great literature of the world in translation and lectures on the cultural background. See ENG Note 1.

General Studies: HU, H

ENG 202 World Literature. (3)

spring

Renaissance and modern periods. Selections from the great literature of the world in translation and lectures on the cultural background. See ENG Note 1.

General Studies: HU, H

ENG 204 Introduction to Contemporary Literature. (3)

once a year

Poetry, fiction, drama, and possibly other genres. See ENG Note 1.

General Studies: HU

ENG 210 Introduction to Creative Writing. (3)

fall and spring

Beginning writing of poetry, fiction, drama, or mixed genre. Separate sections for each genre. Each genre may be taken once. See ENG Note 1.

ENG 212 English Prose Style. (3)

selected semesters

Analysis and practice of writing in various classical and modern prose styles. See ENG Note 1. Prerequisite: preferably English major or both approval of advisor and instructor. Prerequisite with a grade of "B" or higher: ENG 102 or 105.

General Studies: L

ENG 213 Introduction to the Study of Language. (3)

fall and spring

Language as code; phonetics, phonology, morphology, and syntax; the lexicon; language acquisition; sociolinguistics. See ENG Note 1.

ENG 215 Strategies of Academic Writing. (3)

fall and spring

Advanced course in techniques of analyzing and writing academic expository prose. Writing is research based. See ENG Note 1.

General Studies: L

ENG 216 Persuasive Writing on Public Issues. (3)

fall and spring

Advanced course in techniques of analyzing and writing persuasive arguments addressing topics of current public interest. Papers are research based. See ENG Note 1.

General Studies: L

ENG 217 Writing Reflective Essays. (3)

fall and spring

Critical examination of the influences discourse has on formation of identity; narrative analyses of self and culture. See ENG Note 1.

General Studies: L

ENG 218 Writing About Literature. (3)

fall and spring

Advanced writing course requiring analytical and expository essays about fiction, poetry, and drama. For non-English majors. See ENG Note 1.

General Studies: L

ENG 221 Survey of English Literature. (3)

fall and spring

Medieval, Renaissance, and 18th-century literature. Emphasizes major writers and their works in their literary and historical contexts. See ENG Note 1.

General Studies: HU, H

ENG 222 Survey of English Literature. (3)

fall and spring

Romantic, Victorian, and 20th-century literature. Emphasizes major writers and their works in their literary and historical contexts. See ENG Note 1.

General Studies: HU, H

ENG 241 Literatures of the United States to 1860. (3)

fall and spring

Survey of literary movements and genres from colonization to the Civil War. See ENG Note 1.

General Studies: HU

ENG 242 Literatures of the United States, 1860–Present. (3)

fall and spring

Survey of literary movements and genres from the Civil War to the present. See ENG Note 1.

General Studies: HU

ENG 245 Popular Culture Issues. (3)

fall and spring

Selected topics in various forms of popular culture related to written texts. May be repeated for credit when topics vary. See ENG Note 1.

General Studies: L

ENG 301 Writing for the Professions. (3)

fall and spring

Advanced practice in writing and editing expository prose. Primarily for preprofessional majors. See ENG Notes 1, 2.

General Studies: L

ENG 303 Classical Backgrounds of English Literature. (3)

selected semesters

Readings of Greek and Latin literature in translation as they relate to literature in English. See ENG Notes 1, 2.

General Studies: HU

ENG 310 Intermediate Creative Writing. (3)

fall and spring

Separate sections for fiction and poetry. May be taken once for poetry, once for fiction. Lecture, writing assignments, discussion, criticism. See ENG Notes 1, 2. Prerequisite: ENG 210 or instructor approval.

ENG 312 English in Its Social Setting. (3)*fall and spring*

Introduces the sociolinguistic study of the English language. See ENG Notes 1, 2.

*General Studies: L/HU/SB***ENG 313 Phonology and Morphology. (3)***spring*

Introduces English morphology, phonology, etymology, and phonetic aspects of rhyme, alliteration, and other sound-based literary devices. See ENG Notes 1, 2.

*General Studies: L***ENG 314 Modern Grammar. (3)***fall and spring*

Modern descriptive models of English grammar. See ENG Notes 1, 2.

ENG 315 Medieval Literature in Translation. (3)*once a year*

Medieval literature (insular and continental) in translation, from Beowulf to Malory (excluding Chaucer), emphasizing cultural and intellectual backgrounds. Lecture, discussion. See ENG Notes 1, 2.

ENG 321 Introduction to Shakespeare. (3)*fall and spring*

Shakespeare's major comedies, histories, and tragedies. See ENG Notes 1, 2.

*General Studies: L/HU***ENG 325 Restoration and the 18th Century. (3)***once a year*

Writers and movements in nondramatic literature of the restoration and early 19th century. Lecture, discussion. See ENG Notes 1, 2.

ENG 326 English Drama 1660–1800. (3)*once a year*

English drama 1660–1800. See ENG Notes 1, 2.

*General Studies: HU***ENG 328 The Novel to Jane Austen. (3)***selected semesters*

From origins of prose fiction through the 18th century. See ENG Notes 1, 2, 3.

*General Studies: HU, H***ENG 329 19th-Century British Fiction. (3)***selected semesters*

Includes such authors as Austen, Dickens, Eliot, and Conrad. See ENG Notes 1, 2.

ENG 331 American Drama. (3)*once a year*

Major works in the development of American drama from its beginnings to the present. See ENG Notes 1, 2.

*General Studies: L/HU***ENG 332 Major American Novels. (3)***once a year*

Major American novels studied in their ethnically diverse literary, historical, and cultural contexts. See ENG Notes 1, 2.

*General Studies: L***ENG 333 American Ethnic Literature. (3)***once a year*

Examines America's multiethnic identity through works of literature that depict American ethnic, gender, and class sensibilities. Cross-listed as AFH 333. Credit is allowed for only AFH 333 or ENG 333. See ENG Notes 1, 2.

*General Studies: L/HU, C***ENG 335 American Poetry. (3)***selected semesters*

Themes and developments in American poetry. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2.

ENG 342 20th-Century British and Irish Literature. (3)*selected semesters*

Major works in the development of literature since 1900, studied in their historical and cultural contexts. Lecture, discussion. See ENG Notes 1, 2.

ENG 345 Selected Authors or Issues. (3–4)*selected semesters*

Different topics may be offered. Film topics with lab may carry 4 credits. May be repeated for credit when topics vary. See ENG Notes 1, 2.

ENG 372 Document Production. (3)**ENG 352 Short Story. (3)***fall and spring*

Development of the short story as a literary form; analysis of its technique from the work of representative authors. See ENG Notes 1, 2.

*General Studies: HU***ENG 353 African American Literature: Beginnings Through the Harlem Renaissance. (3)***fall*

Historical survey of African American literary traditions and cultural contexts from slavery through the 1930s. Cross-listed as AFH 353. Credit is allowed for only AFH 353 or ENG 353. See ENG Notes 1, 2.

*General Studies: L/HU, C***ENG 354 African American Literature: Harlem Renaissance to the Present. (3)***spring*

Historical survey of African American literary traditions and cultural contexts from the 1920s to the present. Cross-listed as AFH 354. Credit is allowed for only AFH 354 or ENG 354. See ENG Notes 1, 2.

*General Studies: L/HU, C***ENG 355 European Dramatic Traditions. (3)***selected semesters*

Development of European drama since Aeschylus. See ENG Notes 1, 2.

*General Studies: L/HU***ENG 356 The Bible as Literature. (3)***fall and spring*

Readings in the Jewish and Christian Scriptures in modern translation. See ENG Notes 1, 2.

*General Studies: HU***ENG 357 Introduction to Folklore. (3)***selected semesters*

Survey of the history, genres, and dynamics of folklore, with emphasis on oral traditions. See ENG Notes 1, 2.

*General Studies: HU***ENG 359 American Indian Literatures. (3)***selected semesters*

Selected oral traditions and contemporary works by American Indian authors. See ENG Notes 1, 2.

*General Studies: L/HU, C***ENG 360 Western American Literature. (3)***once a year*

Critical examination of ideas and traditions of the literature of the western United States, including the novel. See ENG Notes 1, 2, 3.

*General Studies: L/HU***ENG 361 Silent Film. (4)***fall*

Development of motion pictures from 1850 through 1930. 3 hours lecture, screenings. See ENG Notes 1, 2.

*General Studies: HU***ENG 362 Sound Film Genres. (4)***spring*

Examines the western, the horror film, the comedy, and other genres. 3 hours lecture, screenings. See ENG Notes 1, 2.

*General Studies: HU***ENG 363 Chicana and Chicano Literature. (3)***fall*

Development of Chicana and Chicano literature; study of genres and themes; attention to literary antecedents. Cross-listed as CSH 363. Credit is allowed for only CSH 363 or ENG 363. See ENG Notes 1, 2.

*General Studies: L/HU, C***ENG 364 Women and Literature. (3)***selected semesters*

Approaches to issues of gender and representation in literature by and about women. See ENG Notes 1, 2, 3.

General Studies: HU

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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fall and spring

Introduces document design and production. Practice in critique and in writing the content of publications. Lecture, discussion. See ENG Notes 1, 2. Prerequisite: instructor approval.

General Studies: L

ENG 374 Technical Editing. (3)

fall and spring

Fundamentals of editing technical and professional materials. Role of editors in analyzing, revising, and polishing manuscripts. Successful writer-editor dialogues. See ENG Notes 1, 2. Prerequisite: ENG 102 (or its equivalent).

ENG 385 Career Development for English Majors. (3)

selected semesters

Theoretical and practical aspects of career planning related to skills and interests developed in English studies. Lecture, discussion, workshop. See ENG Notes 1, 2.

ENG 400 History of Literary Criticism. (3)

selected semesters

Major critics and critical traditions in the Western world. See ENG Notes 1, 2. Prerequisite: 6 hours in literature or instructor approval.

General Studies: L/HU, H

ENG 401 Topics in Critical Theory. (3)

selected semesters

Major critical schools of recent decades—postcolonialist, psychoanalytic, deconstructionist, feminist, new historicist. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2. Prerequisite: 6 hours in literature or instructor approval.

ENG 409 Advanced Screenwriting. (3)

selected semesters

Applies the principles taught in a complete feature-length screenplay. See ENG Notes 1, 2. Prerequisite: instructor approval.

ENG 411 Advanced Creative Writing. (3)

fall and spring

Poetry, fiction, and drama for experienced writers, emphasizing individual style. Each genre may be taken once. See ENG Notes 1, 2. Prerequisite: ENG 310 or instructor approval.

ENG 412 Creative Nonfiction. (3)

selected semesters

Lectures, discussion, and criticism concerning techniques of writing creative nonfiction for publication. See ENG Notes 1, 2. Prerequisite: ENG 310 or 411 or instructor approval.

ENG 413 History of the English Language. (3)

once a year

Development of English from the earliest times to the modern period. See ENG Notes 1, 2. Prerequisite: junior standing or instructor approval.

General Studies: HU

ENG 414 Studies in Linguistics. (3)

fall and spring

Relationship of linguistics to literature, gender, power, and other social issues. May be repeated for credit. See ENG Notes 1, 2. Prerequisite: junior standing.

ENG 415 Topics in Medieval Literature and Culture. (3)

selected semesters

Interdisciplinary approach to medieval literature, emphasizing cultural and historical context. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or instructor approval.

General Studies: HU

ENG 416 Chaucer in Middle English. (3)

once a year

Yearly alternate between Chaucer's *The Canterbury Tales* and *Troilus and Criseyde*. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or instructor approval.

General Studies: HU

ENG 418 Renaissance Literature. (3)

once a year

Selected topics, authors, contexts, and themes in Renaissance literature. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or instructor approval.

General Studies: L/HU

ENG 419 English Literature in the Early 17th Century. (3)

once a year

Topics, authors, and themes in English literature, 1603–1660. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or instructor approval.

General Studies: L/HU

ENG 421 Shakespeare. (3)

fall and spring

A selection of Shakespeare's works in different genres. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or instructor approval.

General Studies: HU

ENG 422 Studies in Shakespeare. (3)

once a year

Topics for close examination in selected dramatic and/or nondramatic works. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 421 or instructor approval.

General Studies: HU

ENG 423 Renaissance Drama. (3)

spring

Topics, authors, and themes in the drama of the Tudor and early Stuart periods. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or instructor approval.

General Studies: L/HU

ENG 424 Milton. (3)

once a year

Selected prose and poetry, emphasizing *Paradise Lost*, *Paradise Regained*, and *Samson Agonistes*. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or instructor approval.

General Studies: HU

ENG 425 Studies in Romanticism. (3)

fall

Romanticism in continental, British, and American literature and culture. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2, 3. Prerequisite: ENG 222 or 241 or instructor approval.

General Studies: HU

ENG 427 Studies in 18th-Century Literature and Culture. (3)

selected semesters

Literary, social, and cultural issues of the period studied in an interdisciplinary format. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or 222 or instructor approval.

General Studies: HU

ENG 429 Studies in European Literature and Culture. (3)

selected semesters

Literary, cultural, and historical issues. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2, 3.

ENG 430 Studies in Victorian Literature and Culture. (3)

once a year

Literary, social, and cultural issues of the period studied in an interdisciplinary format. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 222 or instructor approval.

General Studies: L/HU

ENG 434 Studies in the Literature and Culture of the Americas. (3)

selected semesters

Literature and culture of North America, South America, and the Caribbean. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2, 3. Prerequisite: ENG 241 or 242 or instructor approval.

ENG 436 Studies in Anglophone Literature and Culture. (3)

selected semesters

Literary, social, and cultural issues of English-speaking former colonial territories. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2, 3. Prerequisite: ENG 222 or 242 or instructor approval.

ENG 440 Studies in American Literature and Culture. (3)

once a year

Various genres in their literary, political, theoretical, and historical contexts. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 241 or 242 or instructor approval.

General Studies: HU

ENG 442 Studies in 20th-Century British and Irish Literature and Culture. (3)*once a year*

Major literary genres (novel, poetry, and drama) in their cultural and historical contexts. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 222 or instructor approval.

ENG 444 Studies in American Romanticism. (3)*once a year*

Fiction, poetry, and essays of such nineteenth-century authors as Hawthorne, Emerson, Melville, Thoreau, Fuller, Whitman, and Dickinson. See ENG Notes 1, 2, 3. Prerequisite: ENG 241 or instructor approval.

*General Studies: HU***ENG 445 Studies in American Realism. (3)***once a year*

Writers and influences that shaped the development of literary realism. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 242 or instructor approval.

*General Studies: L/HU***ENG 446 Studies in Modernism. (3)***selected semesters*

Cultural, historical, and literary problems in American and European modernism. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2, 3. Prerequisite: ENG 222 or 242 or instructor approval.

ENG 448 Studies in Irish Literature and Culture. (3)*selected semesters*

Themes and problems pertaining to Irish literature, film, and social and cultural history. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2, 3. Prerequisite: ENG 222 or 242 or instructor approval.

*General Studies: HU***ENG 452 Studies in the Novel. (3)***selected semesters*

May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or 222 or 241 or 242 or instructor approval.

*General Studies: HU***ENG 453 Studies in the American Novel. (3)***fall and spring*

Poetics and politics of the novel, 18th through 21st centuries. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 241 or 242 or instructor approval.

*General Studies: HU***ENG 455 Forms of Verse: Theory and Practice. (3)***selected semesters*

Types, history, analysis of traditional poetic forms and contemporary adaptations. Writing of poetry in forms such as sonnet, villanelle, sestina. See ENG Notes 1, 2. Prerequisite: ENG 310 or instructor approval.

ENG 457 Studies in American Poetry. (3)*selected semesters*

May be repeated for credit when topics vary. See ENG Notes 1, 2, 3. Prerequisite: ENG 241 or 242 or instructor approval.

*General Studies: HU***ENG 459 Studies in African American/Caribbean Literatures. (3)***selected semesters*

Studies in African American or Caribbean literatures according to genre, period, theory, or selected authors. May be repeated for credit when topics vary. Cross-listed as AFH 459. Credit is allowed for only AFH 459 or ENG 459. See ENG Notes 1, 2, 3.

ENG 461 Studies in Women and Literature. (3)*selected semesters*

Advanced topics in literature by or about women. May be repeated for credit when topics vary. See ENG Notes 1, 2, 3.

*General Studies: HU***ENG 464 Studies in Drama. (3)***selected semesters*

Selected topics in the history and theory of the genre. See ENG Notes 1, 2, 3. Prerequisite: ENG 221 or 222 or 241 or 242 or instructor approval.

*General Studies: HU***ENG 465 Studies in Film. (3–4)***selected semesters*

Advanced topics in cinema. Lecture, viewing, discussion. See ENG Notes 1, 2.

ENG 469 Science and Literature. (3)*selected semesters*

Historical and theoretical links between science and literature, from Francis Bacon to the present, examined in cultural context. May be repeated for credit when topics vary. Lecture, discussion. See ENG Notes 1, 2, 3.

ENG 470 Symbols and Archetypes in Children's Literature. (3)*fall*

Various critical approaches and recurring themes studied in relation to classical and contemporary children's literature. Lecture, discussion, reading. See ENG Notes 1, 2, 3.

*General Studies: L/HU***ENG 471 Literature for Adolescents. (3)***fall and spring*

Prose and poetry that meet the interests and capabilities of junior high and high school students. Stresses recent literature. Requires passing grade of at least "C" before students are permitted to student teach in English. See ENG Notes 1, 2, 3.

*General Studies: HU***ENG 472 Rhetorical Studies. (3)***fall and spring*

Developments in theory and practice of major rhetorical inquiries. Seminar, workshop. See ENG Notes 1, 2. Prerequisite: junior standing.

*General Studies: L***ENG 480 Methods of Teaching English: Composition. (3)***fall or spring and summer*

Methods of instruction, organization, and presentation of appropriate content in the teaching of composition and other writing skills. See ENG Notes 1, 2.

*General Studies: L***ENG 482 Methods of Teaching English: Language. (3)***fall or spring and summer*

Methods of instruction, organization, and presentation of appropriate content in language and usage for junior and senior high schools. Lecture, discussion, lab. See ENG Notes 1, 2.

*General Studies: L***ENG 484 Internship. (1–12)***fall and spring*

Selected from the following areas. May be repeated for credit. See ENG Notes 1, 2. Topics may include the following:

- General. (1–12)
- Service Learning. (3)
- Writing Certificate. (3)

ENG 493 Honors Thesis. (1–6)*selected semesters**General Studies: L***ENG 494 Special Topics. (1–4)***selected semesters*

See ENG Notes 1, 2. Topics may include the following:

- Science and Literature Across the Cultural Divide

ENG 498 Pro-Seminar. (1–7)*fall and spring*

Selected from the following areas. May be repeated for credit when topics vary. See ENG Notes 1, 2. Topics may include the following:

- Introduction to Graduate Studies. (1)
- Issues in Creative Writing. (3)
- Writing Certificate Portfolio. (1)

ENG 500 Research Methods. (3)*once a year*

Methodology and resource materials for research. Analysis of criticism and scholarship, including evaluation of sources.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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ENG 501 Introduction to Comparative Literature. (3)

selected semesters

Problems, methods, and principles, illustrated by selected critical essays and literary texts.

ENG 502 Contemporary Critical Theory. (3)

once a year

Advanced survey of major schools of 20th-century literary and critical theory. Lecture, discussion. Cross-listed as HUM 549. Credit is allowed for only ENG 502 or HUM 549.

ENG 507 Old English. (3)

selected semesters

Elements of Old English grammar, with selected readings.

ENG 508 Old English Literature. (3)

selected semesters

Intensive literary, linguistic, and cultural study of Old English literature. May be repeated for credit when topics vary. Prerequisite: ENG 507.

ENG 509 Middle English. (3)

selected semesters

Study of the principal dialects of the language, with selected readings. Prerequisite: graduate standing.

ENG 512 The Teaching of Composition. (3)

selected semesters

Theory and practice of teaching writing at all levels. Emphasizes current research. Prerequisites: teaching experience; instructor approval.

ENG 515 Middle English Literature. (3)

selected semesters

English literature from the 12th through the 15th centuries, exclusive of Chaucer. Prerequisite: ENG 509 or instructor approval.

ENG 517 Contemporary Rhetorical Theory. (3)

once a year

Investigates the work of such important rhetorical theorists as Burke, Toulmin, Perelman, Gates, and Cixous.

ENG 520 Renaissance Literature. (3)

selected semesters

Poetry and prose of the English Renaissance, excluding drama.

ENG 521 Shakespeare. (3)

once a year

Selection of comedies, histories, and tragedies presented in the context of literary history and critical theories, with an emphasis on classical and medieval backgrounds.

ENG 525 American Literary Criticism. (3)

selected semesters

Analysis and discussion of leading historical and critical interpretations of American literature from the beginnings to the present.

ENG 530 Classical Rhetoric and Written Composition. (3)

fall

Relationship of major texts in classical rhetoric to developments in composition theory, literary theory, and practice through the 19th century.

ENG 531 Rhetorical Theory and Literary Criticism. (3)

spring

Intensive study of major rhetorical theorists of the 20th century in such areas as literary criticism, discourse theory, and composition theory.

ENG 532 Composition Theory. (3)

selected semesters

Intensive study in the rhetorical categories of invention, arrangement, style, aims, modes, and forms of written discourse.

ENG 545 Studies in English Literature. (3)

selected semesters

Selected authors or issues. May be repeated for credit.

ENG 547 Studies in American Literature. (3)

selected semesters

Selected authors or issues. May be repeated for credit.

ENG 549 Studies in Comparative Literature. (3)

selected semesters

Selected authors or issues. May be repeated for credit.

ENG 550 Contemporary Comparative Literature. (3)

selected semesters

Comparative studies in modern literature in English and other literatures in translation. May be repeated for credit when topics vary.

ENG 559 Advanced Study in African American/Caribbean Literatures. (3)

selected semesters

Advanced study in African American or Caribbean literatures, theory, and criticism. May be repeated for credit when topics vary.

ENG 560 Studies in Dramatic Forms. (3)

selected semesters

Selected topics in dramatic and cinematic literature, history, criticism, theory, and crossdisciplinary study. May be repeated for credit when topics vary. Lecture, studio.

ENG 571 Advanced Study in Literature for Adolescents. (3)

selected semesters

History and criticism of adolescent literature. Prerequisite: ENG 471 or instructor approval.

ENG 573 Censorship and Literature. (3)

selected semesters

History of censorship, primarily in the United States, and significant court decisions that affected writers and books.

ENG 580 Practicum. (1–12)

selected semesters

ENG 591 Seminar. (3)

fall and spring

Selected topics regularly offered in the various areas of English studies.

ENG 594 Conference and Workshop. (1–12)

selected semesters

ENG 598 Special Topics. (1–4)

selected semesters

ENG 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

LINGUISTICS (LIN)

See the *Graduate Catalog* for the LIN courses.

WRITING ACROSS THE CURRICULUM (WAC)

WAC 101 Introduction to Academic Writing. (3)

fall and spring

Combines classroom and supplemental instruction to teach academic genres of writing, including definition, summary, and analysis.

WAC 107 Introduction to Academic Writing for International Students. (3)

fall and spring

For students from non-English-speaking countries. Combines classroom and supplemental instruction with intensive reading, writing, and discussion.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

**Department of Exercise Science
and Physical Education**

www.asu.edu/clas/espe

480/965-3875

PEBW 201

Philip E. Martin, Chair

Regents' Professor: Landers

Professors: Darst, Krahenbuhl, Martin, Matt, Pangrazi, Stelmach

Associate Professors: Hinrichs, Morgan, Treasure, Willis

Assistant Professors: Etnier, Huey, Robertson, Santello

Senior Lecturer: Landers

Lecturer: Pride

**EXERCISE SCIENCE/PHYSICAL EDUCATION—
B.S.**

The B.S. degree in Exercise Science/Physical Education consists of 42 semester hours, including 21 semester hours of required EPE core courses (EPE 110 may be repeated for credit). The remaining 21 semester hours of EPE and other courses are prescribed by the specific concentration the student selects.

The required EPE core courses are as follows:

EPE 110	Movement Analysis Laboratory	6
EPE 200	Introduction to Exercise Science and Physical Education	3
EPE 335	Biomechanics	3
EPE 340	Physiology of Exercise	3
EPE 345	Motor and Developmental Learning	3
EPE 352	Psychosocial Aspects of Physical Activity	3
Total		21

Each EPE core course has specific prerequisite courses that must be taken before taking the respective core course. These prerequisite courses include the following:

BIO 201	Human Anatomy and Physiology I <i>SG</i>	4
BIO 202	Human Anatomy and Physiology II	4
CHM 101	Introductory Chemistry <i>SQ</i>	4
MAT 117	College Algebra <i>MA</i>	3
PGS 101	Introduction to Psychology <i>SB</i>	3
PHY 111	General Physics <i>SQ*</i>	3
Total		21

* Both PHY 111 and 113 must be taken to secure SQ credit.

All prerequisite and EPE courses must be completed with a minimum grade of "C." The requirements for the specific concentrations are described below.

Majors must elect either the exercise science or physical education concentration.

Exercise Science Concentration. Candidates for the exercise science concentration must complete 21 semester hours beyond the core courses in the major field, at least 12 of which must carry EPE prefixes, be upper-division courses, and concern the theoretical subjects of the core. The remaining nine semester hours may carry either EPE prefixes or prefixes from related disciplines selected with the advice and consent of a faculty advisor. Activity courses may not be used to fulfill part of the 21 semester hour requirement. No more than six semester hours may be in independent study courses.

Physical Education Concentration. Candidates must complete 21 semester hours beyond the EPE core courses, 12 of which must carry EPE prefixes from the required course list below.

EPE 361	Physical Education in the Secondary School	3
EPE 376	Physical Education for the Elementary School	3
EPE 382	Physical Education for the Atypical Student	3
EPE elective*		3
Total		12

* See advisor for approved electives.

The remaining nine semester hours of related course work can carry either EPE, psychology, special education, child development, and/or education prefixes. Activity courses (EPE 110) may be used to fulfill part of the 21-semester-hour requirement (additional four semester hours maximum). No more than six semester hours may be taken in internship. Internship experiences may only be in elementary and secondary school teaching and coaching settings. A maximum of six semester hours may be in independent study.

**EXERCISE SCIENCE/PHYSICAL EDUCATION
MINOR**

The minor in Exercise Science/Physical Education consists of the core sequence in exercise science and physical education as follows, plus all prerequisite courses:

EPE 110	Movement Analysis Laboratory	6
EPE 200	Introduction to Exercise Science and Physical Education	3
EPE 335	Biomechanics	3
EPE 340	Physiology of Exercise	3
EPE 345	Motor and Developmental Learning	3
EPE 352	Psychosocial Aspects of Physical Activity	3
Total		21

SECONDARY EDUCATION—B.A.E.

Physical Education. Candidates for the B.A.E. degree are required to complete the following courses in physical education in addition to the required EPE core courses:

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See "General Studies," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

EPE 361 Physical Education in the Secondary School.....	3
EPE 376 Physical Education for the Elementary School.....	3
EPE 382 Physical Education for the Atypical Student	3
EPE 480 Methods of Teaching Physical Education	3
EPE elective*	3
Total	15

* See an advisor for approved electives.

Students must also complete a four-semester Physical Education Teacher Certification Program professional sequence in the College of Education (23 semester hours). Entry into this degree program requires filing an application, 56 semester hours of completed university study, and a minimum GPA of 2.50. See [“College of Education,” page 185](#), for additional requirements.

GRADUATE PROGRAMS

The faculty in the Department of Exercise Science and Physical Education offer programs leading to the Master of Physical Education degree and the M.S. degree in Exercise Science/Physical Education. The department also participates with the Graduate College in the program leading to the Ph.D. degree in Exercise Science and with the College of Education and the Graduate College in the program leading to the Ph.D. degree in Curriculum and Instruction with a concentration in physical education. See the *Graduate Catalog* for requirements.

EXERCISE SCIENCE/PHYSICAL EDUCATION (EPE)

EPE Note 1. A \$5.00 towel and locker fee is required each semester by students using towel and locker facilities for physical education classes and intramural activities.

EPE Note 2. Physical education activity classes (EPE 105, 205, 305, 310) may not be taken for audit. Excessive absences and/or tardiness are considered disruptive behavior.

EPE 100 Introduction to Health and Wellness. (3)

fall, spring, summer

Current concepts in health, exercise, and wellness. Emphasis placed on personal health, theories, attitudes, beliefs, and behaviors. Cross-listed as EXW 100/HES 100. Credit is allowed only for EPE 100 or EXW 100 or HES 100.

General Studies: SB

EPE 105 Physical Education Activity. (1)

fall, spring, summer

Beginning instruction in a wide variety of sports such as aerobics, aquatics, racquet sports, physical conditioning, and golf. 3 hours per week. “Y” grade only. May be repeated for credit. Fee. See EPE Notes 1, 2.

EPE 110 Movement Analysis Laboratory. (1–2)

fall, spring, summer

Practical application of biomechanical, physiological, psychological, and learning principles in the analysis of skill acquisition and performance. May be repeated for credit. Fee. See EPE Note 1. Prerequisites: EPE 105 proficiency; ESPE major.

EPE 191 First-Year Seminar. (1–3)

fall and spring

EPE 200 Introduction to Exercise Science and Physical Education. (3)

fall, spring, summer

Introduces the disciplines and professions associated with ESPE, including an overview of historical and philosophical foundations.

EPE 205 Physical Education Activity. (1)

fall, spring, summer

Intermediate levels. Continuation of EPE 105. 3 hours per week. May be repeated for credit. Fee. See EPE Notes 1, 2.

EPE 283 Prevention and Care of Athletic Injuries. (3)

fall and spring

Taping, injury recognition, emergency care, and observation procedures in athletic training. Prerequisites: BIO 201, 202.

EPE 290 Sports Officiating. (3)

fall

Rules and mechanics of officiating used in football, basketball, and volleyball.

EPE 292 Sports Officiating. (3)

spring

Rules and mechanics of officiating used in softball (slow and fast pitch), baseball, and track and field.

EPE 305 Physical Education Activity. (1)

fall, spring, summer

Advanced levels. Continuation of EPE 205, with instructor's approval. 3 hours per week. May be repeated for credit. Fee. See EPE Notes 1, 2.

EPE 310 Collegiate Sports. (1)

fall and spring

Participation in men's or women's intercollegiate competition. May be repeated for 4 hours, 1 per year. “Y/E” grade.

EPE 334 Functional Anatomy and Kinesiology. (3)

spring

Muscles, bones, joints, and nerves and how they produce movement. Emphasizes muscle origins, insertions, actions, and innervations. Lecture, lab. Prerequisite: BIO 201.

EPE 335 Biomechanics. (3)

fall, spring, summer

Basic anatomical and mechanical principles applied to human movement. Emphasis placed on kinematic and kinetic concepts. Lecture, recitation, lab. Fee. Prerequisites: BIO 201; MAT 117; PHY 111.

EPE 340 Physiology of Exercise. (3)

fall, spring, summer

Physiological mechanisms of acute responses and chronic adaptations to exercise. Lecture, recitation, lab. Fee. Prerequisites: BIO 201, 202; CHM 101.

EPE 345 Motor and Developmental Learning. (3)

fall, spring, summer

Principles of motor skill acquisition across the life span, focusing on the learner and the learning environment. Lecture, recitation, lab. Fee. Prerequisites: BIO 201; PGS 101.

EPE 348 Psychological Skills for Optimal Performance. (3)

fall, spring, summer

Applies psychological techniques and their use to improve effectiveness and performance in sport and related areas.

General Studies: SB

EPE 352 Psychosocial Aspects of Physical Activity. (3)

fall, spring, summer

Interrelationships between physical activity and psychosocial variables, including socialization, cultural values, aggression, and motivation. Includes the psychological benefits of physical activity and exercise adherence. Lecture, recitation. Prerequisite: PGS 101.

General Studies: SB, C

EPE 361 Physical Education in the Secondary School. (3)

fall and spring

Current trends and theories, such as elective programs, coed classes, legal issues, contract teaching, curriculum, and administration.

EPE 370 Advanced First Aid. (3)

selected semesters

Assessment, management, treatment of wounds, injuries, shock, poisoning, burns, sudden illness, emergency rescue, and cardiopulmonary resuscitation. Lecture, lab. Fee.

EPE 376 Physical Education for the Elementary School. (3)

fall and spring

Scope and values of physical education in the elementary school. Methods, materials, and practice in teaching activities for primary, intermediate, and upper grades.

DEPARTMENT OF EXERCISE SCIENCE AND PHYSICAL EDUCATION

EPE 382 Physical Education for the Atypical Student. (3)

fall and spring

Teaching individuals with handicapping conditions physical skills and activities.

EPE 400 Teaching Physical Activity Concepts. (3)

fall and spring

Analyzes and critiques teaching concepts, principles, and skills outlined in Arizona Physical Activity Standards. Evaluates national guidelines for promoting physical activity. Prerequisites: ENG 101 (or 107), 102 (or 108); EPE 200 (or its equivalent).

General Studies: L

EPE 412 Biomechanics of the Skeletal System. (3)

fall

Biomechanics of tissues, structures, and major joints of the musculoskeletal system. Discussion of injury mechanisms. Lecture, discussion, some labs. Prerequisite: EPE 335 or instructor approval.

EPE 413 Qualitative Analysis in Sport Biomechanics. (3)

spring

Develops systematic approach for detecting and correcting errors in human performance using anatomical and mechanical principles. Lecture, lab. Prerequisite: EPE 335.

EPE 414 Electromyographic Kinesiology. (3)

fall

Muscular contributions to human movement, muscle mechanics, electrophysiological basis, and practical application of electromyography. Lecture, discussion. Prerequisites: EPE 335, 340; instructor approval.

General Studies: L

EPE 440 Exercise Biochemistry. (3)

fall

Study of bioenergetics and metabolism of cellular (skeletal muscle, heart, and liver) organelles and proteins during exercise. Prerequisite: EPE 340.

EPE 441 Physiology of Women in Sport. (3)

spring

Physiological aspects of women engaging in physical activity. Emphasizes factors affecting performance and health throughout life. Prerequisite: EPE 340.

General Studies: L

EPE 443 Exercise Endocrinology. (3)

spring

Discussions of current research and theory concerning hormonal changes during exercise. Lecture, discussion. Prerequisite: EPE 340 or instructor approval.

General Studies: L

EPE 444 Metabolic Adaptations to Exercise Training. (3)

fall, spring, summer

Examines physiologic adaptations to exercise training as they relate to metabolism and tissue functions. Prerequisite: EPE 340.

EPE 448 Applied Sport Psychology. (3)

spring

Psychological theories and techniques applied to a sport to enhance the performance and personal growth of athletes and coaches. Lecture, discussion. Prerequisite: EPE 352 (or its equivalent).

General Studies: L

EPE 452 Exercise Psychology. (3)

spring

Contemporary research and theory as related to human behavior and health in an exercise setting. Prerequisite: EPE 352.

General Studies: SB

EPE 460 Theory of Strength Training. (3)

spring

Research and theories on developing muscular strength; programs for developing muscular strength. Lecture, discussion. Prerequisites: EPE 335, 340.

General Studies: L

EPE 478 Student Teaching in Secondary Schools. (3–12)

fall and spring

Practice of teaching. Relationship of practice and theory in teaching. Prerequisite: two complete semesters of block (or its equivalent).

EPE 480 Methods of Teaching Physical Education. (3)

fall and spring

Methods of instruction, organization, and presentation of appropriate content in elementary and secondary physical education. Prerequisites: EPE 361, 376. Corequisite: student teaching or instructor approval.

EPE 484 Internship. (6)

selected semesters

EPE 485 Advanced Techniques of Athletic Training. (3)

spring

Advanced course in athletic training designed for students seeking NATA certification. Emphasizes therapeutic modalities and rehabilitation procedures. Prerequisites: EPE 283, 370; CPR certification.

EPE 500 Research Methods. (3)

fall

Introduces the basic aspects of research, including problem selection, literature review, instrumentation, data handling, methodology, and the writing of research reports and articles.

EPE 501 Research Statistics. (3)

spring

Statistical procedures; sampling techniques; exercise testing, exercise prescription, hypothesis testing, and experimental designs as they relate to research publications.

EPE 505 Applied Exercise Physiology Techniques. (3)

fall

Investigative techniques used in the applied exercise physiology laboratory. Emphasizes pulmonary function, body composition, and cardiorespiratory assessment. Lecture, lab. Fee. Prerequisite: EPE 340.

EPE 510 Introduction to Biomechanics Research Methods. (3)

fall

Applies mechanics to human movement analysis. Includes consideration of two-dimensional imaging techniques, force measurement, electromyography, and data processing methods. Lecture, discussion, some labs. Prerequisite: EPE 335 or instructor approval.

EPE 520 Sport Psychology. (3)

fall

Current research in sport psychology with an emphasis on performance enhancement. Includes questionnaire, psychophysiological, and behavioral research methods. Lecture, discussion. Prerequisites: EPE 448, 500.

EPE 521 Motor Development, Control, and Learning. (4)

spring

Theory and research on motor skill acquisition, including learning/control and development (i.e., growth, children and exercise, and development learning). Lecture, discussion, some labs. Prerequisites: EPE 345, 500, 501.

EPE 522 Exercise Psychology. (3)

spring

Contemporary research and theory as related to human behavior and health in an exercise setting. Lecture, discussion. Prerequisite: EPE 500.

EPE 530 Exercise Physiology. (3)

fall

Immediate and long-term adaptations to exercise with special reference to training and the role of exercise in cardiovascular health. Prerequisite: EPE 340.

EPE 531 Physiology of Women in Sport. (3)

spring

Physiological aspects of women engaging in physical activity. Emphasizes factors affecting performance and health throughout life. Prerequisite: EPE 340.

EPE 561 Administration of Athletics. (3)

selected semesters

Managing an athletic program, including financing, budget policies, staging, and promotion of athletic contests, schedules, travel insurance, and current athletic trends.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

EPE 570 Programs and Special Topics in Adapted Physical Education. (3)

fall
Contemporary adapted, developmental, remedial, and corrective physical education programs; understanding of principles, problems, and recent developments in this area.

EPE 572 Trends and Issues in Physical Education. (3)

spring
Literature, research, and practices in contemporary physical education, including finances, Title IX, teaching and coaching philosophies, school organization, and nonteaching physical education programs.

EPE 573 Curriculum and Instruction in Secondary Physical Education. (3)

fall
Current curriculum and instruction practices and research in secondary school physical education. Prerequisite: ESPE major or teaching experience.

EPE 576 Physical Education for Elementary School Children. (3)

fall
Current practices and research pertaining to elementary school physical education programs.

EPE 578 Student Teaching in Secondary Schools. (6–12)

fall and spring
Practice of teaching. Relationship of theory and practice in teaching. Prerequisite: completion of all required course work (or its equivalent) prior to student teaching.

EPE 599 Thesis. (1–12)

selected semesters

EPE 610 Advanced Topics in Biomechanics. (3)

spring
Three-dimensional imaging techniques, data analysis theory, and integration of biomechanics research tools; includes original research project. Lecture, discussion, some labs. Prerequisite: EPE 510 or instructor approval.

EPE 621 Motor Learning/Control. (3)

fall
Discussion of contemporary research issues in motor learning and control. Includes behavioral and neurophysiological issues. Lecture, discussion. Prerequisite: EPE 521.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

HEALTH SCIENCE (HES)

HES 100 Introduction to Health and Wellness. (3)

fall, spring, summer
Current concepts in health, exercise, and wellness. Emphasis placed on personal health, theories, attitudes, beliefs, and behaviors. Cross-listed as EPE 100/EXW 100. Credit is allowed for only EPE 100 or EXW 100 or HES 100.
General Studies: SB

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Family and Human Development

www.asu.edu/clas/fhd

480/965-6978

COWDN 106

Richard Fabes, Chair

Professors: Christopher, Fabes, Griffin, Hoover, Ladd, Martin, Roosa

Associate Professors: Boulin Johnson, Dumka, Wilson

Assistant Professors: Hanish, Liu, Madden-Derdich, Spinrad, Updegraff

Senior Lecturer: Weigand

Lecturer: Bodman

FAMILY AND HUMAN DEVELOPMENT—B.S.

For the B.S. degree in Family and Human Development at ASU Main, students must pursue the concentration in family studies/child development.

Family Studies/Child Development

The concentration in family studies/child development consists of the following core courses:

CDE 232 Human Development <i>SB</i>	3
CDE 430 Infant/Toddler Development in the Family <i>SB</i>	3
CDE 498 Pro-Seminar	6
or FAS 498 Pro-Seminar (6)	
FAS 331 Marriage and Family Relationships <i>SB</i>	3
FAS 361 Introduction to Family/Child Research Methods <i>L</i>	3
FAS 370 Family, Ethnic, and Cultural Diversity <i>SB, C</i>	3
FAS 431 Parent-Adolescent Relationships <i>SB</i>	3
FAS 435 Advanced Marriage and Family Relationships <i>L/SB</i>	3
FAS 440 Fundamentals of Marriage and Family Therapy	3
Total	30

In addition, 12 hours of electives must be taken from the following:

CDE 337 Early Childhood Intervention	3
CDE 338 Child Development Practicum	2–4
CDE 437 Observational and Naturalistic Methods of Studying Children <i>L/SB</i>	3
CDE 444 Children and Poverty	3
CDE 498 Pro-Seminar	3
or FAS 498 Pro-Seminar (3)	
or FAS 499 Individualized Instruction (3)	
FAS 301 Introduction to Parenting	3
FAS 330 Personal Growth in Human Relationships <i>SB</i>	3
FAS 332 Human Sexuality <i>SB</i>	3
FAS 390 Supervised Research Experience	1–3
FAS 432 Family Development.....	3
FAS 484 Internship	1–3

FAMILY AND HUMAN DEVELOPMENT MINOR

The minor in Family and Human Development consists of 18 semester hours in which students specialize in family studies/child development.

At least 12 of the 18 hours must be in upper-division courses.

Students take the following courses:

CDE 232 Human Development <i>SB</i>	3
FAS 331 Marriage and Family Relationships <i>SB</i>	3
FAS 440 Fundamentals of Marriage and Family Therapy.....	3
Total	9

Three courses (or nine semester hours) must be selected from the following and at least one course must be a CDE course:

CDE 337 Early Childhood Intervention	3
CDE 430 Infant/Toddler Development in the Family <i>SB</i>	3
CDE 444 Children and Poverty	3
CDE 498 Pro-Seminar	3
or FAS 498 Pro-Seminar (3)	
FAS 370 Family, Ethnic, and Cultural Diversity <i>SB, C</i>	3
FAS 431 Parent-Adolescent Relationships <i>SB</i>	3

SECONDARY EDUCATION—B.A.E.

Family and Human Development. Applications are not being accepted at this time. The major teaching field consists of 42 semester hours in family and human development and six hours in interior design. Major courses required are as follows:

CDE 232 Human Development <i>SB</i>	3
CDE 337 Early Childhood Intervention	3
FAS 330 Personal Growth in Human Relationships <i>SB</i>	3
FAS 331 Marriage and Family Relationships <i>SB</i>	3
FAS 431 Parent-Adolescent Relationships <i>SB</i>	3
FRD 451 Field Experience	1–12
HEE 461 Presentations in Home Economics.....	3
HEE 480 Methods of Teaching Home Economics	3–4
HEE 481 Teaching Occupational Home Economics	3
NTR 100 Introductory Nutrition.....	3
NTR 142 Applied Food Principles	3
Total	31–43

Also required are two interior design courses.

The College of Education has additional requirements for teacher certification: Arizona Educator Proficiency Exam (professional knowledge only); 35 hours within the Initial Teacher Certification program.

GRADUATE PROGRAMS

The faculty in the Department of Family and Human Development offer programs leading to the M.S. and Ph.D. degrees. See the *Graduate Catalog* for requirements.

CHILD DEVELOPMENT (CDE)

CDE 232 Human Development. (3)

fall, spring, summer

Lifespan development from conception through adulthood, with emphasis on family influences. Recognizes individuality within the universal pattern of development. Prerequisites: PGS 101; SOC 101.

General Studies: SB

CDE 338 Child Development Practicum. (2–4)

fall and spring

Supervised practicum in the Child Development Lab preparing students for work in child care centers and agencies serving young children and families. Lab. Pre- or corequisite: CDE 337.

CDE 430 Infant/Toddler Development in the Family. (3)

fall and spring

Examines the development of infants/toddlers, the socialization processes of families, and the interactions of these processes. Prerequisite: CDE 232 (or its equivalent).

General Studies: SB

CDE 437 Observational and Naturalistic Methods of Studying Children. (3)

selected semesters

In-depth examination of implementing observational and naturalistic studies of children in a variety of settings. 2 hours lecture, 3 hours lab. Prerequisites: CDE 430; 6 hours in psychology.

General Studies: L/SB

CDE 444 Children and Poverty. (3)

fall

Impact that poverty has on children and their families. 2 hours lecture, 3 hours lab. Prerequisites: CDE 232 (or its equivalent); 6 hours in upper-division social sciences.

CDE 498 Pro-Seminar. (1–7)

fall and spring

CDE 499 Individualized Instruction. (3)

fall and spring

CDE 531 Theoretical Issues in Child Development. (3)

fall

Major developmental theories, related research, and their application to family interaction. Prerequisites: both CDE 430 and 437 (or their equivalents) or only instructor approval.

CDE 533 Research Issues in Child Development. (3)

spring

In-depth exploration and critique of research focusing on child development in a family setting. Prerequisites: CDE 531; FAS 500.

CDE 534 Applied Child Development. (3)

spring

Integrates child development, family theory, and research to understand developmental problems and provide a foundation for intervention. Prerequisites: CDE 531; FAS 500.

CDE 634 Advanced Applied Child Development. (3)

spring

Advanced training in research and theory-based approaches to developing and evaluating prevention programs for children at risk. Prerequisite: CDE 534 or instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

FAMILY STUDIES (FAS)

FAS 301 Introduction to Parenting. (3)

fall and spring

Integrated approach to understanding parenting and parent-child interactions. Television course. Prerequisites: PGS 101; SOC 101 (or its equivalent).

FAS 330 Personal Growth in Human Relationships. (3)

fall, spring, summer

Personal development and behavior as related to competency in interpersonal relationships within the family. Processes of family interaction. Prerequisites: PGS 101; SOC 101 (or its equivalent).

General Studies: SB

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

COLLEGE OF LIBERAL ARTS AND SCIENCES

FAS 331 Marriage and Family Relationships. (3)

fall, spring, summer

Issues, challenges, and opportunities relating to present-day marriage and family living. Factors influencing interrelations within the family. Prerequisite: a course in psychology or sociology.

General Studies: SB

FAS 332 Human Sexuality. (3)

fall and spring

Relationship of sexuality to family life and to major societal issues. Emphasizes developing healthy, positive, and responsive ways of integrating sexual and other aspects of human living. Prerequisite: PGS 101.

General Studies: SB

FAS 361 Introduction to Family/Child Research Methods. (3)

fall and spring

Examines basic methods applied to family/child research, critiques current research literature, and applies methods in current topics. Prerequisites: CDE 232; FAS 331.

General Studies: L

FAS 370 Family, Ethnic, and Cultural Diversity. (3)

fall and spring

Integrative approach to understanding historical and current issues related to the structure and internal dynamics of diverse American families. Lecture, discussion. Cross-listed as AFS 370. Credit is allowed for only AFS 370 or FAS 370. Prerequisite: PGS 101 or SOC 101.

General Studies: SB, C

FAS 390 Supervised Research Experience. (1–3)

fall, spring, summer

Practical, firsthand experience within current faculty research projects in family studies or child development. "Y" grade only; may be repeated for total of 6 hours. Prerequisites: FAS 361; 3.00 GPA in major; approval of supervising faculty member before registration.

FAS 431 Parent-Adolescent Relationships. (3)

fall

Dynamics of the relationships between parents and adolescents. Developmental characteristics of adolescence and the corresponding adult stage. Prerequisites: CDE 232; FAS 331.

General Studies: SB

FAS 432 Family Development. (3)

selected semesters

Normative changes in families over time from formation until dissolution. Emphasizes the marital subsystem in middle and later years. Prerequisites: both CDE 232 and FAS 331 or only instructor approval.

FAS 435 Advanced Marriage and Family Relationships. (3)

fall and spring

Recent research, issues, and trends relating to marriage and family interaction. Influence of family composition, physical environment, family patterns, and values on family dynamics. Prerequisites: FAS 331, 361.

General Studies: L/SB

FAS 440 Fundamentals of Marriage and Family Therapy. (3)

fall and spring

Introduces the fundamental orientations of marriage and family therapy.

FAS 484 Internship. (1–3)

fall and spring

FAS 498 Pro-Seminar. (1–7)

fall and spring

FAS 499 Individualized Instruction. (3)

fall, spring, summer

FAS 500 Research Methods. (4)

fall

Purposes of research. Experimental design, methods of data collection, and thesis proposal development. Includes practical application research laboratory. 3 hours lecture, 3 hours lab.

FAS 530 Introduction to Marriage and Family Therapy. (3)

fall

Introduces major marriage and family therapy orientations. Reviews history, theory, application, and outcome research for each orientation. Prerequisite: admission to graduate program in Family and Human Development with a concentration in family studies or instructor approval.

FAS 531 Family Theory Development. (3)

spring

Historical and current approaches to theory development, evaluation, and application in family studies. Prerequisite: FAS 435 or instructor approval.

FAS 536 Dysfunctional Marriage and Family Relationships. (3)

fall

Critical review of current theory and empirical evidence connecting marital and family interaction patterns with aberrant behavior. Prerequisite: PGS 466 or PSY 573 (or its equivalent) or instructor approval.

FAS 537 Interpersonal Relationships. (3)

fall

Critical examination of current theoretical and research developments in the area of interpersonal relationships. Emphasizes applications for research and intervention. Prerequisite: FAS 435 (or its equivalent) or instructor approval.

FAS 538 Advanced Techniques in Marriage and Family Therapy. (3)

spring

In-depth review of assumptions and advanced techniques associated with contemporary marriage and family therapy approaches. Prerequisite: a graduate-level course in marriage and family therapy or instructor approval.

FAS 539 Research Issues in Family Interaction. (3)

fall

Critical review of current and past research in the area of family dynamics. Emphasizes interactional processes within the family. Prerequisite: FAS 435 (or its equivalent) or instructor approval.

FAS 540 Assessment in Marriage and Family Therapy. (3)

spring

Assessment and outcome evaluation of couples and families involved in marital and family therapy. Lecture, lab. Prerequisites: FAS 500 (or its equivalent); PSY 530; instructor approval.

FAS 580 Marriage and Family Therapy Practicum. (1–12)

fall and spring

Supervised clinical experience in marriage and family therapy; includes development of assessment and outcome evaluation skills. Lecture, lab. Topics may include the following:

- First semester. (3)
- Second semester. (3)
- Third semester. (3)

Prerequisite: instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

FAMILY AND HUMAN DEVELOPMENT (FRD)

FRD 451 Field Experience. (1–12)

selected semesters

Supervised field placement in the area of student's concentration with a community business or agency. Students must make arrangements with instructor 1 semester in advance of enrollment. Prerequisites: completion of 60 hours; instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

HOME ECONOMICS EDUCATION (HEE)

HEE 461 Presentations in Home Economics. (3)

selected semesters

Presentation and demonstration techniques in teaching home economics. Development of audiovisual materials for home economics content areas. Prerequisites: junior standing; instructor approval.

HEE 480 Methods of Teaching Home Economics. (3–4)

selected semesters

Instruction, organization, presentation, and evaluation of subject matter in home economics. HEE students register for 4 semester hours. Dietetic students register for 3 semester hours.

HEE 481 Teaching Occupational Home Economics. (3)

selected semesters

Career orientation related to home economics, cooperative work-related instruction, programs, and youth club advisement associated

with secondary home economics programs. Possible field trips. Prerequisite: Family and Human Development major or minor.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

Department of Geography

geography.asu.edu

480/965-7533

SCOB 330

Breandán Ó hUallacháin, Chair

Professors: Arreola, Balling, Brazel, Burns, Cerveny, Dorn, Gober, Ó hUallacháin, Pasqualetti, Zehnder

Associate Professors: Fall, Kuby, McHugh

Assistant Professors: Edsall, Ellis, Li, Wentz

Lecturer: Shaeffer

Geography is a discipline that integrates the physical and human dimensions of the world in the study of places, people, and environments. The mission of the Department of Geography is the creation, dissemination, and application of geographic knowledge and scholarship in a liberal arts and sciences tradition.

Undergraduate students may choose to pursue a B.A. degree in Geography, B.S. degree in Geography, B.A.E. degree in Secondary Education, or minor in Geography. A grade of “C” or higher is necessary in all required Department of Geography courses. Both B.A. and B.S. degrees in Geography consist of a minimum of 45 semester hours. A minor consists of 18 semester hours.

GEOGRAPHY—B.A.

A student choosing a B.A. degree in Geography may be interested in a liberal arts and sciences focus on the breadth of the field. A B.A. degree may also focus on a geographic region. In either case, the student crafts an individualized program of study in consultation with an advisor.

The B.A. degree consists of courses in core geographic knowledge (10–11 semester hours), geographic skills (12 hours), a regional course (three hours), and electives (12 hours), for a minimum of 37 hours in geography. At least 18 hours in geography must be in upper-division courses. The remaining nine hours are made up of electives from geography courses or related fields of study, chosen in consultation with an advisor.

Core Geographic Knowledge

GCU 102 Introduction to Human Geography <i>SB</i>	3
GCU 121 World Geography <i>SB, G</i>	4
GPH 111 Introduction to Physical Geography <i>SO</i>	4
or GPH 411 Physical Geography (3)	
Total	10–11

Core Geographic Skills

GCU 495 Quantitative Methods in Geography <i>CS</i>	3
GCU 496 Geographic Research Methods <i>L</i>	3
GPH 371 Cartography <i>CS</i>	3
GPH 491 Geographic Field Methods.....	3
Total	12

Geographic Region

Choose one of the courses below, in consultation with an advisor.....	3
GCU 322 Geography of U.S. and Canada <i>SB, C</i> (3)	
GCU 323 Geography of Latin America <i>SB, G</i> (3)	
GCU 325 Geography of Europe <i>SB, G</i> (3)	
GCU 326 Geography of Asia <i>SB, G</i> (3)	
GCU 327 Geography of Africa <i>SB, G</i> (3)	
GCU 328 Geography of Middle East and North Africa <i>SB, G</i> (3)	
GCU 332 Geography of Australia and Oceania <i>SB, G</i> (3)	
GCU 344 Geography of Hispanic Americans <i>SB, C</i> (3)	
GCU 421 Geography of Arizona and Southwestern United States <i>SB, C</i> (3)	
GCU 423 Geography of South America <i>SB, G</i> (3)	
GCU 424 Geography of Mexico and Middle America <i>SB, G</i> (3)	
GCU 425 Geography of the Mexican American Borderland <i>L/SB, G</i> (3)	
GCU 426 Geography of Russia and Surroundings <i>SB, G</i> (3)	
GCU 433 Geography of Southeast Asia (3)	
GPH 433 Alpine and Arctic Environments <i>G</i> (3)	

A student can design, in consultation with an advisor, a general B.A. degree in Geography. In addition, there are three cooperative programs whereby a student receives a B.A. degree in Geography and an emphasis in Asian Studies, Southeast Asian Studies, or Latin American Studies.

Asian and Southeast Asian Emphasis. Students majoring in Geography may elect to pursue an Asian or Southeast Asian emphasis combining courses from the major with selected courses of wholly Asian or Southeast Asian content. The Asian program requires 30 semester hours of Asian content courses, selected from the list drawn up by the Center for Asian Studies. Also required is knowledge of an Asian language; this is deemed to be fulfilled by 20 semester hours or equivalent in Chinese, Indonesian, Japanese, Thai, or Vietnamese. The Southeast Asian Studies Certificate is awarded to Geography students who emphasize a regional studies specialization in Geography and one year of Indonesian, Thai, or Vietnamese. For more information, see [“Asian Studies,” page 336,](#) and [“Southeast Asian Studies,” page 339.](#)

Latin American Studies Emphasis. Students majoring in Geography may elect to pursue a Latin American studies concentration combining courses from the major with selected outside courses of wholly Latin American content. At least 30 upper-division semester hours of the program must be in Latin American content courses, including 15 hours in geography (or in courses approved by the

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SO** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See [“General Studies,” page 83.](#)

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Department of Geography advisor) and 15 in other disciplines. A reading knowledge of Spanish or Portuguese is required and a reading knowledge of the other language is suggested. The program must be approved by the Latin American Studies Center. See [“Latin American Studies,” page 338](#), for more information.

GEOGRAPHY—B.S.

The B.S. degree consists of classes in core geographic knowledge (10–11 semester hours), core geographic skills and core geographic techniques (15 hours), and electives (12 hours)—for a minimum of 37 hours in geography. At least 18 hours in geography must be in upper-division courses. The remaining nine hours are to be made up of electives from geography courses or related fields of study, chosen in consultation with an advisor.

Core Geographic Knowledge

GCU 102 Introduction to Human Geography <i>SB</i>	3
GCU 121 World Geography <i>SB, G</i>	4
GPH 111 Introduction to Physical Geography <i>SQ</i>	4
or GPH 411 Physical Geography (3)	
Total	10–11

Core Geographic Skills

GCU 495 Quantitative Methods in Geography <i>CS</i>	3
GCU 496 Geographic Research Methods <i>L</i>	3
GPH 371 Cartography <i>CS</i>	3
GPH 491 Geographic Field Methods.....	3
Total	12

Core Geographic Techniques

Choose one of the courses below, in consultation with an advisor.....	3
GPH 372 Air Photo Interpretation (3)	
GPH 373 Geographic Information Science I <i>CS</i> (3)	
GPH 471 Cartographic Design <i>CS</i> (3)	

Students seeking the B.S. degree take the required core of eight courses. The remaining four courses (12 hours) of geography electives and nine hours of geography or related fields of study vary among the options available for a B.S. degree in Geography. There are two specific departmental concentrations: meteorology-climatology and urban studies. In addition, a student can design, in consultation with an advisor, an individualized B.S. degree emphasizing other areas within the major.

Meteorology-Climatology Concentration. See an undergraduate advisor in the Department of Geography for the latest National Weather Service certification requirements. The required courses for the meteorology-climatology concentration include a minimum of 39 semester hours in geography plus eight hours of related mathematics:

Core Courses

GCU 102 Introduction to Human Geography <i>SB</i>	3
GCU 121 World Geography <i>SB, G</i> ¹	4
GCU 495 Quantitative Methods in Geography <i>CS</i>	3
GCU 496 Geographic Research Methods <i>L</i>	3
GPH 111 Introduction to Physical Geography <i>SQ</i>	4
or GPH 411 Physical Geography (3)	
GPH 371 Cartography <i>CS</i>	3

GPH 373 Geographic Information Science I <i>CS</i>	3
or another three-hour techniques course if GPH 373 is taken to meet a core requirement	
GPH 491 Geographic Field Methods.....	3
Total	25–26

Required Meteorology Courses

GPH 213 Introduction to Climatology.....	3
GPH 215 Introduction to Climatology Laboratory.....	1
GPH 409 Synoptic Meteorology I.....	4
GPH 410 Synoptic Meteorology II.....	4
GPH 412 Physical Climatology.....	3
or GPH 413 Meteorological Instruments and Measurement (3)	
or GPH 414 Climate Change <i>G</i> (3)	
Total	15

Mathematics and Physics-Related Courses

MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
PHY 121 University Physics I: Mechanics <i>SQ</i> ²	3
PHY 122 University Physics Laboratory I <i>SQ</i> ²	1
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ³	3
PHY 132 University Physics Laboratory II <i>SQ</i> ³	1
Total	20

¹ Three semester hours in transfer courses can also fulfill this requirement.

² Both PHY 121 and 122 must be taken to secure SQ credit.

³ Both PHY 131 and 132 must be taken to secure SQ credit.

Urban Studies Concentration. The required courses for the urban studies concentration are as follows:

Core Courses

GCU 102 Introduction to Human Geography <i>SB</i>	3
GCU 121 World Geography <i>SB, G</i> *.....	4
GCU 495 Quantitative Methods in Geography <i>CS</i>	3
GCU 496 Geographic Research Methods <i>L</i>	3
GPH 111 Introduction to Physical Geography <i>SQ</i>	4
or GPH 411 Physical Geography (3)	
GPH 371 Cartography <i>CS</i>	3
GPH 373 Geographic Information Science I <i>CS</i>	3
or another three-hour techniques course if GPH 373 is taken to meet a core requirement	
GPH 491 Geographic Field Methods.....	3
Total	25–26

Required Urban Geography

Choose one of the courses below.....	3
GCU 351 Population Geography <i>SB, G</i> (3)	
GCU 357 Social Geography <i>SB</i> (3)	
GCU 364 Energy in the Global Arena <i>SB, G</i> (3)	
GCU 441 Economic Geography <i>SB</i> (3)	
GCU 442 Geographical Analysis of Transportation <i>SB</i> (3)	
One upper-division or graduate-level GCU course chosen in consultation with an advisor (3)	
Choose two of the courses below.....	6
GCU 359 Cities of the World I <i>SB, G, H</i> (3)	
GCU 360 Cities of the World II <i>SB, G</i> (3)	
GCU 444 Geographic Studies in Urban Transportation <i>SB</i> (3)	

GCU 494 ST: Geography of Phoenix (3)	
GCU 361 Urban Geography <i>SB</i>	3
GCU 484 Human Geography Internship.....	3
or one upper-division elective course outside the department in a related field of study chosen in consultation with an advisor (3)	—
Urban geography total.....	15

* Three semester hours in transfer courses can also fulfill this requirement.

MINOR IN GEOGRAPHY

A minor in Geography is awarded to students who complete a minimum of 18 hours in geography. A letter grade of “C” or higher is required for all courses taken for the minor. The following lower-division courses are required:

GCU 102 Introduction to Human Geography <i>SB</i>	3
GPH 111 Introduction to Physical Geography <i>SQ</i>	4
or GPH 411 Physical Geography (3)	—
Total	6–7

The remaining courses are selected in conjunction with an advisor. At least one course should be a geographic skill, for example, map reading (GPH 271), cartography (GPH 371), air photo interpretation (GPH 372), geographic field methods (GPH 491), or a class in geographic information science (GPH 373). At least four courses should be upper-division classes in human, physical, or regional geography.

SECONDARY EDUCATION—B.A.E.

The Department of Geography, in conjunction with the College of Education, offers courses toward a Bachelor of Arts in Education degree. The B.A.E. degree consists of 45 semester hours, of which a minimum of 30 must be in geography and 15 in a related teaching field or fields. The following courses are required:

GCU 102 Introduction to Human Geography <i>SB</i>	3
GCU 121 World Geography <i>SB, G*</i>	4
GPH 111 Introduction to Physical Geography <i>SQ</i>	4
or GPH 411 Physical Geography (3)	—
Total	10–11

* Three semester hours in transfer courses can also fulfill this requirement.

In conjunction with an advisor, students choose remaining credits from three groups of human, physical, and regional courses.

CULTURAL GEOGRAPHY (GCU)

GCU 102 Introduction to Human Geography. (3)
fall and spring
Systematic study of human use of the earth. Spatial organization of economic, social, political, and perceptual environments.
General Studies: SB

GCU 121 World Geography. (4)
fall and spring
Description and analysis of areal variations in social, economic, and political phenomena in major world regions.
General Studies: SB, G

GCU 141 Introduction to Economic Geography. (3)
fall
Production, distribution, and consumption of various types of commodities of the world and relationships to the activities of humans.
General Studies: SB, G

GCU 200 Orientation to Geography. (1)
fall
Basic introduction to the Department of Geography faculty, undergraduate graduation requirements, and possible jobs and skills in geography. Cross-listed as GPH 200. Credit is allowed for only GCU 200 or GPH 200.

GCU 240 Introduction to Southeast Asia. (3)
fall
Interdisciplinary introduction to the cultures, religions, political systems, geography, and history of Southeast Asia. Cross-listed as ASB 240/HST 240/POS 240/REL 240. Credit is allowed for only ASB 240 or GCU 240 or HST 240 or POS 240 or REL 240.
General Studies: G

GCU 253 Introduction to Cultural and Historical Geography. (3)
selected semesters
Cultural patterns, including such phenomena as language, religion, and various aspects of material culture. Origins and diffusion and division of the world into cultural areas.
General Studies: SB, G

GCU 294 Special Topics. (4)
once a year
Topics include global awareness.

GCU 322 Geography of U.S. and Canada. (3)
fall
Spatial distribution of relevant physical, economic, and cultural phenomena in the United States and Canada.
General Studies: SB, C

GCU 323 Geography of Latin America. (3)
fall
Spatial distribution of relevant physical, economic, and cultural phenomena in South, Middle, and Caribbean America.
General Studies: SB, G

GCU 325 Geography of Europe. (3)
once a year
Broad and systematic overview of Europe, emphasizing physical, economic, and cultural phenomena.
General Studies: SB, G

GCU 326 Geography of Asia. (3)
fall
Spatial distribution of relevant physical, economic, and cultural phenomena in Asia, excluding the former Soviet Union.
General Studies: SB, G

GCU 327 Geography of Africa. (3)
selected semesters
Spatial distribution of relevant physical, economic, and cultural phenomena in Africa.
General Studies: SB, G

GCU 328 Geography of Middle East and North Africa. (3)
selected semesters
Spatial distribution of relevant physical, economic, and cultural phenomena in the Middle East and North Africa. Prerequisite: GCU 121 or instructor approval.
General Studies: SB, G

GCU 332 Geography of Australia and Oceania. (3)
once a year
Spatial distribution of relevant physical, economic, and cultural phenomena in Australia, New Zealand, and Pacific Islands.
General Studies: SB, G

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

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GCU 344 Geography of Hispanic Americans. (3)

spring

Examines the homelands, migrations, settlements, landscapes, roles, and selected cultural traditions of Hispanic Americans.

General Studies: SB, C

GCU 350 The Geography of World Crises. (3)

fall and spring

Contemporary world crises viewed from a perspective of geographic concepts and techniques.

General Studies: SB, G

GCU 351 Population Geography. (3)

fall

Demographic patterns; spatial, temporal, and structural investigation of the relationship of demographic variables to cultural, economic, and environmental factors.

General Studies: SB, G

GCU 352 Political Geography. (3)

selected semesters

Relationship between the sociophysical environment and the state.

General Studies: SB, G

GCU 357 Social Geography. (3)

once a year

Environmental perception of individuals and groups. Stresses the spatial aspect of social and physical environments.

General Studies: SB

GCU 359 Cities of the World I. (3)

fall

Historical evolution of urban patterns and structures in the Middle East, India, Southeast Asia, China, Japan, and Europe.

General Studies: SB, G, H

GCU 360 Cities of the World II. (3)

spring

Historical evolution of urban patterns and structures in Latin America, North America, Sub-Saharan Africa, and Australasia.

General Studies: SB, G

GCU 361 Urban Geography. (3)

fall and spring

External spatial relations of cities, internal city structure, and spatial aspects of urban problems in various parts of the world, particularly in the United States.

General Studies: SB

GCU 364 Energy in the Global Arena. (3)

spring

Production, transportation, and consumption of energy, emphasizing the electric power industry and its environmental problems.

General Studies: SB, G

GCU 394 Special Topics. (1–4)

fall and spring

GCU 414 Teaching Geography Standards. (3)

fall and summer

Introduction to Arizona Geography Standards for K–12 educators, emphasizing exciting curricula and illustrated with best practices by master teachers. Internet.

GCU 421 Geography of Arizona and Southwestern United States. (3)

fall and spring

Geography of the Southwest with an emphasis on Arizona. Divided into physical geography, history, people, and economy.

General Studies: SB, C

GCU 423 Geography of South America. (3)

selected semesters

Prerequisite: GCU 323 or instructor approval.

General Studies: SB, G

GCU 424 Geography of Mexico and Middle America. (3)

once a year

Central America and Mexico. Prerequisite: GCU 323 or instructor approval.

General Studies: SB, G

GCU 425 Geography of the Mexican American Borderland. (3)

spring

Geography of a binational and bicultural region. Examines settlement, boundary issues, ethnic subregions, population change, industrial development, and urban growth. Fee.

General Studies: L/SB, G

GCU 426 Geography of Russia and Surroundings. (3)

selected semesters

Examines the geography of Russia and other post-Soviet states. Prerequisite: GCU 121 or instructor approval.

General Studies: SB, G

GCU 433 Geography of Southeast Asia. (3)

spring

Examines the biophysical and social features of Southeast Asian nations and peoples. Prerequisite: GCU 326 or instructor approval.

GCU 441 Economic Geography. (3)

once a year

Spatial distribution of primary, secondary, and tertiary economic and production activities. Prerequisite: GCU 141 or instructor approval.

General Studies: SB

GCU 442 Geographical Analysis of Transportation. (3)

fall

Networks, modes, economics, and flows at the urban, national, and international scales. Prerequisite: GCU 141 or 441.

General Studies: SB

GCU 444 Geographic Studies in Urban Transportation. (3)

spring

Current urban transportation issues in metropolitan Phoenix. Lecture, team project. Prerequisite: GCU 361.

General Studies: SB

GCU 453 Recreational Geography. (3)

selected semesters

Examines problems surrounding the organization and use of space for recreation. Introduces geographic field survey methods of data collection and analysis. Possible Saturday field trips.

GCU 455 Historical Geography of U.S. and Canada. (3)

selected semesters

Geographical perspective on the evolution of the United States and Canada from pre-Columbian times to early 20th century.

General Studies: SB, H

GCU 474 Public Land Policy. (3)

selected semesters

Geographic aspects of federal public lands, policy, management, and issues. Emphasizes western wilderness and resource development problems.

General Studies: SB

GCU 484 Human Geography Internship. (3)

fall and spring

GCU 494 Special Topics. (1–4)

once a year

Topics may include the following:

- Geography of Phoenix. (3)

GCU 495 Quantitative Methods in Geography. (3)

fall and spring

Statistical techniques applied to the analysis of spatial distributions and relationships. Introduces models and theory in geography. Prerequisite: MAT 119.

General Studies: CS

GCU 496 Geographic Research Methods. (3)

fall and spring

Scientific techniques used in geographic research. Prerequisites: GCU 495; GPH 371, 491.

General Studies: L

GCU 515 Human Migration. (3)

fall

Economic, political, social, and geographic factors underlying population movements. Migration selectivity, streams and counter-streams, labor migration, and migration decision making. Lecture, seminar. Prerequisite: GCU 351 or instructor approval.

GCU 526 Spatial Land-Use Analysis. (3)*selected semesters*

Determination, classification, and analysis of spatial variations in land-use patterns. Examines the processes affecting land-use change. Prerequisite: 15 hours in geography or instructor approval.

GCU 529 Contemporary Geographic Thought. (3)*fall*

Comparative evaluation of current philosophy concerning the nature and trends of geography. Prerequisites: 15 hours in geography; instructor approval.

GCU 585 Advanced Research Methods in Geography. (3)*spring*

Specialized research techniques and methodologies in economic, political, or cultural geography.

GCU 591 Seminar. (1–3)*fall, spring, summer*

Selected topics in economic, political, or cultural geography. Possible field trips. Topics may include the following:

- Transportation Systems Pro-Seminar
- Urban Geographic Information Systems

GCU 596 History of Geographic Thought. (3)*selected semesters*

Historical development of geographic thought from pre-Greek days to the early 20th century.

GCU 598 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Geography of the Mexican American Borderland. (3)
Fee.

GCU 599 Thesis. (6)*fall and spring*

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

PHYSICAL GEOGRAPHY (GPH)**GPH 111 Introduction to Physical Geography. (4)***fall and spring*

Spatial and functional relationships among climates, landforms, soils, water, and plants. Credit is allowed for only GPH 111 or 411. 3 hours lecture, 3 hours lab, field trips. Fee.

*General Studies: SQ***GPH 200 Orientation to Geography. (1)***fall*

Basic introduction to the Department of Geography faculty, undergraduate graduation requirements, and possible jobs and skills in geography. Cross-listed as GCU 200. Credit is allowed for only GCU 200 or GPH 200.

GPH 210 Society and Environment. (3)*fall*

Examines the interaction between social processes, key environmental issues, and nature's role as a resource at global and regional scales.

*General Studies: G***GPH 211 Landform Processes. (3)***spring*

Geographic characteristics of landforms and earth-surface processes, emphasizing erosion, transportation, deposition, and implications for human management of the environment. Fee. Prerequisites: ENG 101 (or 105); GPH 111.

*General Studies: L***GPH 212 Introduction to Meteorology. (3)***fall*

Fundamentals of weather and climate, including basic atmospheric processes and elements. Students whose curricula require a laboratory course must also register for GPH 214. Prerequisite: GPH 111 or instructor approval.

*General Studies: SG (if credit also earned in GPH 214)***GPH 213 Introduction to Climatology. (3)***spring*

Fundamentals of meteorological/climatological analysis, including terminology and symbology. Recommended for meteorology/climatology program students. Prerequisite: instructor approval.

GPH 214 Introduction to Meteorology Laboratory. (1)*fall*

Introduces basic meteorological/climatological data and measurements. Suggested concurrent enrollment in GPH 212. 3 hours lab.

*General Studies: SG (if credit also earned in GPH 212)***GPH 215 Introduction to Climatology Laboratory. (1)***spring*

Fundamentals of meteorological/climatological map analysis and interpretation. Recommended for meteorology/climatology program students. May be taken concurrently with GPH 213. Prerequisite: instructor approval.

GPH 271 Maps and Map Reading. (3)*once a year*

Map types, uses, limitations, and evolution. Communication via paper and digital medium. Navigation, interpretation, projections, sources, symbols, classification, case, handling.

GPH 314 Global Change. (3)*fall*

Response of Earth's natural systems (atmosphere, hydrosphere, lithosphere, biosphere) to past environmental change, and effects of potential future changes.

*General Studies: HU, G***GPH 370 Geographic Information Technologies. (3)***fall and spring*

Introduces modern geographic information technologies, including cartography, GIS, remote sensing, global positioning systems, and statistical analyses. Lecture, lab.

*General Studies: CS***GPH 371 Cartography. (3)***fall and spring*

Philosophy and practical aspects of map production; employs communications, symbolism, data manipulation, presentation, decision making, generalization, linework, lettering, digital media. Prerequisite: GPH 111.

*General Studies: CS***GPH 372 Air Photo Interpretation. (3)***once a year*

Subset, remote sensing, includes: photography, films, aerial geometry, image components, stereoscopy, photogrammetry, ground truthing; interpret physical, cultural, economic, intelligence information. Prerequisite: GPH 211 or a course in Cultural Geography (GCU) or instructor approval.

GPH 373 Geographic Information Science I. (4)*once a year*

History and basic aspects of GIS including map and data file structure, conversions, and synthesis with a computerized environment. Prerequisite: GPH 370.

*General Studies: CS***GPH 381 Geography of Natural Resources. (3)***once a year*

Nature and distribution of natural resources and the problems and principles associated with their use.

*General Studies: G***GPH 394 Special Topics. (1–4)***fall and spring*

Topics may include the following:

- Geographic Information Science. (3)

GPH 401 Topics in Physical Geography. (1–3)*once a year*

Open to students qualified to pursue independent studies. Possible field trips. Prerequisite: instructor approval.

GPH 405 Energy and Environment. (3)*spring*

Sources, regulatory and technical controls, distribution, and consequences of the supply and human use of energy. Prerequisite: a course in physical or life sciences or instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

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GPH 409 Synoptic Meteorology I. (4)

fall

Diagnostic techniques and synoptic forecasting. Includes techniques of weather analysis, map interpretation, and satellite and radar analysis. Prerequisites: MAT 270; PHY 131, 132.

GPH 410 Synoptic Meteorology II. (4)

spring

Diagnostic techniques and synoptic forecasting. Includes techniques of weather analysis, map interpretation, and satellite and radar analysis. Prerequisite: GPH 409.

GPH 411 Physical Geography. (3)

once a year

Introduces physiography and the physical elements of the environment. Credit is allowed for only GPH 411 or 111. Field trips.

GPH 412 Physical Climatology. (3)

once a year

Physical processes in the earth-atmosphere system on regional and global scales; concepts and analysis of energy, momentum, and mass balances. Prerequisites: both GPH 212 and 213 or only instructor approval.

GPH 413 Meteorological Instruments and Measurement. (3)

once a year

Design and operation of ground-based and aerological weather measurement systems. Collection, reduction, storage, retrieval, and analysis of data. Field trips. Prerequisites: both GPH 212 and 213 or only instructor approval.

GPH 414 Climate Change. (3)

spring

Survey of three climate research areas: paleoclimatology, theories (e.g., greenhouse warming), numerical modeling. Prerequisite: GPH 212 or instructor approval.

General Studies: G

GPH 418 Landforms of the Western United States. (3)

once a year

Studies landforms and geomorphic processes in the western United States, including lecture, topographical maps, aerial photographs, satellite imagery, and field trips. Lecture, critical inquiry, laboratory, field work. Fee. Prerequisites: GPH 211 (or its equivalent); a General Studies L course.

General Studies: L

GPH 422 Plant Geography. (3)

selected semesters

Plant communities of the world and their interpretation, emphasizing North American plant associations. Cross-listed as PLB 422. Credit is allowed for only GPH 422 or PLB 422. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 or only GPH 111.

GPH 433 Alpine and Arctic Environments. (3)

selected semesters

Regional study of advantages and limitations of the natural environment upon present and future problems involving resource distribution, human activities, and regional and interregional adjustments. Field trips. Prerequisite: GPH 111 or instructor approval.

General Studies: G

GPH 471 Cartographic Design. (3)

fall

Advanced design using desktop mapping. Cartographic decision making, qualitative and quantitative symbol design, projections, color. Prerequisites: GPH 371 or instructor approval.

General Studies: CS

GPH 473 Geographic Information Science II. (3)

fall

GIS as a basis for microcomputer spatial analysis and synthesis. Includes digitizing, database organization, spatial retrieval, and graphics. Lecture, lab. Prerequisites: GPH 373 (or instructor approval); CSE 100.

General Studies: CS

GPH 474 Dynamic Meteorology I. (3)

fall

Large-scale atmospheric motion, kinematics, Newton's laws, wind equation, baroclinics, vorticity, and the midlatitude depression. Prerequisites: GPH 213, 215; MAT 271; PHY 131, 132.

GPH 475 Dynamic Meteorology II. (3)

spring

Topics in climate dynamics. General circulation, numerical modeling, teleconnection phenomena, and surface-atmosphere interaction. Prerequisite: GPH 474 or instructor approval.

GPH 481 Environmental Geography. (3)

once a year

Problems of environmental quality, including uses of spatial analysis, research design, and field work in urban and rural systems. Field trips. Prerequisite: instructor approval.

GPH 483 Geographic Information Analysis. (3)

fall

Basics of spatial data analysis. Topics include point pattern analysis, spatial autocorrelation, spatial regression, and kriging. Lecture, lab. Prerequisites: both one 200-level or above course in geography or biology or plant biology or geology or planning and one basic statistics course (GCU 495).

GPH 484 Physical Geography Internship. (3)

fall and spring

Assist in teaching sixth-grade students a simplified version of GPH 111 using hands-on activities.

GPH 491 Geographic Field Methods. (3)

spring and summer

Field techniques, including use of aerial photos, large-scale maps, and fractional code system of mapping; urban and rural field analysis to be done off campus. Fee. Prerequisites: GCU 102, 121; GPH 111.

GPH 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Geographic Information Analysis

GPH 511 Fluvial Processes. (3)

once a year

Geographical aspects of processes of river erosion, transportation, sedimentation: emphasizing spatial characteristics of forces, resistance, landforms, sediment; includes computer applications. Prerequisites: both GPH 111 (or GLG 101) and 211 (or GLG 362) or only instructor approval.

GPH 533 Snow and Ice. (3)

spring

Processes, distribution, climatic interactions of snow/ice emphasizing mass balance, snow stratigraphy/metamorphism and glacier/snow-pack climatology. Lecture, field work. Prerequisite: instructor approval.

GPH 573 Geographic Information Science III. (3)

spring

In-depth look at programming within GIS. Focuses on programming and methodology, utilizing specific software, and basic scientific computing. Lecture, lab. Prerequisite: GPH 473 or instructor approval.

GPH 575 Geographic Applications of Remote Sensing. (3)

selected semesters

Uses imaging and nonimaging methods of remote acquisition of data, including satellite sensors, airborne radar, multiband scanning, conventional photographic sensors, and ground-based equipment. Field trips. Prerequisites: GCU 585 (or GPH 491); GPH 372.

GPH 591 Seminar. (1–3)

fall and spring

Selected topics in physical geography. Possible field trips.

GPH 596 Advanced Spatial Statistics. (3)

spring

Multivariate and advanced statistical techniques including Box-Jenkins modeling and spectral analysis. Requires project papers and presentations. Seminar. Prerequisite: GCU 495 (or its equivalent).

GPH 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Intermediate Geographic Information Systems

GPH 599 Thesis. (6)

fall and spring

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Geological Sciences

geology.asu.edu

480/965-5081

PS F686

Simon Peacock, Chair

Regents' Professors: Buseck, Greeley, Moore

Professors: Burt, Christensen, Farmer, Fink, Holloway, Knauth, Larimer, Peacock, Reynolds, Shock, Stump, Tyburczy, Williams

Associate Professors: Arrowsmith, Leshin, O'Day, Sharp

Assistant Professors: Fouch, Garner, Tang

GEOLOGICAL SCIENCES—B.S.

The B.S. degree in Geological Sciences requires 39 semester hours including the following core courses or their equivalents:

GLG 101 Introduction to Geology I (Physical) <i>SQ</i> ¹ <i>G</i>	3
GLG 102 Introduction to Geology II (Historical) <i>SG</i> ² <i>H</i>	3
GLG 103 Introduction to Geology I—Laboratory <i>SQ</i> ¹	1
GLG 104 Introduction to Geology II—Laboratory <i>SG</i> ²	1
GLG 310 Structural Geology	3
GLG 321 Mineralogy	3
GLG 400 Geology Colloquium	1
GLG 424 Petrology	3
GLG 435 Sedimentology	3
GLG 451 Field Geology I	3
GLG 452 Field Geology II	3
Total	27

¹ Both GLG 101 and 103 must be taken to secure SQ credit.

² Both GLG 102 and 104 must be taken to secure SG credit.

In addition, two of the following four branch courses must be taken:

GLG 335 Paleontology	3
GLG 418 Geophysics	3
GLG 470 Hydrogeology	3
GLG 481 Geochemistry	3

To complete the total required hours, other upper-division courses in geological sciences (excluding GLG 300 and 304) or courses in related fields listed as approved by the department may be taken. See ["College Degree Requirements," page 330](#).

Supporting courses required in related fields include:

CHM 113 General Chemistry <i>SQ</i>	4
CHM 116 General Chemistry <i>SQ</i>	4
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4

MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
or MAT 274 Elementary Differential Equations <i>MA</i> (3)	
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹	3
PHY 122 University Physics Laboratory I <i>SQ</i> ¹	1
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ²	3
PHY 132 University Physics Laboratory II <i>SQ</i> ²	1
Total	28

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

MAT 290 Calculus I and MAT 291 Calculus II may be substituted for MAT 270, 271, and 272.

MINOR IN GEOLOGICAL SCIENCES

A minor in Geological Sciences is awarded to students who complete a minimum of 21 hours of geological science courses. Required courses are as follows:

GLG 101 Introduction to Geology I (Physical) <i>SQ</i> ¹ <i>G</i>	3
GLG 102 Introduction to Geology II (Historical) <i>SG</i> ² <i>H</i>	3
GLG 103 Introduction to Geology I—Laboratory <i>SQ</i> ¹	1
GLG 104 Introduction to Geology II—Laboratory <i>SG</i> ²	1
GLG 310 Structural Geology	3
GLG 321 Mineralogy	3
GLG 400 Geology Colloquium	1
Total	15

¹ Both GLG 101 and 103 must be taken to secure SQ credit.

² Both GLG 102 and 104 must be taken to secure SG credit.

The remaining six semester hours may be chosen among other upper-division geological sciences courses, except GLG 300 and 400, after consultation with a departmental advisor.

GRADUATE PROGRAMS

The faculty in the Department of Geological Sciences offer programs leading to the degrees of Master of Natural Science, M.S., and Ph.D. See the *Graduate Catalog* for requirements.

GEOLOGICAL SCIENCES (GLG)

GLG 101 Introduction to Geology I (Physical). (3)

fall, spring, summer

Basic principles of geology, geochemistry, and geophysics. Rocks, minerals, weathering, earthquakes, mountain building, volcanoes, water, and glaciers. Possible weekend field trips.

General Studies: *SQ* (if credit also earned in GLG 103), *G*

GLG 102 Introduction to Geology II (Historical). (3)

spring

Basic principles of applied geology and the use of these principles in the interpretation of geologic history. Possible weekend field trips. Fee. Prerequisite: GLG 101.

General Studies: *SG* (if credit also earned in GLG 104), *H*

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

COLLEGE OF LIBERAL ARTS AND SCIENCES

GLG 103 Introduction to Geology I—Laboratory. (1)

fall, spring, summer

3 hours lab, some field trips. Fee. Corequisite: GLG 101.

General Studies: SQ (if credit also earned in GLG 101)

GLG 104 Introduction to Geology II—Laboratory. (1)

spring

Laboratory techniques involving map interpretation, cross sections, and fossils. 3 hours lab, possible field trips. Prerequisite: GLG 103 (or its equivalent). Corequisite: GLG 102.

General Studies: SG (if credit also earned in GLG 102)

GLG 105 Introduction to Planetary Science. (4)

spring

Solar system objects and their geologic evolution, surfaces, interiors, and atmospheres; weekly laboratory for data analysis and experiments. Lecture, lab, weekend field trip.

General Studies: SG

GLG 110 Geologic Disasters and the Environment. (3)

fall

Geological studies as they apply to interactions between humans and earth. Includes geological processes and hazards, resources, and global change.

General Studies: SG (if credit also earned in GLG 111), G

GLG 111 Geologic Disasters Laboratory. (1)

fall

Basic geological processes and concepts. Emphasizes geology-related environmental problems. Case histories, field studies, lab. Corequisite: GLG 110.

General Studies: SG (if credit also earned in GLG 110)

GLG 294 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Geology of the Planets
- Fee.

GLG 300 Geology of Arizona. (3)

once a year

Basic and historical geology, fossils, mining, energy resources, environmental problems, landscape development, and meteorites, cast in examples from Arizona. Majors who have taken GLG 101 for credit may not enroll.

GLG 304 Geology of the Grand Canyon. (2)

selected semesters

Reviews the discovery, history, origin, and geology of the Grand Canyon of the Colorado River in Arizona. Requires 6-day field trip down the river (first 6 days after commencement in May) at student's expense. Requires field research and term paper on trip.

GLG 310 Structural Geology. (3)

spring

Geologic structures and the mechanical processes involved in their formation. 2 hours lecture, 3 hours lab. Possible field trips. Fee. Prerequisites: GLG 101; MAT 270 (or 290).

GLG 321 Mineralogy. (3)

fall

Crystal chemistry, crystallography, mineral identification, origin and occurrence of minerals, systematic mineralogy. 2 hours lecture, 3 hours lab, possible field trips. Prerequisites: CHM 113; MAT 270 (or 290). Pre- or corequisite: CHM 116.

GLG 335 Paleontology. (3)

fall

Introduces concepts and analytical techniques in biogeology, paleobiology, paleoecology, and paleoenvironmental reconstruction from the fossil record. 2 hours lecture, 3 hours lab. Fee. Prerequisites: both GLG 102 and MAT 270 (or 290) or only instructor approval.

GLG 362 Geomorphology. (3)

selected semesters

Land forms and processes which create and modify them. Laboratory and field study of physiographic features. 2 hours lecture, 3 hours lab, possible weekend field trips. Prerequisite: GLG 101. Pre- or corequisite: GLG 310.

GLG 400 Geology Colloquium. (1)

fall and spring

Presentation of recent research by faculty and guests. Requires written assignments. 1 semester hour required for Geological Sciences

majors; may be repeated for a total of 2 semester hours. Prerequisite: 2 courses in the department or instructor approval.

GLG 405 Geology of the Moon. (3)

selected semesters

Current theories of the origin and evolution of the moon through photogeological analyses and consideration of geochemical and geophysical constraints. Possible field trips to examine Arizona geology. Fee. Prerequisite: GLG 105 or instructor approval.

GLG 406 Geology of Mars. (3)

selected semesters

Geological evolution of Mars through analyses of spacecraft data, theoretical modeling, and study of terrestrial analogs; emphasizes current work. Possible field trips to examine Arizona geology. Fee. Prerequisite: GLG 105 or instructor approval.

GLG 410 Computers in Geology. (3)

fall

Geological computer skills including data processing, visualization, presentation, numerical analysis, software and hardware applications. 2 hours lecture, 3 hours lab. Prerequisites: both GLG 101 and an upper-division course in geology or only instructor approval.

General Studies: CS

GLG 412 Geotectonics. (3)

selected semesters

Earthquakes, earth's interior, formation of oceanic and continental crust, and plate tectonics. Emphasizes current work. Prerequisite: GLG 310.

GLG 416 Field Geophysics. (3)

spring

Methods of applied geophysical exploration; seismic refraction, gravity, electrical resistivity, geomagnetics. Includes survey planning, data acquisition, processing, analysis, and interpretation. Lecture, field exercises. Prerequisite: a course in geology or instructor approval.

GLG 418 Geophysics. (3)

fall

Solid earth geophysics; geomagnetism, gravity, seismology, heat flow. Emphasizes crust and upper mantle. Prerequisites: a combination of GLG 310 and MAT 272 and PHY 131 or only instructor approval.

GLG 419 Geodynamics. (3)

selected semesters

Emphasizes application of continuum principles to geological problems, including lithospheric stresses, heat transfer, fluid mechanics, and rock rheology. Prerequisite: PHY 131.

GLG 420 Volcanology. (3)

once a year

Distribution of past and present volcanism, types of volcanic activity, mechanism of eruption, form and structure of volcanoes, and geochemistry of volcanic activity. Possible weekend field trips. Fee. Prerequisite: GLG 424.

GLG 424 Petrology. (3)

fall

Origin of igneous and metamorphic rocks. Optical mineralogy, hand specimen identification, and thin-section analysis. 2 hours lecture, 3 hours lab, possible weekend field trips. Fee. Prerequisite: GLG 321.

GLG 435 Sedimentology. (3)

spring

Origin, transport, deposition, and diagenesis of sediments and sedimentary rocks. Physical analysis, hand specimen examination, and interpretation of rocks and sediments. 2 hours lecture, 3 hours lab, possible weekend field trips. Fee. Prerequisites: GLG 102, 321.

GLG 441 Ore Deposits. (3)

selected semesters

Origin, occurrence, structure, and mineralogy of ore deposits. Possible weekend field trips. Fee. Prerequisite: GLG 424 or instructor approval.

GLG 451 Field Geology I. (3)

spring

Geological mapping techniques using topographic maps and aerial photos. Intensive field-based instruction. Lab. Prerequisites: GLG 310, 321.

General Studies: L

GLG 452 Field Geology II. (3)

summer

Continuation of GLG 451. Lab. Prerequisite: GLG 451.

General Studies: L

GLG 455 Advanced Field Geology. (3–4)

once a year

Geologic mapping in igneous, sedimentary, and metamorphic terrains of the Basin and Range province of Arizona. May be repeated for credit. Weekend field trips. Fee. Prerequisite: instructor approval.

GLG 456 Cordilleran Regional Geology. (3)

selected semesters

Systematic coverage through space and time of the geological development of western North America, emphasizing the western United States. Fee. Prerequisite: senior major or graduate student in Geological Sciences or instructor approval.

GLG 461 Geomicrobiology. (3)

spring

Past and present interactions among microbial life, geological materials, and biogeochemical cycles involving carbon, sulfur, phosphate, nitrogen, and minerals. Cross-listed as MIC 461. Credit is allowed for only GLG 461 or MIC 461. Prerequisites: introductory courses in chemistry and microbiology (or geological sciences); instructor approval.

GLG 470 Hydrogeology. (3)

spring

Geology of groundwater occurrence, aquifer and well hydraulics, water chemistry and quality, contaminant transport, remediation. Emphasizes quantitative methods. Prerequisites: GLG 101 (or 103); MAT 270; PHY 121.

GLG 481 Geochemistry. (3)

spring

Origin and distribution of the chemical elements. Geochemical cycles operating in the earth's atmosphere, hydrosphere, and lithosphere. Cross-listed as CHM 481. Credit is allowed for only CHM 481 or GLG 481. Prerequisite: CHM 341 (or 346) or GLG 321.

GLG 484 Geology Internship. (3)

fall and spring

Assist in teaching fifth-grade students a simplified version of GLG 103 using hands-on activities.

GLG 485 Meteorites and Cosmochemistry. (3)

selected semesters

Chemistry of meteorites and their relationship to the origin of the earth, solar system, and universe. Cross-listed as CHM 485. Credit is allowed for only CHM 485 or GLG 485.

GLG 490 Topics in Geology. (1–3)

fall, spring, summer

Special topics in a range of fields in geology. May be repeated for credit. Fee. Prerequisite: instructor approval.

GLG 495 Undergraduate Thesis. (3)

fall, spring, summer

Guided research culminating in the completion and presentation of an undergraduate thesis based on supervised research. Independent study. Prerequisite: GLG 499 (3 hours); formal conference with instructor; instructor and department chair approval.

GLG 499 Individualized Instruction. (1–3)

selected semesters

GLG 500 Geology Colloquium. (1)

fall and spring

Presentation of recent research by faculty and invited guests. 1 semester required for all Geological Sciences graduate students. May be repeated for a total of 2 semester hours. Requires research paper. Prerequisite: instructor approval.

GLG 501 Geology of Arizona. (3)

once a year

Basic and historical geology, fossils, mining, energy resources, environmental problems, landscape development, and meteorites, cast in examples from Arizona. Requires research paper.

GLG 504 Geology of the Grand Canyon. (2)

selected semesters

Reviews the discovery, history, origin, and geology of the Grand Canyon of the Colorado River in Arizona. Requires 6-day field trip down the river (first 6 days after commencement in May) at student's expense. Requires field research and term paper on trip.

GLG 510 Advanced Structural Geology. (3)

selected semesters

Mechanics of rock deformation, emphasizing relationship between field observation, theory, and experiment. Stress, strain, simple constitutive relationships, failure criteria, and the basis of continuum methods. Possible field trips. Fee. Prerequisites: both GLG 310 and 424 or only instructor approval.

GLG 520 Advanced Physical Volcanology. (2–3)

selected semesters

Selected volcanologic topics, including explosive eruption processes, lava flow mechanics, and intrusive mechanisms. Possible field trips. Fee. Prerequisite: GLG 420 or instructor approval.

GLG 524 Advanced Igneous Petrology. (3)

selected semesters

Theoretical and practical aspects of the genesis of igneous rocks. Study of selected sites. Modern laboratory techniques. 2 hours lecture, 3 hours lab, possible weekend field trips. Fee. Prerequisite: GLG 424.

GLG 581 Isotope Geochemistry. (3)

selected semesters

Geochemistry and cosmochemistry of stable and radioactive isotopes; geochronology; isotope equilibria. Prerequisite: instructor approval.

GLG 582 Physical Geochemistry. (3)

selected semesters

Applies thermodynamic and kinetic principles to geochemical processes. Prerequisite: CHM 341 (or 346) or GLG 321.

GLG 591 Seminar. (1–3)

fall, spring, summer

Topics in a range of fields in geology. May be repeated for credit. Fee. Prerequisite: instructor approval.

GLG 592 Research. (1–12)

fall, spring, summer

GLG 598 Special Topics. (1–4)

fall, spring, summer

Special topics in geological sciences. May be repeated for credit. Topics may include the following:

- Advanced Field Geology. (1–3)
Fee.
- Clastic Sedimentology and Petrology. (1–3)
Fee.
- Cordilleran Regional Geology. (1–3)
Fee.
- Fundamental Planetary Geology. (1–3)
- Geology of Mars. (1–3)
Fee.
- Methods in Geoscience Teaching. (1–3)
- Ore Deposits. (1–3)
Fee.
- Orogenic Systems. (1–3)
- Petrology-Petrography. (1–3)
Fee.
- Principles of Stratigraphy. (1–3)
Fee.
- Remote Sensing. (1–3)
- Sedimentology. (1–3)
Fee.
- Volcanology. (1–3)
Fee.

Prerequisite: instructor approval.

GLG 599 Thesis. (1–12)

fall, spring, summer

GLG 792 Research. (1–12)

fall, spring, summer

GLG 799 Dissertation. (1–15)

fall, spring, summer

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

Department of History

www.asu.edu/clas/history

480/965-5778

SS 204

Noel J. Stowe, Chair

CORE FACULTY

Regents' Professor: Iverson;

Professors: Adelson, Batalden, Burg, Davis, Fuchs, Gratton, Green, Kleinfeld, Lavrin, MacKinnon, Rosales, Simpson, Stowe, Tambs, Tillman, Trennert, Warnicke;

Associate Professors: Barnes, Carroll, El Hamel, Gray, Gullett, Kahn, Longley, Powers, Rush, Samuelson, Smith, Soergel, Stoner, Thornton, VanderMeer, Warren-Findley;

Assistant Professors: Kaplan, Koopmans, Manchester, Thompson, Whitaker, Wilson;

Senior Instructional Professional: Luey

AFFILIATED FACULTY

Chicana And Chicano Studies

Associate Professor: Escobar

Biology

Professor: Pyne

Women's Studies

Professor: Rothschild

HISTORY—B.A.

The B.A. degree in History consists of 30 semester hours in history and 15 hours in closely related fields, as approved by an undergraduate advisor in consultation with the student. At least 18 hours in history courses and nine hours in related fields must be in upper-division course work, with at least 12 of the upper-division HST hours taken in residence at ASU Main. HST 300 Historical Inquiry and HST 498 History Pro-Seminar are required for all degree candidates. (Honors students may substitute HST 493 Honors Thesis for HST 498.)

Students are required to complete course work in two different areas of concentration. One concentration must be defined geographically: Asia, Europe, Latin America, or the United States. The second concentration may be thematic or geographic. Students completing a thematic concentration must complete two courses outside the field of their geographic concentration. At least two history courses in either concentration must include topics outside the United States and Europe. Students must complete at least one course in the HST 302–306 “Studies in History” sequence.

The major includes the following:

1. one concentration of 18 hours (12 hours HST and six hours related field);

2. one concentration of 15 hours (12 hours HST and three hours related field);
3. HST 300, three hours (may be within a concentration);
4. HST 498, three hours (may be within a concentration);
5. elective related field courses, six hours;
6. two HST courses with content outside Europe and the United States (may be within a concentration);
7. two HST courses in thematic concentration outside the geographic concentration; and
8. at least one course in the HST 302–306 “Studies in History” sequence as part of one concentration.

A minimum GPA of 2.25 in the 30 hours of history course work is required.

Asian Studies Certificate. Students majoring in History may elect to pursue an Asian Studies Certificate combining courses from the major with selected outside courses of wholly Asian content. See [“Asian Studies,” page 336](#), for more information.

Jewish Studies Certificate. Students majoring in History may elect to pursue the Jewish Studies Certificate combining courses from the major with selected outside courses of wholly Jewish content. See [“Jewish Studies,” page 338](#), for more information.

Latin American Studies Certificate. Students majoring in History may elect to pursue a Latin American Studies Certificate combining courses from the major with selected outside courses of wholly Latin American content. See [“Latin American Studies,” page 338](#), for more information.

Medieval and Renaissance Studies Certificate. Students majoring in History may elect to pursue the Medieval and Renaissance Studies Certificate by successfully completing the requirements. See [“Medieval and Renaissance Studies,” page 338](#), for more information.

Russian and East European Studies Certificate. Students majoring in History may elect to pursue the Russian and East European Studies Certificate combining courses from the major with selected outside courses of wholly Russian and East European content. See [“Russian and East European Studies,” page 338](#), for more information.

Southeast Asian Studies Certificate. Students majoring in History may elect to pursue the Southeast Asian Studies Certificate combining courses from the major with selected outside courses of wholly Southeast Asian content. See [“Southeast Asian Studies,” page 339](#), for more information.

Women's Studies Certificate. Students majoring in History may elect to pursue a Women's Studies Certificate by successfully completing the requirements. See [“Women's Studies,” page 339](#), for more information.

MINOR IN HISTORY

The History minor consists of 18 semester hours of course work, at least 12 hours of which are in upper-division course work. Students earning a minor in history must com-

plete one 12 hour HST concentration (geographic or thematic), HST 300, and 498. The Department of History requires a grade of at least “C” in all courses in the minor. A minimum of six upper-division hours in the minor must be taken in residence at ASU Main.

SECONDARY EDUCATION—B.A.E.

History. The major teaching field consists of 42 semester hours, of which at least 30 must be in history courses. At least 18 must be in upper-division courses. At least 15 must be in U.S. history. The remaining history and related-area courses must be selected in consultation with an advisor from the Department of History. All degree candidates must complete the following four-course methods block:

HST 300	Historical Inquiry <i>L/SB, H</i>	3
HST 480	Methods of Teaching History: Classroom Resources	3
HST 481	Methods of Teaching History: Community Resources	3
HST 498	PS: History Pro-Seminar <i>L</i>	3

Students should complete HST 300 before enrolling in HST 480, 481, and 498. A minimum GPA of 2.50 in history courses is required for admission to student teaching and for graduation. HST 480 and 481 may not be counted as part of the 42-hour requirement for the academic specialization.

GRADUATE PROGRAMS

The faculty in the Department of History offer programs leading to the M.A. and Ph.D. degrees. A Scholarly Publishing Certificate is also available. See the *Graduate Catalog* for requirements.

HISTORY (HST)

- HST 101 Global History Since 1500. (3)**
fall and spring
Survey of Africa, the Americas, and Eurasia; changes in communication, communities, demography, economics, environment, politics, religion, technology, warfare, and women. Lecture, CD-ROM, electronic forum, discussion.
General Studies: G, H
- HST 102 Western Civilization. (3)**
fall and spring
Origins and development of Western societies and institutions from the ancient world through the Middle Ages.
General Studies: SB, H
- HST 103 Western Civilization. (3)**
fall and spring
Origins and development of Western societies and institutions from Black Death through the Renaissance and Reformation to the Enlightenment.
General Studies: SB, H
- HST 104 Western Civilization. (3)**
fall and spring
Origins and development of Western societies and institutions from the French Revolution to the present.
General Studies: SB, G, H
- HST 105 Slavic Civilization. (3)**
fall, spring, summer
Development of Slavic cultures and societies from medieval Byzantium to the present; introduction to modern Eurasia. Lecture, discussion, electronic forum.
General Studies: SB, H

- HST 106 Asian Civilizations. (3)**
once a year
Civilizations of China, Japan, and India from antiquity to the 17th century.
General Studies: SB, G, H
- HST 107 Asian Civilizations. (3)**
once a year
Civilizations of China, Japan, India, and Southeast Asia from the 17th century to the present.
General Studies: SB, G, H
- HST 108 Introduction to Japan. (3)**
fall
Historical survey of the people, culture, politics, and economy of Japan, supplemented by audiovisual presentations. Intended for non-majors.
General Studies: SB, G, H
- HST 109 The United States to 1865. (3)**
fall and spring
Growth of the Republic from the colonial period through the Civil War.
General Studies: SB, H
- HST 110 The United States Since 1865. (3)**
fall and spring
Growth of the Republic from the Civil War to the present.
General Studies: SB, H
- HST 200 Historical Themes. (3)**
once a year
General introduction to selected themes in history. May be repeated for credit when topics vary.
General Studies: SB, H
- HST 201 Historical Themes in Asia. (3)**
once a year
General introduction to selected themes in Asian history. May be repeated for credit when topics vary.
General Studies: SB, H
- HST 202 Historical Themes in Europe. (3)**
once a year
General introduction to selected themes in European history. May be repeated for credit when topics vary.
General Studies: SB, H
- HST 203 Historical Themes in Latin America. (3)**
once a year
General introduction to selected themes in Latin American history. May be repeated for credit when topics vary.
General Studies: SB, H
- HST 204 Historical Themes in the United States. (3)**
once a year
General introduction to selected themes in United States history. May be repeated for credit when topics vary.
General Studies: SB, H
- HST 210 American Social History. (3)**
once a year
American society from the colonial period to the present. Ethnicity, race, age, and sex as factors in historical experience. Prerequisite: ENG 101 or 105.
General Studies: L/SB, H
- HST 211 American Jewish History. (3)**
selected semesters
Chronological analysis of Jews and Judaism in American history and letters.
General Studies: SB, H
- HST 212 American Military History. (3)**
selected semesters
Study of the role of the military in American life during war and peace from colonial times to the present day. 3 hours lecture, conference.
General Studies: SB, H

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

HST 240 Introduction to Southeast Asia. (3)

fall

Interdisciplinary introduction to the cultures, religions, political systems, geography, and history of Southeast Asia. Cross-listed as ASB 240/GCU 240/POS 240/REL 240. Credit is allowed for only ASB 240 or GCU 240 or HST 240 or POS 240 or REL 240.

General Studies: G

HST 294 ST: Selected Topics in History. (3)

selected semesters

Full description of topics for any semester is available in the Department of History office. May be repeated for credit.

HST 300 Historical Inquiry. (3)

fall and spring

Historical methods and critical inquiry related to particular events and processes. Topics vary. Required course for majors. Prerequisite for HST 498. Discussion, seminar, lecture. Prerequisites: ENG 102; History major.

General Studies: L/SB, H

HST 302 Studies in History. (3)

once a year

Specialized topics in history. Explores countries, cultures, and issues in history, and their interpretation in historical scholarship.

General Studies: SB, H

HST 303 Studies in Asian History. (3)

once a year

Specialized topics in Asian history. Explores countries, cultures, and issues in history, and their interpretation in historical scholarship.

General Studies: SB, H

HST 304 Studies in European History. (3)

once a year

Specialized topics in European history. Explores countries, cultures, and issues in history, and their interpretation in historical scholarship.

General Studies: SB, H

HST 305 Studies in Latin American History. (3)

once a year

Specialized topics in Latin American history. Explores countries, cultures, and issues in history, and their interpretation in historical scholarship.

General Studies: SB, H

HST 306 Studies in United States History. (3)

once a year

Specialized topics in United States history. Explores regions, cultures, and issues in history, and their interpretation in historical scholarship.

General Studies: SB, H

HST 309 Exploration and Empire. (3)

once a year

Survey of European discovery, exploration, and imperialism in the early modern and modern periods.

General Studies: L, H

HST 310 Film as History. (3)

once a year

Survey of moving image media as recorder, object, and writer of history.

General Studies: HU

HST 313 American Cultural History to 1865. (3)

fall and spring

Culture, including ideas, ideals, the arts, and social and economic standards, from the nation's colonial and early national periods.

General Studies: SB, H

HST 314 American Cultural History Since 1865. (3)

fall and spring

Culture, including ideas, ideals, the arts, and social and economic standards, from the age of industrialism to modern U.S.

General Studies: SB, H

HST 315 Political History of the United States. (3)

once a year

American political history since independence, focusing post-1865. Evaluates major trends in issues, presidential leadership, elections, and state politics. Lecture, discussion.

General Studies: SB, H

HST 316 20th-Century U.S. Foreign Relations. (3)

once a year

U.S. relations with foreign powers from the late 19th century to the present.

General Studies: SB, G, H

HST 318 United States Labor History. (3)

selected semesters

American workers, from the colonial period to the present, including farmers, slaves, housewives, the skilled and unskilled, unionized and nonunionized.

General Studies: SB, H

HST 319 U.S. Urban History to 1850. (3)

once a year

History of the city in American life from the colonial period to the mid-19th century.

General Studies: SB, H

HST 320 U.S. Urban History Since 1850. (3)

once a year

History of the city in American life from the mid-19th century to the present.

General Studies: SB, H

HST 321 Constitutional History of the United States to 1865. (3)

fall

Origin and development of the American constitutional system from colonial period through the Civil War.

General Studies: SB, H

HST 322 Constitutional History of the United States Since 1865. (3)

spring

Development of the U.S. constitutional system from Reconstruction to the present.

General Studies: SB, H

HST 325 Immigration and Ethnicity in the United States. (3)

fall and spring

Origins, historical development, and future of a multiethnic society, 1492 to 2050. Prerequisite: HST 109 or 110.

General Studies: SB, C, H

HST 327 Women in U.S. History, 1600–1880. (3)

fall and spring

Examines American women of diverse racial, religious, and ethnic groups and classes; focuses on changing definitions of women's roles.

General Studies: SB, C, H

HST 328 Women in U.S. History, 1880–1980. (3)

fall and spring

Examines American women of diverse racial, religious, and ethnic groups and classes; focuses on changing definitions of women's roles.

General Studies: SB, C, H

HST 329 Women in 20th-Century U.S. West. (3)

once a year

Examines how women of various cultures have contended for and shaped the U.S. West, including the West of imagination. Lecture, discussion.

General Studies: C, H

HST 330 Mexican Women in the United States: Conquests and Migrations. (3)

once a year

Overview of Chicana history from Mesoamerican origins to the present, focusing on Mexican women in the western U.S. Lecture, discussion.

General Studies: L/SB, C, H

HST 331 Mexican American History to 1900. (3)

once a year

Mexican American history from pre-Hispanic origins to frontier journeys north through 19th-century life in the U.S. Southwest.

General Studies: SB, H

HST 332 Mexican American History Since 1900. (3)

once a year

Traces the formation of Mexican American communities across the rural and urban U.S. and examines 20th-century immigration from Mexico.

General Studies: SB, C, H

HST 333 African American History to 1865. (3)

once a year

The African American in American history, thought, and culture from slavery to 1865. Cross-listed as AFS 363. Credit is allowed for only AFS 363 or HST 333.

General Studies: SB, C, H

HST 334 African American History Since 1865. (3)

once a year

The African American in American history, thought, and culture from 1865 to the present. Cross-listed as AFS 364. Credit is allowed for only AFS 364 or HST 334.

General Studies: SB, C, H

HST 337 American Indian History to 1900. (3)

fall and spring

Cultural, economic, political, and social continuity and change of American Indian communities to 1900.

General Studies: SB, C, H

HST 338 American Indian History Since 1900. (3)

fall and spring

Cultural, economic, political, and social continuity and change of American Indian communities from 1900 to the present.

General Studies: SB, C, H

HST 341 The U.S. West in the 19th Century. (3)

once a year

Social, political, and economic development of the trans-Mississippi West, beginning with the Louisiana Purchase and ending in 1900.

General Studies: SB, H

HST 342 The U.S. West in the 20th Century. (3)

fall and spring

Role of the western states in U.S. history since 1890 emphasizing politics, the environment, industry and labor, and ethnic minorities.

General Studies: SB, H

HST 343 The American Southwest. (3)

once a year

Development of the region from 1848 to the present.

General Studies: L/SB, H

HST 344 Arizona. (3)

fall and spring

Emergence of the state from early times to the present.

General Studies: SB, H

HST 347 Ancient Greece. (3)

fall

History and civilization of the Greek world from 650 B.C.E. to the death of Alexander the Great.

General Studies: SB, H

HST 348 Rome. (3)

spring

History and civilization of Rome from the beginning of the Republic to the end of the Empire.

General Studies: SB, H

HST 349 The Early Middle Ages. (3)

fall

Political, socioeconomic, and cultural developments of Western Europe from the 5th through 10th centuries.

General Studies: SB, H

HST 350 The Later Middle Ages. (3)

spring

Political, socioeconomic, and cultural developments of Western Europe from the 11th through 15th centuries.

General Studies: SB, H

HST 351 Renaissance Europe. (3)

fall

Culture of the Renaissance in Italy and Northern Europe from the 14th to the early 16th centuries.

General Studies: L/SB, H

HST 352 Europe's Reformations. (3)

spring

Causes and implications of the major Protestant, Catholic, and Radical religious reformations in 16th- and 17th-century Europe.

General Studies: L/SB, H

HST 353 The Old Regime in Europe. (3)

fall

Society and culture of Europe during the 17th and 18th centuries.

General Studies: SB, H

HST 354 Revolutionary Europe. (3)

spring

Political, social, economic, and intellectual currents in Europe from the French through the Russian Revolutions.

General Studies: SB, H

HST 355 Total War and the Crisis of Modernity. (3)

fall

Forces of change and instability in early 20th-century Europe.

General Studies: SB, G, H

HST 356 Europe Since 1945. (3)

selected semesters

Europe in its world setting since World War II, emphasizing major political and social issues from 1945 to the present.

General Studies: SB, G, H

HST 358 Jewish History from the Bible to 1492. (3)

fall

Continuity and change in political, legal, economic, and sociocultural history of the Jews from biblical through medieval times. Lecture, discussion.

General Studies: SB, H

HST 359 Jewish History from 1492 to 1948. (3)

spring

Jewish history from early modern through modern times, highlighting emancipation, enlightenment, and Jewish responses to modernity. Lecture, discussion.

General Studies: SB, G, H

HST 361 Witchcraft and Heresy in Europe. (3)

selected semesters

Background, origins, and development of the Inquisition; persecution of women and marginal groups. Cross-listed as REL 374. Credit is allowed for only HST 361 or REL 374. Prerequisite: upper-division standing or instructor approval.

General Studies: L, H

HST 362 Sex and Society in Classical and Medieval Europe. (3)

fall

Family life, sex roles, and marriage, and their relationship to political, economic, and religious change in classical and medieval Europe. Lecture, discussion. Prerequisite: upper-division standing or instructor approval.

General Studies: SB, H

HST 363 Sex and Society in Early Modern Europe. (3)

spring

Family life, sex roles, and marriage and their relationship to political, economic, and religious change in early modern Europe. Lecture, discussion. Prerequisite: upper-division standing or instructor approval.

General Studies: SB, H

HST 364 Sex and Society in Modern Europe. (3)

selected semesters

Family life, sex roles, and marriage, and their relationship to political, economic, and social changes in modern Europe. Lecture, discussion. Prerequisite: upper-division standing or instructor approval.

General Studies: L/SB, H

HST 365 Women in Europe. (3)

once a year

European women's diverse religious, ethnic, national, and economic roles in society, culture, and politics, 1750 to the present.

General Studies: L/HU/SB, H

HST 366 England to 1689. (3)

once a year

Political, economic, and social development of the English people to the late 17th century.

General Studies: SB, H

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

HST 367 Modern Britain. (3)

once a year

Political, economic, and social development in Britain from 17th century to the present.

General Studies: SB, H

HST 368 Culture and Imagination in European History. (3)

once a year

Topics in European cultural and intellectual history. May be repeated for credit.

General Studies: HU, H

HST 370 Eastern Europe in Transition. (3)

once a year

Democratization, privatization, and identity transformations since the fall of communism in contemporary Eastern Europe and the former Soviet Union. Lecture, discussion.

General Studies: SB, G, H

HST 372 The Modern Middle East. (3)

selected semesters

Impact of the West and modernization upon Middle Eastern governments, religion, and society in the 19th and 20th centuries.

General Studies: SB, G, H

HST 375 Colonial Latin America. (3)

fall and spring

Ancient civilization, exploration and conquerors, and colonial institutions.

General Studies: SB, H

HST 376 Modern Latin America. (3)

fall and spring

Nationalistic development of the independent republics since 1821.

General Studies: SB, H

HST 377 Women in Colonial Latin America. (3)

fall

History of women in colonial Latin America, cross-examining class, race, and gender relations in depth. Lecture, discussion.

General Studies: H

HST 378 Latin American Women: The National Period. (3)

spring

Surveys the history of women, gender relations, and state policies in a broad continental setting, from independence to the present. Lecture, media, discussion.

General Studies: SB, G, H

HST 380 Cultural History of Latin America. (3)

selected semesters

Main currents of thought, the outstanding thinkers, and their impact on 19th- and 20th-century Latin America. Cultural and institutional basis of Latin American life.

General Studies: SB, H

HST 383 China. (3)

fall

Political, economic, social, and cultural history of the Chinese people from early times to the 17th century.

General Studies: SB, H

HST 384 China. (3)

spring

Political, economic, social, and cultural history of the Chinese people from the 17th century to the present.

General Studies: SB, G, H

HST 385 Chinese Science and Medicine. (3)

selected semesters

Explores developments of Chinese traditions dealing with the natural world, science, and medicine. Lecture, discussion. Cross-listed as HPS 325. Credit is allowed for only HPS 325 or HST 385.

General Studies: HU, G, H

HST 386 Interpreting China's Classics. (3)

selected semesters

Study of selected Confucian and/or Taoist classics and ways they have been read in both Asian and Western scholarship. Cross-listed as HUM 312. Credit is allowed for only HST 386 or HUM 312.

General Studies: L/HU, H

HST 387 Japan. (3)

once a year

Political, economic, social, and cultural history of the Japanese people from early times to the 17th century.

General Studies: L/SB, H

HST 388 Japan. (3)

once a year

Political, economic, social, and cultural history of the Japanese people from the 17th century to the present.

General Studies: SB, G, H

HST 389 Japanese Society and Values: Premodern. (3)

selected semesters

Effects of economic and social transitions on personal and social values as reflected in the dramatizations of contemporary events.

HST 391 Modern Southeast Asia. (3)

spring

Vietnam, Laos, Cambodia, Thailand, Burma, Malaysia, Singapore, Brunei, Indonesia, and Philippines since 1750: imperialism, revolution, and independence. Lecture, discussion.

General Studies: SB, G, H

HST 394 ST: Selected Topics in History. (3)

fall and spring

Full description of topics for any semester is available in the Department of History office. May be repeated for credit.

HST 405 Colonial American History to 1763. (3)

once a year

Political, economic, social, and cultural history of the colonial era. Concentrates on English colonies, with some consideration of Spanish, French, and other colonial regions in North America.

General Studies: SB, H

HST 406 The American Revolution, 1763–1789. (3)

once a year

Causes, course, and consequences of the American Revolution culminating in the ratification of the Constitution.

General Studies: SB, H

HST 407 The Early U.S. Republic, 1789–1850. (3)

once a year

Political, social, economic, and cultural development of the United States from the Revolution to 1850.

General Studies: L/SB, H

HST 408 Civil War and Reconstruction. (3)

once a year

Explores the causes, conduct, and consequences of the American Civil War, concentrating on the years 1848 to 1877.

General Studies: L/SB, H

HST 409 The Emergence of the Modern United States, 1877 to 1918. (3)

once a year

Triumph of modern political, social, and economic structures and values, 1877–1918; role of region, religion, race, and ethnicity.

General Studies: SB, H

HST 410 The Modern United States, 1918 to 1945. (3)

once a year

1920's boom and the crash, the Depression and the New Deal response. The Second World War at home and abroad.

General Studies: SB, H

HST 411 The Postwar United States, 1945 to 1973. (3)

once a year

Cold War, prosperity, reform, and immense social and political change in the U.S.

General Studies: SB, H

HST 412 The Contemporary United States, 1973 to the Present. (3)

once a year

End of the Cold War, political crises, and cultural transformations in the U.S.

General Studies: SB, H

HST 414 The Modern U.S. Economy. (3)

selected semesters

Origins of 19th-century slavery and industrialization; 20th-century crisis and regulation: political economy of an advanced capitalist democracy. Prerequisite: ECN 111 (or 112) or HST 109 (or 110).

General Studies: SB, H

HST 415 Unequal Sisters: Women and Political and Cultural Change. (3)*once a year*

Examines race, ethnic, and class differences among women, focusing on the political and cultural experiences of women in the U.S.

*General Studies: L/SB, C, H***HST 416 Indian History of the Southwest. (3)***once a year*

Reviews historical events from prehistoric peoples, the Spanish and Mexican periods, and the U.S. period from 1846 to present.

*General Studies: SB, C, H***HST 417 Topics in Mexican American History. (3)***once a year*

Focuses on specific topics in Mexican American history including immigration, civil rights, the Chicano Movement, union activism, and regional and generational differences.

*General Studies: SB, C, H***HST 423 The Tudor Monarchy. (3)***once a year*

Political, cultural, and social foundations of 16th-century England.

*General Studies: SB, H***HST 424 The Stuart Transformation of England. (3)***once a year*

Political, social, economic, and cultural developments in 17th-century England.

*General Studies: SB, H***HST 426 The British Empire. (3)***once a year*

British imperialism and colonialism in Africa, the Americas, Asia, and the South Pacific. Prerequisite: upper-division standing or instructor approval.

*General Studies: SB, H***HST 427 The French Revolution and the Napoleonic Era. (3)***once a year*

Conditions in Pre-Revolutionary and Revolutionary France; organization of France under Napoleon and impact of French changes upon Europe.

*General Studies: SB, H***HST 428 Modern France. (3)***selected semesters*

Social, political, economic, and cultural transformations of French society, 1815–present. Impact of industrialization, war, and revolution on people's lives. Prerequisite: upper-division standing or instructor approval.

*General Studies: SB, G, H***HST 429 Modern Germany. (3)***once a year*

Germany since 1871.

*General Studies: SB, G, H***HST 430 Hitler: Man and Legend. (3)***once a year*

Biographical approach to the German Third Reich emphasizing nature of Nazi regime, sociocultural issues, World War II, and historiography.

*General Studies: SB, H***HST 431 Eastern Europe and the Balkans Before 1914. (3)***selected semesters*

Empire and nation in Eastern Europe and the Balkans before World War I, emphasizing Hapsburg and Ottoman lands.

*General Studies: SB, H***HST 432 Eastern Europe and the Balkans in the 20th Century. (3)***selected semesters*

Politics and culture in Eastern Europe and the Balkans from World War I to the present.

*General Studies: SB, G, H***HST 435 The Russian Empire. (3)***fall*

Development of Russian imperial institutions and civil society from the 17th to the early 20th centuries. Lecture, discussion.

*General Studies: SB, H***HST 436 The Soviet Experiment. (3)***spring*

Communist revolutionaries' rule of Russia, focusing on utopian culture, Stalinist terror, heroism in war, and the breakup of the former USSR.

*General Studies: SB, G, H***HST 437 Spain Through the Golden Age. (3)***selected semesters*

Cultural, economic, political, and social development of Spain from antiquity to the late 17th century.

*General Studies: HU/SB, H***HST 438 Modern Spain. (3)***selected semesters*

Cultural, economic, political, and social development of modern Spain.

*General Studies: HU/SB, G, H***HST 441 Spanish South America. (3)***selected semesters*

Political, economic, and social development of the Spanish-speaking nations of South America since independence. 19th-century developments.

*General Studies: SB, H***HST 442 Spanish South America. (3)***once a year*

Political, economic, and social development of the Spanish-speaking nations of South America. 20th-century developments.

*General Studies: SB, H***HST 443 The United States and Latin America. (3)***once a year*

Latin American struggle for diplomatic recognition, attempts at political union, participation in international organizations since 1810, and relations between the United States and Latin America.

*General Studies: SB, G, H***HST 445 20th-Century Cuba. (3)***once a year*

History of Cuba from colonial era to formation of the early republic; political, economic, social development in late 20th century. Lecture, discussion.

*General Studies: SB, G, H***HST 446 Colonial Mexico. (3)***once a year*

Political, economic, social, and cultural developments from pre-Columbian times to 1810.

*General Studies: SB, H***HST 447 Modern Mexico. (3)***once a year*

Political, economic, social, and cultural developments from 1810 to the present.

*General Studies: SB, H***HST 451 Chinese Cultural History. (3)***selected semesters*

China's classics in translation studied both for their intrinsic ideas and for the origins of Chinese thought.

*General Studies: SB, H***HST 452 Chinese Cultural History. (3)***selected semesters*

Evolution of Confucian thought, its synthesis with Taoism and Buddhism, and modern reactions against, and uses of, Confucian traditions.

*General Studies: SB, G, H***HST 453 The People's Republic of China. (3)***selected semesters*

Analyzes major political, social, economic, and intellectual trends in China since the founding of the People's Republic in 1949.

General Studies: SB, G, H

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

HST 455 The United States and Japan. (3)

fall

Cultural, political, and economic relations in the 19th and 20th centuries. Emphasizes post-World War II period.

General Studies: SB, G, H

HST 456 The Vietnam War. (3)

once a year

Intersection of American and Asian histories in Vietnam, viewed from as many sides as possible.

General Studies: SB, G, H

HST 460 History of Fire. (3)

fall

Global survey of the natural and cultural history of fire. Lecture, discussion.

General Studies: L, H

HST 480 Methods of Teaching History: Classroom Resources. (3)

fall

Methods in instruction, organization, and presentation of the subject matter of history and closely allied fields. Prerequisites: HST 300; ITC admission.

HST 481 Methods of Teaching History: Community Resources. (3)

spring

Identify community-based resources for teaching history, work with resources, and learn how to integrate them into the secondary classroom. Lecture, lab. Prerequisites: HST 300; ITC admission.

HST 484 Internship. (1–4)

selected semesters

HST 492 Honors Directed Study. (1–6)

selected semesters

HST 493 Honors Thesis. (3)

selected semesters

General Studies: L

HST 494 Special Topics. (1–4)

selected semesters

HST 498 PS: History Pro-Seminar. (3)

fall and spring

Required course for majors on topic selected by instructor; writing-intensive course related to the development of research skills and writing tools used by historians. Prerequisites: HST 300; History major.

General Studies: L

HST 499 Individualized Instruction. (1–3)

selected semesters

HST 500 Methods of Historical Investigations. (1–12)

selected semesters

HST 502 Public History Methodology. (3)

fall

Introduces historical research methodologies, techniques, and strategies used by public historians. Readings, short papers, and guest speakers. Required for students in the public history concentration.

HST 512 Western Civilization to the Enlightenment. (3)

fall

Systematically examines various interpretations of Western civilization from the ancient Middle Eastern civilizations to the European Enlightenment. Seminar.

HST 513 Western Civilization Since the French Revolution. (3)

spring

Systematically examines various interpretations of Western civilization since the French Revolution. Seminar.

HST 514 Historians of the United States. (3)

selected semesters

Study of the history of American historical writing from the early colonial days to the 20th century.

HST 515 Studies in Historiography. (3)

fall and spring

Methods and theories of writers of history. May be repeated for credit.

HST 525 Historical Resource Management. (3)

fall

Identification, documentation, and interpretation of historic period buildings, sites, and districts. Emphasis on interdisciplinary efforts among historians, architects, and anthropologists.

HST 526 Historians and Preservation. (3)

spring

Preparation of historians for public and private historic preservation programs. Prerequisite: HST 525 or instructor approval.

HST 527 Historical Administration. (3)

fall

Preparation of historians in administration of archives and historical sites, museums, societies, and offices in government agencies.

HST 532 Community History. (3)

selected semesters

Techniques and methods of community history emphasizing local resources. Required for community history option. Seminar.

HST 551 Comparative Histories of War and Revolution. (3)

once a year

Comparative field course of the themes of war and revolution.

HST 552 Comparative History of Family and Community. (3)

selected semesters

Comparative course with a focus on family, including minority and ethnic groups, in society.

HST 553 Comparative History of State and Institutions. (3)

selected semesters

Comparative course that explores the changing nature of central institutions and government.

HST 554 Comparative Historical Population Studies: Ethnicity, Economy, and Migration. (3)

selected semesters

Comparative course that explores the impact of social, cultural, or economic changes in the population.

HST 555 Comparative Historical Topics. (3)

selected semesters

Analyzes a variety of specific social, political, cultural, and intellectual topics.

HST 584 Internship. (1–12)

selected semesters

HST 590 Reading and Conference. (1–12)

selected semesters

HST 591 Seminar. (3)

selected semesters

May be repeated for credit.

HST 592 Research. (1–12)

selected semesters

HST 595 Continuing Registration. (1)

selected semesters

HST 598 Special Topics. (1–4)

selected semesters

Reading courses designed to increase familiarity with a particular topic and the important writing concerning it. May be repeated for credit. Topics may include the following:

- Asian History. (3)
- English and British History. (3)
- European History. (3)
- Latin American History. (3)
- U.S. History. (3)

HST 599 Thesis. (1–12)

selected semesters

HST 684 Internship. (1–12)

selected semesters

HST 690 Reading and Conference. (1–12)

selected semesters

HST 695 Continuing Registration. (1)

selected semesters

HST 700 Public History Research Methods. (1–12)

selected semesters

HST 790 Reading and Conference. (1–12)

selected semesters

HST 791 Seminar. (1–12)

selected semesters

HST 792 Research. (1–12)

selected semesters

HST 795 Continuing Registration. (1)

selected semesters

INTERDISCIPLINARY HUMANITIES PROGRAM

HST 799 Dissertation. (1–15)
selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

SCHOLARLY PUBLISHING (PUB)

See the *Graduate Catalog* for the PUB courses.

Interdisciplinary Humanities Program

www.asu.edu/clas/humanities

480/965-6747

LL 641

Mary L. Rothschild, Interim Director

Humanities

Professors: Kugelmass, Lehman;
 Associate Professors: Privateer, Wright;
 Assistant Professors: Baker, Lund, Romeyn, Taylor, Duncan;
 Academic Professional: Zaffrann

Languages and Literatures

Regents' Professor: Foster

The humanities are those learned bodies of knowledge that are used to express ideas, to understand the meaning of words, and to explore the values and beliefs that underlie our culture and the cultures of others. As defined by the U.S. Congress, the humanities include archaeology, comparative religion, ethics, history, jurisprudence, literature, linguistics, philosophy, the history and criticism of the arts, and those aspects of the social sciences that employ a philosophical or historical rather than quantitative approach to knowledge.

HUMANITIES—B.A.

The major in Humanities is interdisciplinary and may be intercollegiate. In consultation with an advisor, the student takes a minimum of 44 semester hours of interdisciplinary humanities courses from two components: (1) an interdisciplinary core of 23 hours and (2) an area of concentration of 21 hours.

Interdisciplinary Core

Issues, Methods, and Theory

HUM 200 Encountering the Humanities *HU*3
 HUM 498 Pro-Seminar in the Humanities *L/HU*3

Cultures in Context

HUM 301 Humanities in the Western World *L/HU, H*4
 HUM 302 Humanities in the Western World *L/HU, H*4
 One approved upper-division HUM course on the cultures and traditions of Latin America, Asia, or Africa3

Ethnicity, Race, and Gender

One approved course.....3

Art, Science, and Technology
 One approved course.....3
 Total23

Area of Study

Required courses from list obtained from advisor.....21

Courses must be selected from an approved list or be approved in advance by the undergraduate advisor. Areas of study include architecture, culture and society; classical studies; digital cultures and media technologies, film and media studies; and humanistic studies. An undergraduate major may also earn a certificate in Classical Studies.

MINOR IN HUMANITIES

The following courses are required for the minor:

HUM 110 Contemporary Issues in Humanities *HU*3
 or HUM 200 Encountering the Humanities *HU* (3)
 HUM 301 Humanities in the Western World *L/HU, H*4
 HUM 302 Humanities in the Western World *L/HU, H*4
 Three approved upper-division HUM courses9
 Total20

GRADUATE PROGRAM

The faculty in the program also offer the M.A. degree in Humanities through the Graduate Committee on Humanities. See the *Graduate Catalog* for requirements.

HUMANITIES (HUM)

HUM 110 Contemporary Issues in Humanities. (3)

fall and spring
 Responses of literature, art history, history, philosophy, religion, and other disciplines to common problems affecting modern American life.
General Studies: HU

HUM 194 Special Topics in the Humanities. (1–4)

selected semesters
 Open to all students. Topics may include the following:

- American Fine Arts. (3)
- Comparative Fine and Performing Arts. (3)
- Cultures of Ethnic Minorities. (3)
- Non-Western Cultures. (3)
- Western Historical or Contemporary Cultures. (3)

HUM 200 Encountering the Humanities. (3)

fall and spring
 Introduces the languages, methods, and objectives of the study of the interdisciplinary humanities. Intersections of ideas, values, and cultural institutions. Lecture, studio, workshop. Prerequisite: Humanities major.
General Studies: HU

HUM 260 Introduction to Islam. (3)

spring
 Examines Islamic beliefs, ceremonies, festivals, and institutions. Assumes no prior knowledge about Islam. Lecture, discussion. Cross-listed as REL 260. Credit is allowed for only HUM 260 or REL 260.
General Studies: HU, G

HUM 294 Special Topics in the Humanities. (1–4)

selected semesters
 Open to all students. Topics may include the following:

- American Fine Arts. (3)
- Comparative Fine and Performing Arts. (3)
- Cultures of Ethnic Minorities. (3)
- Film and Media Studies. (3)

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See [“General Studies,” page 83.](#)

COLLEGE OF LIBERAL ARTS AND SCIENCES

- Introduction to Film
Fee.
- Non-Western Cultures. (3)

HUM 301 Humanities in the Western World. (4)

fall

Interrelation of arts and ideas in Western civilization, Hellenic through medieval. 3 hours lecture, 1 discussion meeting per week.

General Studies: L/HU, H

HUM 302 Humanities in the Western World. (4)

spring

Interrelation of arts and ideas in Western civilization, Renaissance to the present. 3 hours lecture, 1 discussion meeting per week.

General Studies: L/HU, H

HUM 310 Japanese Cities and Cultures to 1800. (3)

once a year

Relations among ideas and literary, visual, and performing arts of the ancient aristocracy, medieval samurai, and early modern townspeople. Cross-listed as REL 355. Credit is allowed for only HUM 310 or REL 355.

General Studies: L/HU, H

HUM 312 Interpreting China's Classics. (3)

selected semesters

Study of selected Confucian and/or Taoist classics and ways they have been read in both Asian and Western scholarship. Cross-listed as HST 386. Credit is allowed for only HST 386 or HUM 312.

General Studies: L/HU, H

HUM 331 Sexuality, Race, and Power. (3)

fall

Sexuality as an expression of identity politics, social transgression, and racial inequality, as portrayed in international literature, art, and film. Lecture, discussion.

HUM 340 Contemporary American Film and Popular Culture. (3)

fall

Study of American film, television, and popular music of past three decades as cultural documents. Fee.

General Studies: HU

HUM 371 Origins, Evolution, and Creation. (3)

selected semesters

Examines scientific, mythic, and religious ideas relating to origins (particularly human). Place of antievolutionism and "scientific creationism" in American culture. Lecture, discussion. Cross-listed as BIO 344/HPS 311/REL 383. Credit is allowed for only BIO 344 or HPS 311 or HUM 371 or REL 383.

HUM 372 The Darwinian Revolution. (3)

selected semesters

Intellectual and cultural history of Darwinism and modern evolutionary theory and their impact on 19th- and 20th-century thought. Lecture, discussion. Cross-listed as BIO 346/HPS 332. Credit is allowed for only BIO 346 or HPS 332 or HUM 372.

HUM 394 Special Topics in the Humanities. (1–4)

selected semesters

Open to all students. Topics may include the following:

- Art and Politics. (3)
- Culture and Society of Contemporary China. (3)
- Film History
Fee.
- Immigration and Ethnicity in American Culture. (3)
- The Holocaust and Social Theory. (3)

HUM 401 The Culture and Legacy of the European Enlightenment. (3)

spring

Historical survey of 18th-century European enlightenment and its status within contemporary intellectual culture. Lecture, discussion.

General Studies: HU, H

HUM 420 Interpreting Latin America. (3)

spring

Introduces protocols and methodologies for cultural interpretation of Latin America, with emphasis on four principal cities as cultural space.

General Studies: HU, G, H

HUM 440 Los Angeles and Cultural Theory. (3)

spring

Analyzes representations of Los Angeles in literary, film, and musical texts and broader implications for contemporary American society.

General Studies: L/HU, C

HUM 441 American Jewry Through Film and TV. (3)

fall

Examines the connection between Jews and the entertainment industry with reference to the constructions of race, class, and ethnicity. Lecture, discussion.

HUM 450 Technology and Culture. (3)

spring

Explores sociocultural, ideological, and postmodern implications of technology and the role technology plays in social constructions as well as the spaces it creates. Seminar, discussion.

General Studies: L/HU

HUM 451 Virtual Reality: The Culture of Cyberspace. (3)

once a year

Socioeconomic, cultural, aesthetic, postmodern, theoretical, and human implications of virtual reality technologies. Themes: cultural ideological productions of cyberspace. Collaborative and research based.

HUM 460 Postmodern Culture and Interpretation. (3)

selected semesters

Currents and interpretations of postmodern culture; international, comparative perspective on the culture and traditions of contemporary "Europes" and "Americas." Seminar, discussion.

General Studies: L

HUM 461 Postcolonial Studies. (3)

selected semesters

Interdisciplinary approach to the culture of European imperialism, independence movements, and contemporary postcolonial societies, focusing on literature, film, and theory. Lecture, discussion.

HUM 462 Psychoanalysis and Culture. (3)

fall

Introduces intellectual history of psychoanalytic movement of the 20th century and its contribution to humanities disciplines.

General Studies: L/HU/SB



Regents' Professor David Smith at the electron microscope

Tim Trumble photo

HUM 465 Narrative in the Human Sciences. (3)*fall*

Theories of narrative and narrativity in the humanities, concentrating on the problems of specific disciplines and interdisciplinary solutions.
General Studies: L/HU

HUM 494 Special Topics in the Humanities. (1–4)*selected semesters*

Open to all students. Topics may include the following:

- Comedy and Culture. (3)
- Global Media Studies. (3)
- Italian/American Culture. (3)
- Uses and Abuses of Classical Antiquity. (3)

HUM 498 Pro-Seminar in the Humanities. (1–7)*fall and spring*

Methodologies and comparative theories for the study of relationships between various aspects of culture, the history of ideas, and the arts. For students with a major in Humanities with upper-division standing. May be repeated for a total of 6 semester hours when topics vary. Topics may include the following:

- Theory and Culture. (3)

*General Studies: L/HU***HUM 501 Introduction to Cultural Theory. (3)***fall*

Selective history of cultural theory. Major figures and topics include Marx, Nietzsche, Freud, phenomenology, western Marxism, structuralism, and post-structuralism. Seminar.

HUM 502 Writing Cultures. (3)*spring*

Theories and methods of representing Western and non-Western cultures in literature, history, ethnography, and pictorial media.

HUM 503 Research and Writing in the Humanities. (3)*fall*

Systematic training in humanistic research and writing with particular attention to the interdisciplinary study of culture. Seminar.

HUM 511 Structures of Knowledge. (3)*fall*

Theories and examples of structures of knowledge, including such topics as metaphor, semiotics, and knowledge of the "other."

HUM 513 Interpretation of Cultures. (3)*once a year*

Methodologies and comparative theories for the study of relationships between various aspects of culture, the history of ideas, and the arts. May be repeated for a total of 6 semester hours when topics vary. Fee.

HUM 549 Contemporary Critical Theory. (3)*once a year*

Advanced survey of major schools of 20th-century literary and critical theory. Lecture, discussion. Cross-listed as ENG 502. Credit is allowed for only ENG 502 or HUM 549.

HUM 591 Seminar. (1–12)*once a year*

Topics may include the following:

- Cultural Productions. (3)
- Theory and Culture. (3)
- Tragedy: Meaning and Form. (3)

HUM 598 Special Topics in the Humanities. (1–4)*selected semesters*

Open to all students. Topics may include the following:

- Comparative Fine and Performing Arts. (3)
- Cultures of Ethnic Minorities. (3)
- Film and Media Studies. (3)
- Film Theory and Criticism
Fee.
- Non-Western Cultures. (3)
- Sexuality in the Media
Fee.
- Western Historical or Contemporary Cultures. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Languages and Literatures

www.asu.edu/languages/index.htm

480/965-6281

LL 440

Deborah Losse, Chair

Regents' Professors: Foster, Keller

Professors: Alexander, Baldini, Ballon-Aguirre, Chambers, Couch, Croft, Ekmanis, Guntermann, Honegger, Horwath, Losse, Valdivieso, Volek, Wetsel, Williams, Wixted, T. Wong

Associate Professors: Acedera, Candela, Cota-Cardenas, Garcia-Fernández, W. Hendrickson, Hernández-G., B. Lafford, Ossipov, Reiman, Sanchez, Suwarno, Tompkins, Urioste-Azcorra, Vitullo

Assistant Professors: Burton, Canovas, Cashman, Choi, Colina, George, Ginsburg, Gruzinska, Haberman, Orlich, Rees, Tipton

Lecturers: Foard, S. Hendrickson, Lage, Martinez, Petersen, Sherman, Stiffl, Walton-Ramirez, E. Wong

Instructors: Deal, Le, Oh, Pang

Associate Research Professional: P. Lafford

Academic Associate: Glessner

BACHELOR OF ARTS DEGREE

The faculty in the Department of Languages and Literatures offer majors in Asian Languages (Chinese/Japanese), French, German, Italian, Russian, and Spanish. Each major consists of 45 semester hours, of which 30 must be in one language and 15 in a second language or in closely related fields to be approved by the advisor in consultation with the student. Of the 30 hours required for the major, a minimum of 24 hours must be taken at the 300 or 400 level and must include at least nine hours at the 400 level. Specific required courses for each major area are shown in this section and in a brochure available in the department. See "[College Degree Requirements](#)," page 330.

MAJORS

Asian Languages (Chinese/Japanese)—B.A.

Students majoring in Asian Languages (Chinese/Japanese) may select a course of study that focuses on either language. The major requires 45 semester hours.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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Chinese. At least nine semester hours must be at the 400 level. In addition to the courses shown below, the student must meet with an advisor and choose at least 15 semester hours of courses, including six semester hours of JPN courses such as Japanese language and calligraphy, Japanese literature in translation (FLA 421) or KOR prefix courses such as Korean language and/or Korean culture, and nine semester hours from appropriate courses in art, humanities, social and behavioral sciences, and business.

Required

CHI 313 Third-Year Chinese I <i>G</i>	3
CHI 314 Third-Year Chinese II <i>G</i>	3
CHI 321 Chinese Literature <i>L/HU</i>	3
CHI 322 Chinese Literature <i>L/HU, G</i>	3
or FLA 420 Foreign Literature in Translation <i>HU, G</i> (3)	
CHI 413 Introduction to Classical Chinese <i>HU</i>	3
CHI 414 Introduction to Classical Chinese <i>HU</i>	3
Total	18

Electives

Choose six semester hours from the courses below.....	6
CHI 309 Chinese Conversation (2)	
CHI 310 Chinese Conversation (2)	
CHI 311 Chinese Conversation (2)	
CHI 312 Chinese Conversation (2)	
CHI 494 Special Topics (1–4)	
CHI 499 Individualized Instruction (1–3)	
Total	6

Recommended

Two 200-level CHI courses (excluding 205).....	6
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Japanese. At least nine semester hours must be taken from FLA 421, and JPN 321 and 414. No more than eight semester hours may be selected from JPN 309, 310, 311, and 312.

Required

FLA 421 Japanese Literature in Translation <i>L/HU, G</i>	3
JPN 313 Third-Year Japanese I <i>G</i>	3
JPN 314 Third-Year Japanese II <i>G</i>	3
JPN 321 Japanese Literature <i>L/HU, G</i>	3
JPN 414 Introduction to Classical Japanese.....	3
Total	15

Electives

Choose nine semester hours from the courses below.....	9
JPN 309 Intermediate Japanese Conversation (2)	
JPN 310 Intermediate Japanese Conversation (2)	
JPN 311 Japanese Conversation and Composition <i>G</i> (3)	
JPN 312 Japanese Conversation and Composition <i>G</i> (3)	
JPN 321 Japanese Literature <i>L/HU, G</i> (3)	
JPN 394 Special Topics (1–4)	
JPN 435 Advanced Readings (3)	
JPN 485 Problems of Translation (3)	
JPN 494 Special Topics (1–4)	
JPN 499 Individualized Instruction (1–3)	
Total	9

Recommended

Two 200-level JPN courses.....	6
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In addition to the courses, the student must meet with an advisor and choose at least 15 semester hours of courses, including six semester hours of CHI prefix courses such as Chinese language and calligraphy, Chinese literature in

translation (CHI 321 and 322 and FLA 420) or KOR prefix courses such as Korean language and/or Korean culture. At least three semester hours must be in an approved course that provides an overview of Japanese history. The remaining hours may consist of appropriate courses in art, humanities, literature, public programs, social and behavioral sciences, business, etc.

French—B.A.

Required

FRE 205 Readings in French Literature <i>G</i>	3
FRE 311 French Conversation <i>G</i>	3
FRE 312 French Composition <i>G</i>	3
FRE 321 French Literature <i>L/HU, H</i>	3
FRE 322 French Literature <i>L/HU</i>	3
Total	15

Select 15 semester hours from the following list, including at least nine semester hours from the 400 level:

FRE 315 French Phonetics.....	3
FRE 319 Business French <i>G</i>	3
FRE 411 Advanced Spoken French <i>G</i>	3
FRE 412 Advanced Written French <i>G</i>	3
FRE 415 French Civilization I <i>HU</i>	3
FRE 416 French Civilization II <i>HU, G</i>	3
FRE 421 Structure of French.....	3
FRE 422 Applied French Linguistics.....	3
FRE 423 French Syntax.....	3
FRE 441 French Literature of the 17th Century <i>HU</i>	3
FRE 442 French Literature of the 17th Century <i>HU, H</i>	3
FRE 445 French Literature of the 18th Century <i>L/HU</i>	3
FRE 451 French Poetry of the 19th Century.....	3
FRE 452 French Novel of the 19th Century <i>HU</i>	3
FRE 453 Theater of the 19th Century <i>L/HU</i>	3
FRE 461 Modern Narrative <i>HU</i>	3
FRE 462 Modern Poetry <i>HU</i>	3
FRE 471 The Literature of Francophone Africa and the Caribbean <i>L/HU</i>	3
FRE 472 Franco-Canadian Civilization.....	3
FRE 480 Translation Theory and Practice.....	3
FRE 482 Business Translation.....	3
FRE 485 Literary Translation.....	3
FRE 494 Special Topics.....	1–4
FRE 499 Individualized Instruction.....	1–3

In addition to the courses, the student must meet with an advisor and choose at least 15 semester hours of courses from appropriate social and behavioral science, humanities, business courses, and other language courses.

German—B.A.

Required

GER 311 German Conversation <i>G</i>	3
or GER 312 German Conversation <i>G</i> (3)	
GER 313 German Composition <i>G</i>	3
GER 411 Advanced Grammar and Conversation <i>G</i>	3
GER 412 Advanced Grammar and Composition <i>G</i>	3
GER 421 German Literature <i>HU</i>	3
GER 422 German Literature <i>L/HU</i>	3
Choose six semester hours from the courses below.....	6
GER 303 Scientific German (3)	
GER 304 Scientific German (3)	
GER 314 Introduction to German Literature (3)	

DEPARTMENT OF LANGUAGES AND LITERATURES

GER 319 Business Correspondence and Communication <i>G</i> (3)	
GER 394 Special Topics (1–4)	
GER 415 German Civilization <i>HU, H</i> (3)	
GER 416 German Civilization <i>HU, H</i> (3)	
GER 445 German Literature: Enlightenment to Classicism (3)	
GER 451 German Literature: Biedermeier to Naturalism (3)	
GER 494 Special Topics (1–4)	
Two 200-level GER courses.....	6
Total	30

In addition to the courses, the student must meet with an advisor and choose at least 15 semester hours of courses from appropriate social and behavioral science, humanities, business courses, and other language courses.

Italian—B.A.

Required

ITA 311 Italian Composition and Conversation <i>G</i>	3
ITA 312 Italian Composition and Conversation <i>G</i>	3
ITA 325 Introduction to Italian Literature <i>HU</i>	3
Two 200-level ITA courses	6
Total	15

Note: ITA 394 Commercial Italian may substitute for either ITA 311 or 312.

Fifteen semester hours are required from the following list, including at least nine semester hours from the 400 level:

ITA 314 Advanced Italian <i>G</i>	3
ITA 394 Special Topics	1–4
ITA 415 Italian Civilization <i>L/HU, G</i>	3
ITA 420 Italian Cinema.....	3
ITA 425 Italian American Culture <i>L</i>	3
ITA 430 Italian Literature of the Middle Ages <i>HU</i>	3
ITA 441 Dante: <i>Divina Commedia L/HU</i>	3
ITA 443 Italian Literature of the Renaissance <i>HU, H</i>	3
ITA 446 Italian Literature of the 18th and 19th Centuries <i>HU</i> ...	3
ITA 449 20th-Century Italian Literature <i>HU, G</i>	3
ITA 494 Special Topics	1–4
ITA 499 Individualized Instruction	1–3

In addition to the courses shown above, the student must meet with an advisor and choose at least 15 semester hours of courses from appropriate social and behavioral science, humanities, business courses, and other language courses.

Russian—B.A.

Required

RUS 211 Basic Russian Conversation <i>G</i>	3
RUS 212 Basic Russian Conversation <i>G</i>	3
RUS 311 Russian Composition and Conversation <i>G</i>	3
RUS 312 Russian Composition and Conversation <i>G</i>	3
RUS 411 Advanced Composition and Conversation I <i>G</i>	3
or RUS 412 Advanced Composition and Conversation II <i>G</i> (3)	
Total	15

Fifteen semester hours are required from the following list, including at least six semester hours from the 400 level:

RUS 303 Scientific Russian.....	3
RUS 304 Scientific Russian.....	3

RUS 321 Survey of Russian Literature <i>HU, H</i>	3
RUS 322 Survey of Russian Literature <i>L/HU</i>	3
RUS 323 Survey of Literature of the Soviet Era <i>L/HU, G</i>	3
RUS 411 Advanced Composition and Conversation I <i>G</i>	3
RUS 412 Advanced Composition and Conversation II <i>G</i>	3
RUS 417 Applied Russian Phonetics	2
RUS 420 Russian Poetry <i>L/HU</i>	3
RUS 421 Pushkin <i>L/HU</i>	3
RUS 423 Dostoyevsky <i>L/HU</i>	3
RUS 424 Tolstoy <i>L/HU</i>	3
RUS 425 Chekhov <i>L/HU</i>	3
RUS 426 Literatures of the Nationalities of the Former Soviet Union <i>L/HU, G</i>	3
RUS 430 Russian Short Story <i>L/HU</i>	3
RUS 440 History of the Russian Language.....	3
RUS 441 Survey of Russian Culture <i>L/HU, G, H</i>	3
RUS 494 Special Topics	1–4
RUS 499 Individualized Instruction	1–3

In addition to the courses shown above, the student must meet with an advisor and choose at least 15 semester hours of courses from appropriate social and behavioral science, humanities, business courses, and other language courses.

Spanish—B.A.

Required

SPA 313 Spanish Conversation and Composition <i>G</i>	3
or SPA 315 Spanish Conversation and Composition for Bilinguals (3)	
SPA 314 Spanish Conversation and Composition <i>G</i>	3
or SPA 316 Spanish Conversation and Composition for Bilinguals (3)	
SPA 325 Introduction to Hispanic Literature <i>HU</i>	3
SPA 412 Advanced Conversation and Composition <i>G</i>	3
SPA 425 Spanish Literature <i>HU</i>	3
Choose two courses below	6
SPA 426 Spanish Literature <i>HU</i> (3)	
SPA 427 Spanish American Literature <i>L</i> (3)	
SPA 428 Spanish American Literature <i>L, G</i> (3)	
Choose one course below.....	3
SPA 471 Civilization of the Spanish Southwest <i>HU</i> (3)	
SPA 472 Spanish American Civilization <i>HU, G, H</i> (3)	
SPA 473 Spanish Civilization <i>HU/SB, G</i> (3)	
Total	24

Electives

Two upper-division (300–400-level) SPA courses.....6

Related Fields

POR 101 Elementary Portuguese	5
POR 201 Intermediate Portuguese <i>G</i>	5

In addition to these courses, the student must meet with an advisor and choose at least six semester hours of courses from appropriate social and behavioral science, humanities, business courses, and other romance language courses.

SPA 311 and 312 are not counted toward the major or minor in Spanish.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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MINORS

Each minor in Asian Languages (Chinese/Japanese), French, German, Italian, Russian, and Spanish consists of 18 hours, of which 12 hours must be in the upper division. In addition, specific required courses for each area follow and are in a brochure in the department.

Chinese

Required

CHI 313	Third-Year Chinese I <i>G</i>	3
CHI 314	Third-Year Chinese II <i>G</i>	3

Consult with the departmental advisor for other courses.

French

Required

FRE 311	French Conversation <i>G</i>	3
FRE 312	French Composition <i>G</i>	3
FRE 321	French Literature <i>L/HU, H</i>	3
	or FRE 322 French Literature <i>L/HU</i> (3)	

Consult with the departmental advisor for other courses. Twelve hours must be at the 300 level or above.

German

Required

GER 311	German Conversation <i>G</i>	3
	or GER 312 German Conversation <i>G</i> (3)	
GER 313	German Composition <i>G</i>	3
	One 400-level GER course.....	3
	Upper-division GER course.....	3

Consult with the departmental advisor for other courses.

Italian

Required

ITA 311	Italian Composition and Conversation <i>G</i>	3
	or ITA 312 Italian Composition and Conversation <i>G</i> (3)	
	or ITA 394 Special Topics (1–4)	
ITA 325	Introduction to Italian Literature <i>HU</i>	3
	One 400-level ITA course.....	3

Consult with the departmental advisor for other courses.

Japanese

Required

JPN 313	Third-Year Japanese I <i>G</i>	3
JPN 314	Third-Year Japanese II <i>G</i>	3

Consult with the departmental advisor for other courses.

Russian

Required

RUS 303	Scientific Russian.....	3
RUS 304	Scientific Russian.....	3
RUS 311	Russian Composition and Conversation <i>G</i>	3
RUS 312	Russian Composition and Conversation <i>G</i>	3

RUS 211 and 212 are the only lower-division courses that may count toward the Russian minor.

Consult with the departmental advisor for other courses.

Spanish

The minor in Spanish requires a minimum of 18 upper-division semester hours.

Required

SPA 313	Spanish Conversation and Composition <i>G</i>	3
	or SPA 315 Spanish Conversation and Composition for Bilinguals (3)	
SPA 314	Spanish Conversation and Composition <i>G</i>	3
	or SPA 316 Spanish Conversation and Composition for Bilinguals (3)	
SPA 325	Introduction to Hispanic Literature <i>HU</i>	3
SPA 412	Advanced Conversation and Composition <i>G</i>	3
SPA 471	Civilization of the Spanish Southwest <i>HU</i>	3
	or SPA 472 Spanish American Civilization <i>HU, G, H</i> (3)	
	or SPA 473 Spanish Civilization <i>HU/SB, G</i> (3)	

SPA 311 and 312 are not counted toward the major or minor in Spanish.

CERTIFICATES AND EMPHASES

The following are certificate programs or emphases offered in the Department of Languages and Literatures. For more information, see [“Certificate Programs and Areas of Emphasis,” page 336.](#)

Asian Studies Certificate. Foreign language students majoring in Asian Languages (Chinese/Japanese) may elect to pursue an Asian Studies Certificate combining courses from the major with selected outside courses of wholly Asian content.

Classical Studies. Any undergraduate major can earn a certificate in classical studies

Latin American Studies Certificate. Foreign language students majoring in Spanish may elect to pursue a Latin American Studies Certificate combining courses from the major with selected outside courses of wholly Latin American content.

Russian and East European Studies Certificate. Any undergraduate major can earn a Russian and East European Studies Certificate by successfully completing one of the options mentioned in the section on [“Russian and East European Studies,” page 338.](#)

Scandinavian Studies Certificate. Any undergraduate major can earn a Scandinavian Studies Certificate.

Southeast Asian Studies Certificate. To earn a Southeast Asian Studies Certificate, a student must complete a minimum of 40 semester hours of course work related to Southeast Asia, including two years (20 semester hours) of a Southeast Asian language.

Translation Certificate (Spanish/English). The Translation Certificate program is designed to provide the advanced training required for professional translation in both public and private sectors, preparation for the rigorous examinations required by national and international agencies, and training as an ancillary skill for professional fields, such as international business, public health and medicine, and law, in accordance with guidelines recommended by the American Translators’ Association. The certificate is a nondegree

program consisting of 12 semester hours of course work and two hours of in-service practicum primarily into the receptor language of English from the source language of Spanish. It may be taken simultaneously with course work leading to an undergraduate or graduate degree, as a related area sequence, or as the sole program of study for members of the community who meet the admission requirements of the certificate program and are enrolled in the university. A complete brochure is available at the Department of Languages and Literatures in LL 440.

While the certificate program is not yet available in French, FRE translation courses may be available. See the *Schedule of Classes* for course offerings.

Admission Requirements. Since entrance to professional translation is through work, cultural experience, and examination, the two entrance requirements to this certificate program are (1) written proficiency examination in the source and the receptor languages at the level of completion of the fourth year or most advanced composition course in Spanish, which at ASU is SPA 412, and (2) either an academic year at a university in a Spanish-speaking country, an extensive work experience using Spanish, or demonstrated bilingual facility, both written and oral, in English and Spanish.

Certificate Requirements. The certificate program consists of the following requirements:

Prerequisites

FLA 400	Linguistics <i>SB</i>	3
	or SPA 494 ST: Introduction to Hispanic Linguistics (3) or equivalent	
SPA 413	Advanced Spanish Grammar <i>G</i>	3
SPA 494	ST: Lexicography.....	3

Required

FLA 401	Translation Theory and Practice	3
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In-Service Practicum

FLA 484	Internship	2
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Also required are nine hours of applied translation electives in specialized areas chosen from the following courses:

FLA 481	Technical and Scientific Translation	3
FLA 482	Business and Financial Translation.....	3
FLA 483	Medical and Legal Translation.....	3
FLA 485	Problems of Literary Translation	3

B.I.S. CONCENTRATION AREAS

Students seeking to focus on a language as one of their concentration areas for the Bachelor of Interdisciplinary Studies degree may choose from Chinese, French, German, Italian, Japanese, Russian, and Spanish. They may also choose from any of the approved certificate programs. The requirements for the Bachelor of Arts in Interdisciplinary Studies (B.I.S.) concentrations are the same for the minor in that language. See [“Minors,” page 405](#), for specific course requirements. For more information, see [“Division of Undergraduate Academic Services,” page 113](#).

SECONDARY EDUCATION—B.A.E.

French, German, and Spanish. Each of the major teaching fields in French, German, and Spanish consists of 45 semester hours, of which 30 must be in one language and 15 in a second language or in closely related fields to be approved by the advisor in consultation with the student. Of the 30 hours required for the academic specialization, a minimum of 24 hours must be taken at the 300 or 400 level and must include at least nine hours at the 400 level. Specific required courses for each major area are listed in curriculum check sheets of the individual language areas available in the department.

Applications are not being accepted at this time for Chinese, Japanese, and Russian.

GRADUATE PROGRAMS

The faculty in the Department of Languages and Literatures offer programs leading to the M.A. degree in French, German, and Spanish and the Ph.D. degree in Spanish. See the *Graduate Catalog* for requirements.

FOREIGN LANGUAGES FOR INTERNATIONAL PROFESSIONS

The sequence of two semesters, listed under numbers 107 and 207 in two languages (French and Spanish), integrates an accelerated study, a functional approach to course design, and preparation for international professions (e.g., business, diplomacy, international political economy). It is parallel to the traditional sequence of 101 through 202 and also satisfies the college’s foreign language requirement. The sequence differs from traditional basic language programs in that all aspects of the language—vocabulary, grammar, and skill development—are practiced within the context of authentic communication for social and professional purposes in the target culture. Classes meet eight hours weekly, for eight semester hours in each of two semesters.

Students who have had success in learning one foreign language are encouraged to join this program in a second language. Students should contact the Department of Languages and Literatures before registration.

FOREIGN LANGUAGE REQUIREMENT

The College of Liberal Arts and Sciences requires knowledge of one foreign language equivalent to the completion of two years’ study at the college level. This normally includes a sequence of courses numbered 101 and 102 and 201 and 202 *or* 107 and 207. However, important exceptions exist in Greek, Latin, Portuguese, and Romanian.

Greek. To satisfy the foreign language requirement, students must take GRK 301 and 302.

Latin. Students entering LAT 202 directly from LAT 102 must complete LAT 201 to satisfy the College of Liberal Arts and Sciences requirement.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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Portuguese. To satisfy the foreign language requirement, students must take POR 314 or a higher numbered POR course.

Romanian. To satisfy the foreign language requirement, students must complete ROM 314.

FOREIGN LANGUAGE PLACEMENT

Students who transfer from other postsecondary institutions with foreign language credits below the 202 level are placed in a course at the level directly above the work completed.

Students who have completed their secondary education at a school in which the language of instruction was not English are considered to have satisfied the foreign language requirement. Certification of this status is made at the time of admission to ASU.

Questions should be addressed to the International Admissions program within Undergraduate Admissions. For more information, call 480/965-2688, or visit the Web site at www.asu.edu/admissions.

The foreign language requirement can be met in languages not taught at ASU either by transferring credit from another institution or by passing a proficiency examination. When possible, the Department of Languages and Literatures recommends to the college an appropriate source for such examinations and proctors them. Grading is done by the institution that provides the examination, and the student pays any costs incurred. The examination can be used only to demonstrate proficiency; it does not produce semester hours of credit.

Students desiring placement above the 101-level course in French, German, or Spanish should take the placement exam for that language in the Computer Language Laboratory in LL 65.

Ordinarily, no placement or proficiency examination is administered to students who wish to continue studying languages for which high school credits have been earned. Students should be guided by the following principles of equivalency: (1) one unit (one academic year) of high school-level study is considered, for placement purposes only, to equal one semester of study of the same language at the university level. Thus, students with one year of high school study would enroll in the second semester course (102); students with two years of high school study, in the third semester course (201), and so on. (2) Students who feel that their high school language preparation was inadequate may choose to place themselves in a lower level, but not lower than 111 with two or three years of high school study and 201 with four years of high school study.

Students with prior knowledge of a language may meet the college foreign language requirement in any one of the following ways:

1. by satisfactory results in a nonrepeatable college-approved proficiency examination;
2. by achieving a grade of at least "C" in the last course of the required sequence; or
3. by achieving a grade of at least "C" in a course taught in the language for which the last course of the required sequence is a prerequisite.

Students are expected to follow the progressive sequence of 100, 200, and 300. Once a grade of "C" or higher is earned in a 300-level class in a language, students may not earn lower-division credit in that language.

First-year foreign language courses taught by the Department of Languages and Literatures are not open to students who have spent one or more years in a country where that language is the predominant language. Individual language areas may have different policies. Students with questions about this policy should check with the appropriate language coordinator in the department.

If transfer students are uncertain about course equivalencies, they should contact the Department of Languages and Literatures.

LANGUAGE LABORATORY REQUIREMENT

All students enrolled in 101, 102, 201, and 202 language courses are expected to spend a minimum of one hour per week in the language laboratory or in other assigned audio-lingual tape exercises in addition to the regular class periods.

FOREIGN LANGUAGES (FLA)

FLA 150 Introduction to East Asian Culture. (3)

spring

Introduces the cultures of China, Japan, and Korea.

General Studies: HU, G

FLA 323 Survey of Literature of the Soviet Era in Translation. (3)

fall and spring

Surveys main literary movements, prominent authors, most significant works of prose, poetry, and drama of the Soviet period, 1917–1991.

General Studies: L/HU, G

FLA 400 Linguistics. (3)

spring

Introduces the analysis of language and its use in social contexts.

Topics: morphology, phonology, pragmatics, semantics, syntax, and variation. Prerequisites: junior standing; instructor approval.

General Studies: SB

FLA 401 Translation Theory and Practice. (3)

selected semesters

Translation theories and professional practices and ethics; bibliography, computer technology, and sample texts for natural and social sciences and humanities. Prerequisite: 4th-year composition or instructor approval in respective language area.

FLA 415 Bilingualism and Languages in Contact. (3)

fall

Analyzes linguistic aspects of bilingualism, e.g., pidgins and creoles, code-switching, and other contact phenomena; simultaneous/sequential bilingual language acquisition. Prerequisite: FLA 400 (or its equivalent) or instructor approval.

FLA 420 Foreign Literature in Translation. (3)

fall and spring

Not for language majors (except in Asian languages and Russian); open to language majors as a related-area course. Graduate students by permission. Topics may include the following:

- Brazilian
- Chinese
- French
- German
- Greek
- Italian
- Latin
- Portuguese
- Russian
- Soviet
- Spanish
- Spanish American

General Studies: HU, G

FLA 421 Japanese Literature in Translation. (3)*fall and spring*

Readings selected by theme or genre or period from various works of Japanese literature in English translation. May be repeated when topics vary. Graduate students by permission. Prerequisite: a General Studies L course.

*General Studies: L/HU, G***FLA 480 Methods of Teaching Foreign Languages. (3)***fall*

Teaching foreign languages and literatures at secondary and college levels. Does not meet the Liberal Arts and Sciences General Studies requirement for humanities and fine arts. Required for admission to SED 478. Prerequisite: 12 hours of upper-division courses in 1 foreign language.

FLA 481 Technical and Scientific Translation. (3)*selected semesters*

Resources, practices, strategies, and lexicon for translation of professional texts in subjects such as engineering, architecture, agriculture, computer technology, electronics, and physical and biological sciences. Prerequisite: FLA 401.

FLA 482 Business and Financial Translation. (3)*selected semesters*

Resources, practices, strategies, and lexicon for translation of professional texts in subjects such as economics, finance, insurance, management, marketing, accounting, advertising, and real estate. Prerequisite: FLA 401.

FLA 483 Medical and Legal Translation. (3)*selected semesters*

Resources and strategies for translation of professional texts in subjects such as medicine, nursing, public health, criminal justice, and international law. May be repeated for a total of 6 semester hours. Prerequisite: FLA 401.

FLA 484 Internship. (1–12)*selected semesters***FLA 485 Problems of Literary Translation. (3)***selected semesters*

Theory and practice with emphasis on application through individual translation projects. May be repeated for a total of 6 semester hours. Prerequisite: FLA 401 or instructor approval in the respective language area.

FLA 494 Special Topics. (1–4)*selected semesters*

Various topics.

FLA 515 Second Language Acquisition. (3)*spring*

Discussion and application of theories of second language acquisition. Prerequisite: FLA 400 (or its equivalent).

FLA 525 Trends and Issues in Foreign Language Teaching. (3)*selected semesters*

Advanced methods seminar, designed for experienced teachers.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

ARABIC (ARB)**ARB 101 Elementary Arabic. (4)***fall*

Reading, writing, speaking, and understanding basic Arabic. 4 hours lecture, 1 hour lab.

ARB 102 Elementary Arabic. (4)*spring*

Reading, writing, speaking, and understanding basic Arabic. 4 hours lecture, 1 hour lab. Prerequisite: ARB 101 (or its equivalent).

ARB 201 Intermediate Arabic. (4)*fall*

Review of Arabic grammar with emphasis on the development of the skills of listening comprehension, reading, speaking, and writing. 4 hours lecture, 1 hour lab. Prerequisite: ARB 102 (or its equivalent).

*General Studies: G***ARB 202 Intermediate Arabic. (4)***spring*

Review of Arabic grammar with emphasis on the development of the skills of listening comprehension, reading, speaking, and writing. 4 hours lecture, 1 hour lab. Prerequisite: ARB 201 (or its equivalent).

General Studies: G

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

CHINESE (CHI)**CHI 101 First-Year Chinese I. (5)***fall*

Pronunciation, grammar, elementary conversation, and development of basic reading and writing skills. Standard dialect. 5 class hours. Fee.

CHI 102 First-Year Chinese II. (5)*spring*

See CHI 101. Fee. Prerequisite: CHI 101 (or its equivalent).

CHI 201 Second-Year Chinese I. (5)*fall*

Systematic review of grammar. Development of vocabulary through reading and writing. Drill in aural/oral skills. 5 class hours. Fee. Prerequisite: CHI 102 (or its equivalent).

*General Studies: G***CHI 202 Second-Year Chinese II. (5)***spring*

See CHI 201. Fee. Prerequisite: CHI 201 (or its equivalent).

*General Studies: G***CHI 205 Chinese Calligraphy. (1)***fall and spring*

Introduces styles and techniques of Chinese writing. Requires no knowledge of Chinese or Japanese.

CHI 309 Chinese Conversation. (2)*fall*

Aural/oral drills using contemporary stories, articles, and essays. For students with lower-level proficiency. Prerequisite: CHI 202.

CHI 310 Chinese Conversation. (2)*spring*

See CHI 309. Prerequisite: CHI 202.

CHI 311 Chinese Conversation. (2)*fall*

Intensive aural/oral practice in modern Chinese. For students who have lived in China or a Chinese-speaking environment. Discussion, drill. Prerequisite: CHI 202.

CHI 312 Chinese Conversation. (2)*spring*

See CHI 311. Discussion, drill. Prerequisite: CHI 202.

CHI 313 Third-Year Chinese I. (3)*fall*

Expansion of proficiency in listening comprehension, speaking, reading, and writing. Lecture, 3 hours discussion, drill. Prerequisite: CHI 202 (or its equivalent).

*General Studies: G***CHI 314 Third-Year Chinese II. (3)***spring*

Continuation of CHI 313. Prerequisite: CHI 313 (or its equivalent).

*General Studies: G***CHI 321 Chinese Literature. (3)***fall*

Masterworks of the tradition from the 6th century B.C.E. through the 13th century. Readings, lectures, and examinations are in English.

General Studies: L/HU

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

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CHI 322 Chinese Literature. (3)

spring

Masterpieces from the later tradition and its transition to modern times. Readings, lectures, and examinations are in English.

General Studies: L/HU, G

CHI 345 Chinese Film and Civilization. (3)

once a year

Screening and discussion of recent films from China, Taiwan, and Hong Kong in the context of modern Chinese civilization. Lecture, discussion, screening.

CHI 413 Introduction to Classical Chinese. (3)

fall

Reading in various genres of pre-20th century literature (wen-yen), with analysis of the structure of the classical writings. Prerequisite: CHI 314 or instructor approval.

General Studies: HU

CHI 414 Introduction to Classical Chinese. (3)

spring

Continuation of CHI 413. Prerequisite: CHI 413.

General Studies: HU

CHI 494 Special Topics. (1–4)

selected semesters

CHI 499 Individualized Instruction. (1–3)

selected semesters

CHI 500 Bibliography and Research Methods. (3)

selected semesters

Introduces research materials on China in Chinese, Japanese, and Western languages. Overview of research methods. Lecture, discussion.

CHI 514 Advanced Classical Chinese. (3)

selected semesters

Close readings in selected premodern texts, with focus on special grammatical features, and increased vocabulary. Lecture, discussion.

CHI 520 Teaching of Chinese as a Second Language. (3)

selected semesters

Theory and practice of teaching Chinese, including presentation, interaction, and evaluation, with consideration given to cultural factors. Lecture, discussion.

CHI 535 Advanced Readings. (3)

selected semesters

Readings in primary and secondary sources in history, art, religious studies, economics, or other fields. Lecture, discussion.

CHI 543 Chinese Language and Linguistics. (3)

fall

Analysis and discussion, within the framework of linguistic theory, of selected problems in Chinese phonetics, morphology, and syntax. Lecture, discussion.

CHI 585 Problems of Translation. (3)

selected semesters

Theories and practice of translation: strategies for handling a variety of Chinese texts. Lecture, discussion.

CHI 591 Seminar. (3)

selected semesters

Topics in literary, linguistic, or cultural studies.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

FRENCH (FRE)

FRE 101 Elementary French. (4)

fall, spring, summer

Intensive aural/oral drill in class and laboratory; basic grammar supplemented by simple prose readings. Not open to students with credit for FRE 111. 4 hours lecture, 1 hour lab. Fee.

FRE 102 Elementary French. (4)

fall, spring, summer

See FRE 101. Fee. Prerequisite: FRE 101 (or its equivalent).

FRE 107 French for International Professions I. (8)

fall

Accelerated alternative to FRE 101 and 102 or FRE 111. Functional approach. Emphasizes communicative competence for international professions. Fee.

FRE 111 Fundamentals of French. (4)

fall and spring

Primarily for students with two years of high school French who need review to enter second year study. Not open to students with credit for FRE 101 or 102 or 107. 4 hours lecture, 1 hour lab. Fee.

FRE 201 Intermediate French I. (4)

fall, spring, summer

Grammar review, with emphasis on development of skills of speaking, reading, writing, and listening comprehension. 4 hours lecture; 1 hour lab. Fee. Prerequisite: FRE 102 or 111 (or its equivalent).

General Studies: G

FRE 202 Intermediate French II. (4)

fall, spring, summer

Continuation of grammar review with emphasis on development of skills in speaking, reading, writing, and listening comprehension. 4 hours lecture, 1 hour lab. Fee. Prerequisite: FRE 201 (or its equivalent).

General Studies: G

FRE 205 Readings in French Literature. (3)

fall, spring, summer

Designed to teach reading with facility and comprehension. Vocabulary building and textual analysis of literary genres are major elements. Prerequisite: FRE 202 (or its equivalent).

General Studies: G

FRE 207 French for International Professions II. (8)

spring

Continuation of FRE 107, alternative to FRE 201, 202 sequence. Expansion of communicative proficiency in specific areas of international professions. Fee. Prerequisite: FRE 107 or instructor approval.

General Studies: G

FRE 311 French Conversation. (3)

fall and spring

Further practice in speaking French, emphasizing current usage and promoting facility in the expression of ideas. Prerequisite: 8 hours of 200-level French (or its equivalent).

General Studies: G

FRE 312 French Composition. (3)

fall and spring

Further practice in writing French, emphasizing current usage and promoting facility in the expression of ideas. Prerequisite: 8 hours of 200-level French (or its equivalent).

General Studies: G

FRE 315 French Phonetics. (3)

fall

Practice and theory of French pronunciation. Emphasizes standard French, although an overview of regional varieties is offered. Lecture, lab. Prerequisite: FRE 311 (or its equivalent).

FRE 319 Business French. (3)

spring

Introduces the structure, vocabulary, and practices of the French business world. Prerequisite: FRE 312 or instructor approval.

General Studies: G

FRE 321 French Literature. (3)

fall and spring

Representative masterpieces and significant movements of French literature of the Middle Ages through the 18th century. Prerequisite: FRE 205 (or its equivalent).

General Studies: L/HU, H

FRE 322 French Literature. (3)

fall and spring

Literature of the 19th and 20th centuries. Prerequisite: FRE 205 (or its equivalent).

General Studies: L/HU

FRE 411 Advanced Spoken French. (3)

fall and spring

Improvement of spoken French. Prerequisites: FRE 311 and 6 hours of 300-level French (or their equivalents).

General Studies: G

FRE 412 Advanced Written French. (3)

fall and spring

Improvement of composition skills. Prerequisites: FRE 312 and 6 hours of 300-level French (or their equivalents).

General Studies: G

FRE 415 French Civilization I. (3)*spring*

Political, intellectual, social, economic, and artistic development of France from its origins to the end of the 17th century. Prerequisite: 6 hours of upper-division French.

*General Studies: HU***FRE 416 French Civilization II. (3)***spring*

Political, intellectual, social, economic, and artistic development of France from the 18th century to present. Prerequisite: 6 hours of upper-division French.

*General Studies: HU, G***FRE 421 Structure of French. (3)***fall*

Phonology, morphology, syntax, semantics, and varieties of French. Prerequisites: both FRE 311 and 312 or only instructor approval.

FRE 422 Applied French Linguistics. (3)*spring*

Applies linguistic theory and second language acquisition theory to teaching of French. Prerequisite: ASB 480 or ENG 213 or FLA 400.

FRE 423 French Syntax. (3)*spring*

Analyzes French syntactic structure by contemporary theoretical models. Prerequisite: ASB 480 or ENG 213 or FLA 400.

FRE 424 French Phonology. (3)*selected semesters*

Introduces phonological theory and its application to French. Prerequisites: both FRE 311 and 312 or only instructor approval.

FRE 441 French Literature of the 17th Century. (3)*fall*

From 1600 to 1660. Prerequisites: both FRE 321 and 6 hours of 300-level French or only instructor approval.

*General Studies: HU***FRE 442 French Literature of the 17th Century. (3)***spring*

From 1660 to 1700. Prerequisites: both FRE 321 and 6 hours of 300-level French or only instructor approval.

*General Studies: HU, H***FRE 445 French Literature of the 18th Century. (3)***selected semesters*

Contributions of the philosophers and the development of the novel and drama. Prerequisites: both FRE 321 and 6 hours of 300-level French or only instructor approval.

*General Studies: L/HU***FRE 451 French Poetry of the 19th Century. (3)***spring*

From Romanticism to Parnassian poetry to Symbolism. Prerequisites: both FRE 322 and 6 hours of 300-level French or only instructor approval.

FRE 452 French Novel of the 19th Century. (3)*fall*

From Constant, Hugo, Balzac, Stendhal, and Sand to Flaubert and Zola, with emphasis on major literary movements. Prerequisites: both FRE 322 and 6 hours of 300-level French or only instructor approval.

*General Studies: HU***FRE 453 Theater of the 19th Century. (3)***spring*

From Romantic drama to the Symbolist Theater. Representative plays of Hugo, Musset, Vigny, Dumas, Becque, Rostand, Feydeau, and Mirbeau. Prerequisites: both FRE 322 and 6 hours of 300-level French or only instructor approval.

*General Studies: L/HU***FRE 461 Modern Narrative. (3)***fall*

Representative authors from Gide to the new Nouveau Roman. Prerequisites: both FRE 322 and 6 hours of 300-level French or only instructor approval.

*General Studies: HU***FRE 462 Modern Poetry. (3)***spring*

Representative authors from Mallarmé to Bonnefoy. Lecture, discussion. Prerequisites: both FRE 322 and 6 hours of 300-level French or only instructor approval.

*General Studies: HU***FRE 471 The Literature of Francophone Africa and the Caribbean. (3)***fall*

Selected prose, poetry, and drama of black authors from Africa and the Caribbean. Prerequisites: both FRE 322 and 6 hours of 300-level French or only instructor approval.

*General Studies: L/HU***FRE 472 Franco-Canadian Civilization. (3)***spring*

Study of the civilization of Quebec in particular through its history, language, literature, music, and customs. Prerequisite: 9 hours of 300-level French or instructor approval.

FRE 480 Translation Theory and Practice. (3)*spring*

Theoretical and practical approaches to the fundamentals of meaning-based translation. Lecture, seminar. Prerequisite: FRE 412 or instructor approval.

FRE 482 Business Translation. (3)*fall*

Practical approach to meaning-based translation through exposure to a variety of business texts. Prerequisite: FRE 312 or instructor approval.

FRE 485 Literary Translation. (3)*spring*

Theory and practice of literary translation with emphasis on application through individual translation project. Prerequisite: FRE 480.

FRE 494 Special Topics. (1–4)*selected semesters***FRE 499 Individualized Instruction. (1–3)***selected semesters***FRE 500 Bibliography and Research Methods. (3)***fall*

Required of all graduate students.

FRE 510 Explication de Textes. (3)*selected semesters*

Detailed analysis of literary texts.

FRE 515 Intellectual Currents in France, from the Middle Ages to the 18th Century. (3)*selected semesters*

Significant social, aesthetic, philosophic, and scientific ideas as presented by major writers of fiction and nonfiction.

FRE 516 Intellectual Currents in France, from the 19th Century to the 20th Century. (3)*selected semesters*

See FRE 515.

FRE 521 History of the French Language. (3)*spring*

Principal phonological, morphological, and semantic developments of French from Latin to present, with emphasis on Old and Middle French. Prerequisite: some familiarity with Latin recommended.

FRE 531 Medieval French Literature. (3)*fall*

Readings in the epics, early drama, Roman courtois, and other representative literary genres of the Middle Ages.

FRE 535 French Literature of the 16th Century. (3)*fall*

Readings in French Renaissance literature with special attention to the humanist movement and to Rabelais, Montaigne, and the Pleiade.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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FRE 580 Translation Theory and Practice. (3)

spring

Theoretical and practical approaches to the fundamentals of meaning-based translation. Lecture, seminar. Prerequisite: FRE 412 or instructor approval.

FRE 582 Business Translation. (3)

fall

Practical approach to meaning-based translation through exposure to a variety of business texts. Prerequisite: FRE 312 or instructor approval.

FRE 585 Literary Translation. (3)

spring

Theory and practice of literary translation with emphasis on application through individual translation project. Lecture, seminar. Prerequisite: FRE 480.

FRE 591 Seminar. (1–12)

selected semesters

Topics may include the following:

- Advanced Problems in French Literature. (3)
- Balzac. (3)
- Corneille, Molière, and Racine. (3)
- Diderot, Voltaire, and Rousseau. (3)
- Flaubert. (3)
- French Existentialist Literature. (3)
- French Literary Criticism. (3)
- Proust. (3)
- Realism and Naturalism. (3)
- Romanticism. (3)
- Stendhal and Zola. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

GERMAN (GER)

GER 101 Elementary German. (4)

fall, spring, summer

Reading, writing, speaking, and understanding of basic German, with emphasis on pronunciation and grammar. Credit is allowed for only GER 101 or 111. 4 hours lecture, 1 hour lab. Fee.

GER 102 Elementary German. (4)

fall, spring, summer

See GER 101. Credit is allowed for only GER 102 or 111. Fee. Prerequisite: GER 101 (or its equivalent).

GER 111 Fundamentals of German. (4)

fall and spring

Primarily for students with two years of high school German who need review to enter second-year study. Credit is allowed for only GER 111 or both GER 101 and 102. 4 hours lecture, 1 hour lab. Fee.

GER 201 Intermediate German. (4)

fall, spring, summer

Intensive review of grammar, with emphasis on the development of the skills of speaking, listening comprehension, reading, and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: GER 102 or 111 (or its equivalent).

General Studies: G

GER 202 Intermediate German. (4)

fall, spring, summer

See GER 201. Fee. Prerequisite: GER 201 (or its equivalent).

General Studies: G

GER 303 Scientific German. (3)

selected semesters

Acquisition of a specialized vocabulary through the reading of German scientific publications. Prerequisite: GER 202 (or its equivalent).

GER 304 Scientific German. (3)

selected semesters

See GER 303. Prerequisite: GER 202 (or its equivalent).

GER 311 German Conversation. (3)

fall

Expansion of idiom through oral practice dealing with contemporary articles, essays, and stories. 3 semester hours limit for majors. Prerequisite: GER 202 (or its equivalent).

General Studies: G

GER 312 German Conversation. (3)

spring

See GER 311. Prerequisite: GER 202 (or its equivalent).

General Studies: G

GER 313 German Composition. (3)

spring

Intensive practice in writing, emphasizing style and grammar. Prerequisite: GER 202 (or its equivalent).

General Studies: G

GER 314 Introduction to German Literature. (3)

fall

Beginning study of German poetry, drama, the novel, and the *Novelle*. Prerequisite: GER 202 (or its equivalent).

GER 319 Business Correspondence and Communication. (3)

selected semesters

Organization and presentation of clear, effective business communications; vocabulary applicable to modern business usage. Prerequisite: GER 313 or instructor approval.

General Studies: G

GER 394 Special Topics. (1–4)

selected semesters

GER 411 Advanced Grammar and Conversation. (3)

fall

Improvement of diction and idiom through intensive oral review. Prerequisite: GER 311 or 312 (or its equivalent).

General Studies: G

GER 412 Advanced Grammar and Composition. (3)

spring

Improvement of writing ability. Prerequisite: GER 313 (or its equivalent).

General Studies: G

GER 415 German Civilization. (3)

spring

Aspects of political, social, and cultural life of the German-speaking world from the beginning through 1600. Prerequisite: a 300-level course in German or instructor approval.

General Studies: HU, H

GER 416 German Civilization. (3)

fall

From 1600 through 1945. Prerequisite: a 300-level course in German or instructor approval.

General Studies: HU, H

GER 421 German Literature. (3)

fall

From the beginning to Classicism. Prerequisite: 6 hours of 300-level German.

General Studies: HU

GER 422 German Literature. (3)

spring

From Romanticism to the present. Prerequisite: 6 hours of 300-level German.

General Studies: L/HU

GER 445 German Literature: Enlightenment to Classicism. (3)

selected semesters

Major works of the literary epochs in the century. Prerequisite: GER 421 or instructor approval.

GER 451 German Literature: Biedermeier to Naturalism. (3)

selected semesters

Representative works of prose and poetry from 1820 to 1890. Prerequisite: GER 422 or instructor approval.

GER 453 German Literary Masterpieces on Film. (3)

fall, spring, summer

Film and literature in their correlation to each other and to cultural, political, and social trends in German-speaking countries. Special arrangements for graduate students and those without a knowledge of German. Lecture, discussion.

General Studies: HU, G, H

GER 461 Contemporary German Literature. (3)

spring and summer

German writers since 1945. Prerequisite: GER 422 or instructor approval.

GER 494 Special Topics. (1–4)*selected semesters***GER 500 Bibliography and Research Methods. (3)***selected semesters*

Required of all graduate students.

GER 511 German Stylistics. (3)*selected semesters*

Art of writing literary German, comparative stylistics.

GER 521 History of German Language. (3)*selected semesters*

Linguistic development of German from the earliest records to the present.

GER 523 German Drama. (3)*selected semesters*

Drama of the 19th and 20th centuries.

GER 525 German Novel. (3)*selected semesters*

Special studies in the German novel.

GER 527 The *Novelle*. (3)*selected semesters*

Special studies in the German short story.

GER 531 Middle High German Language and Literature. (3)*selected semesters*

Reading and discussion of specimens of the Middle High German epics, romances, and other literary genres.

GER 551 Romanticism. (3)*selected semesters*

Treatment of early and late Romanticism.

GER 555 Modern German Literature. (3)*selected semesters*

Major works from the period of Expressionism to 1945.

GER 591 Seminar. (1–12)*selected semesters*

Special topics are concerned with a figure, theme, or work in German literature or Germanic studies. Topics may include the following:

- Faust. (3)
- Germanic Studies. (3)
- Goethe. (3)
- Grass and Böll. (3)
- Hesse. (3)
- Kafka. (3)
- Kleist. (3)
- Schiller. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

ANCIENT GREEK (GRK)**GRK 101 Elementary Ancient Greek. (4)***fall*

Ancient Greek grammar and vocabulary with an emphasis on developing reading skills. For beginning students only.

GRK 201 Intermediate Ancient Greek. (4)*spring*

Continuation of GRK 101. Increased emphasis on reading texts adapted from Aristophanes, Demosthenes, and Plato. Prerequisite: GRK 101 or instructor approval.

GRK 301 Ancient Greek Literature. (3)*fall*

Readings in the masterpieces of ancient Greek literature; advanced grammar. Authors read are changed each year in accordance with the needs of the class. May be repeated for credit. Prerequisite: GRK 201 or instructor approval.

*General Studies: HU***GRK 302 Ancient Greek Literature. (3)***spring*

Continuation of GRK 301. Prerequisite: GRK 201 or instructor approval.

General Studies: HU

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

HEBREW (HEB)**HEB 101 Elementary Modern Hebrew. (4)***fall*

Reading, writing, speaking, and understanding of basic modern Hebrew, with emphasis on pronunciation and grammar. 4 hours lecture, 1 hour lab. Fee.

HEB 102 Elementary Modern Hebrew. (4)*spring*

Reading, writing, speaking, and understanding of basic modern Hebrew, with emphasis on pronunciation and grammar. 4 hours lecture, 1 hour lab. Fee. Prerequisite: HEB 101 (or its equivalent).

HEB 201 Intermediate Modern Hebrew. (4)*fall*

Intensive review of grammar, with emphasis on the development of the skills of speaking, listening comprehension, reading, and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: HEB 102 (or its equivalent).

*General Studies: G***HEB 202 Intermediate Modern Hebrew. (4)***spring*

Intensive review of grammar, with emphasis on the development of the skills of speaking, listening comprehension, reading, and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: HEB 201 (or its equivalent).

*General Studies: G***HEB 313 Advanced Modern Hebrew. (4)***fall*

Continued development of ability to communicate orally and in writing. Reading of selected literary works. Prerequisite: HEB 202 (or its equivalent).

HEB 314 Advanced Modern Hebrew. (4)*spring*

Continued development of ability to communicate orally and in writing. Reading of selected literary works. Prerequisite: HEB 313 (or its equivalent).

HEB 375 Contemporary Culture of Israel. (3)*fall and spring*

Intense study of aspects of historical, social, political, and cultural modern life in Israel. Beginning of Zionism to present day. Lecture, discussion.

General Studies: HU, G

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

INDONESIAN (IDN)**IDN 101 Elementary Indonesian I. (5)***fall*

Basic communication, reading, and writing skills. Intensive oral/aural classroom drill supplemented by prose reading. 4 hours lecture, 1 hour lab. Fee.

IDN 102 Elementary Indonesian II. (5)*spring*

Basic communication, reading, and writing skills. Intensive oral/aural classroom drill supplemented by prose reading. 4 hours lecture, 1 hour lab. Fee. Prerequisite: IDN 101 (or its equivalent).

IDN 201 Intermediate Indonesian I. (5)*fall*

Systematic review of grammar. Continued development of communication skills with increased emphasis on reading and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: IDN 102 (or its equivalent).

General Studies: G

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

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IDN 202 Intermediate Indonesian II. (5)

spring

Systematic review of grammar. Continued development of communication skills with increased emphasis on reading and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: IDN 201 (or its equivalent).
General Studies: G

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses,](#)" page 56.

ITALIAN (ITA)

ITA 101 Elementary Italian. (5)

fall, spring, summer

Aural/oral drill in class and laboratory. Basic grammar supplemented by simple prose readings. 5 hours lecture, 1 hour lab. Fee.

ITA 102 Elementary Italian. (5)

fall, spring, summer

Aural/oral drill in class and laboratory. Basic grammar supplemented by simple prose readings. 5 hours lecture, 1 hour lab. Fee. Prerequisite: ITA 101 (or its equivalent).

ITA 201 Intermediate Italian. (3)

fall and spring

Systematic review of grammar. Development of vocabulary through reading, listening, speaking, and writing. 3 hours lecture, 1 hour lab. Fee. Prerequisite: ITA 102 (or its equivalent).

General Studies: G

ITA 202 Intermediate Italian. (3)

fall and spring

Systematic review of grammar. Development of vocabulary through reading, listening, speaking, and writing. 3 hours lecture, 1 hour lab. Fee. Prerequisite: ITA 201 (or its equivalent).

General Studies: G

ITA 311 Italian Composition and Conversation. (3)

fall and spring

Development of writing ability and oral expression. Prerequisite: ITA 202 (or its equivalent).

General Studies: G

ITA 312 Italian Composition and Conversation. (3)

fall and spring

See ITA 311. Prerequisite: ITA 202 (or its equivalent).

General Studies: G

ITA 314 Advanced Italian. (3)

selected semesters

Advanced grammar and composition with readings of selected literary works. Prerequisite: ITA 202 or instructor approval.

General Studies: G

ITA 325 Introduction to Italian Literature. (3)

fall

Italian literature through the interpretation of representative works in drama, poetry, and novel. Prerequisite: ITA 202 or instructor approval.

General Studies: HU

ITA 394 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Commercial Italian. (3)

ITA 415 Italian Civilization. (3)

selected semesters

General survey of history, literature, art, and music, emphasizing Italy's cultural contribution to Western civilization. Prerequisites: ITA 311, 312 (or 314).

General Studies: L/HU, G

ITA 420 Italian Cinema. (3)

fall

Major trends of Italian cinema from the post-war period to the present.

ITA 425 Italian American Culture. (3)

spring

Analyzes representations of Italian American history and culture in several media including literature, film, and television. Lecture, discussion.

General Studies: L

ITA 430 Italian Literature of the Middle Ages. (3)

selected semesters

Emphasizes "Stil Novo," Dante's minor works, Petrarch, and Boccaccio. Prerequisite: ITA 325 or instructor approval.

General Studies: HU

ITA 441 Dante: *Divina Commedia*. (3)

selected semesters

Critical reading of the three *Cantiche* (*Inferno*, *Purgatorio*, and *Paradiso*). Prerequisite: ITA 325.

General Studies: L/HU

ITA 443 Italian Literature of the Renaissance. (3)

selected semesters

Emphasizes Lorenzo de'Medici, Poliziano Castiglione, Machiavelli, Ariosto, and Tasso. Prerequisite: ITA 325 or instructor approval.

General Studies: HU, H

ITA 446 Italian Literature of the 18th and 19th Centuries. (3)

selected semesters

Goldoni, Parini, Alfieri, the poetry of Foscolo and Leopardi, and the sociohistorical novels of Foscolo, Manzoni, and Verga. Prerequisite: ITA 325 or instructor approval.

General Studies: HU

ITA 449 20th-Century Italian Literature. (3)

selected semesters

Major works, figures, and movements of contemporary Italian literature. Prerequisite: ITA 325.

General Studies: HU, G

ITA 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Italian/American Culture. (3)

ITA 499 Individualized Instruction. (1–3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses,](#)" page 56.

JAPANESE (JPN)

JPN 101 First-Year Japanese I. (5)

fall

Communication skills and basic skills in grammar, reading, and writing, including hiragana, katakana, and about 75 kanji. 5 hours per week. Fee.

JPN 102 First-Year Japanese II. (5)

spring

Continuation of JPN 101. Additional 99 kanji. Continued development of communication skills in speaking, listening, reading, writing, and culture. Fee. Prerequisite: JPN 101 (or its equivalent).

JPN 201 Second-Year Japanese I. (5)

fall

Continued development of communication skills. Increased emphasis on reading and writing. Review of fundamentals of structure to increase abilities in composition and translation. 5 hours per week. Fee. Prerequisite: JPN 102 (or its equivalent).

General Studies: G

JPN 202 Second-Year Japanese II. (5)

spring

Continuation of JPN 201. Fee. Prerequisite: JPN 201 (or its equivalent).

General Studies: G

JPN 206 Calligraphy. (1)

selected semesters

Introduces the practice of calligraphy in Japan, with emphasis on the derivation of Japanese kana syllabaries from Chinese characters. Prerequisite: CHI 205 or JPN 101.

JPN 309 Intermediate Japanese Conversation. (2)

fall

Practice in current usage in expression of ideas. Recommended especially for those who have not had the opportunity to practice Japanese in Japan. Prerequisite: JPN 202.

JPN 310 Intermediate Japanese Conversation. (2)

spring

Continuation of JPN 309. Prerequisite: JPN 309.

JPN 311 Japanese Conversation and Composition. (3)*fall*

Intensive aural/oral practice leading toward conversational fluency. Practice in writing Japanese, emphasizing current usage. Prerequisite: JPN 202.

*General Studies: G***JPN 312 Japanese Conversation and Composition. (3)***spring*

See JPN 311. Prerequisite: JPN 202.

*General Studies: G***JPN 313 Third-Year Japanese I. (3)***fall*

Continued development of basic skills with greater emphasis on reading. JPN 313 and 314 must be taken in sequence. Prerequisite: JPN 202 (or its equivalent).

*General Studies: G***JPN 314 Third-Year Japanese II. (3)***spring*

Continued development of basic skills with continued emphasis on reading. JPN 313 and 314 must be taken in sequence. Prerequisite: JPN 313 or instructor approval.

*General Studies: G***JPN 321 Japanese Literature. (3)***selected semesters*

Readings in modern literature, changing yearly. May be repeated for credit. Prerequisite: JPN 313 (or 314) or instructor approval.

*General Studies: L/HU, G***JPN 394 Special Topics. (1–4)***selected semesters***JPN 414 Introduction to Classical Japanese. (3)***spring*

Readings from various genres of pre-20th-century literature, with analysis of the structure of the classical language. Prerequisite: JPN 313 or instructor approval.

JPN 435 Advanced Readings. (3)*selected semesters*

Readings in history, art, religious studies, economics, or other fields. Lecture, discussion. Prerequisite: JPN 314 (or its equivalent).

JPN 485 Problems of Translation. (3)*selected semesters*

Theories and practice of translation: strategies for handling a variety of Japanese texts. Lecture, discussion. Prerequisite: JPN 314 (or its equivalent).

JPN 494 Special Topics. (1–4)*selected semesters***JPN 499 Individualized Instruction. (1–3)***selected semesters***JPN 500 Bibliography and Research Methods. (3)***selected semesters*

Introduces research materials on Japan both in Japanese and in Western languages. Overview of research methods. Lecture, discussion.

JPN 514 Advanced Premodern Japanese. (3)*selected semesters*

Close readings of selected premodern texts, with focus on grammatical and stylistic features. Lecture, discussion. Prerequisite: JPN 414 (or its equivalent).

JPN 520 Teaching of Japanese as a Second Language. (3)*selected semesters*

Theory and practice of teaching Japanese, including presentation, interaction, and evaluation, with consideration given to cultural factors. Lecture, discussion.

JPN 535 Advanced Readings. (3)*selected semesters*

Readings in primary and secondary sources in history, art, religious studies, literature, or other fields. Lecture, discussion. Prerequisite: JPN 414 (or its equivalent).

JPN 543 Japanese Language and Linguistics. (3)*selected semesters*

Analysis and discussion of linguistic theories applied to Japanese phonology, morphology, and syntax, including psychological, sociological, and historical aspects.

JPN 585 Advanced Problems of Translation. (3)*selected semesters*

Theories and practice of translation; strategies for handling a variety of Japanese texts. Lecture, discussion. Prerequisite: JPN 435 (or its equivalent).

JPN 591 Seminar. (3)*selected semesters*

Topics in literary, linguistic, or cultural studies.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

KOREAN (KOR)**KOR 101 First-Year Korean I. (5)***fall*

Pronunciation, grammar, elementary conversation, and development of basic reading and writing skills including Han'gul. Lecture, recitation.

KOR 102 First-Year Korean II. (5)*spring*

Continuation of KOR 101. Lecture, recitation. Prerequisite: KOR 101 (or its equivalent).

KOR 201 Second-Year Korean I. (5)*fall*

Continual development of communication skills. Increased emphasis on reading and writing, vocabulary building, and review of fundamentals. Lecture, recitation. Prerequisite: KOR 102 (or its equivalent).

*General Studies: G***KOR 202 Second-Year Korean II. (5)***spring*

Continuation of KOR 201. Lecture, recitation. Prerequisite: KOR 201 (or its equivalent).

*General Studies: G***KOR 250 Korean Culture and Society. (3)***once a year*

Survey of Korean culture and society, covering history, religious traditions, gender, and popular culture. Lecture, discussion.

*General Studies: G***KOR 313 Third-Year Korean I. (3)***fall*

Continued development of ability to communicate orally and in writing. Exposure to a variety of Korean written styles. Reading, writing, discussion. Prerequisite: KOR 202 (or its equivalent).

KOR 314 Third-Year Korean II. (5)*spring*

Continuation of KOR 313. Reading, writing, discussion. Prerequisite: KOR 313 (or its equivalent).

KOR 347 Korean Film and Literature. (3)*fall*

Introduces aspects of Korean history, culture, and society through Korean film and literature. Lecture, discussion.

KOR 350 Women of Korea. (3)*spring*

Examines the changing role and status of women in modern Korea in relation to political and cultural changes. Lecture, discussion.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

LATIN (LAT)**LAT 101 Elementary Latin. (4)***fall and spring*

Basic Latin grammar with an emphasis on developing reading skills. For beginning students only.

LAT 102 Elementary Latin. (4)*fall and spring*

Continuation of LAT 101. Prerequisite: LAT 101 (or its equivalent).

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

COLLEGE OF LIBERAL ARTS AND SCIENCES

LAT 201 Intermediate Latin. (4)

fall

Selected Latin literature, both classical and postclassical; Virgil's *Aeneid*; advanced grammar. Prerequisite: LAT 102 or instructor approval.

General Studies: HU

LAT 202 Intermediate Latin. (4)

spring

Continuation of LAT 201. Students entering LAT 202 directly from LAT 102 must complete LAT 201 to satisfy the College of Liberal Arts and Sciences second language requirement. Prerequisite: LAT 201 or instructor approval.

General Studies: HU

LAT 421 Roman Literature. (3)

fall

Readings in the Latin masterpieces. Authors read change each year in accordance with needs of the class. May be repeated for credit. Prerequisite: LAT 202 or instructor approval.

General Studies: HU

LAT 422 Roman Literature. (3)

spring

See LAT 421. Prerequisite: LAT 202 or instructor approval.

General Studies: HU

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

NORWEGIAN (NOR)

NOR 101 Elementary Norwegian. (4)

fall

Reading, writing, speaking, and understanding of basic Norwegian. 4 hours lecture, 1 hour lab. Fee.

NOR 102 Elementary Norwegian. (4)

spring

Reading, writing, speaking, and understanding of basic Norwegian. 4 hours lecture, 1 hour lab. Fee. Prerequisite: NOR 101 (or its equivalent).

NOR 201 Intermediate Norwegian. (4)

fall

Reviews Norwegian grammar with emphasis on the development of the skills of speaking, listening comprehension, reading, and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: NOR 102 (or its equivalent).

NOR 202 Intermediate Norwegian. (4)

spring

Reviews Norwegian grammar with emphasis on the development of the skills of speaking, listening comprehension, reading, and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: NOR 201 (or its equivalent).

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

PORTUGUESE (POR)

POR 101 Elementary Portuguese. (5)

fall

Basic grammar with intensive drills in class and laboratory directed toward conversational fluency. 5 hours lecture, 1 hour lab. Fee. Prerequisite: 1 year of Spanish or French or Italian or instructor approval.

POR 201 Intermediate Portuguese. (5)

spring

Continuation of POR 101. Intensive drill of fundamentals in class and laboratory directed toward conversational fluency. 5 hours lecture, 1 hour lab. Fee. Prerequisite: POR 101 or instructor approval.

General Studies: G

POR 313 Portuguese Composition and Conversation. (3)

fall

Develops skill in written Portuguese and corrected oral expression. Must be taken in sequence. Prerequisite: POR 201 or instructor approval.

General Studies: G

POR 314 Portuguese Composition and Conversation. (3)

spring

Continuation of POR 313. Prerequisite: POR 313 or instructor approval.

General Studies: G

POR 321 Luso-Brazilian Literature. (3)

selected semesters

Representative masterpieces of Portuguese and Brazilian literature from the beginning to the present. Prerequisite: POR 313 or instructor approval.

General Studies: HU

POR 472 Luso-Brazilian Civilization. (3)

selected semesters

Lectures, readings, and discussion of important aspects of Luso-Brazilian civilization. Topics from music, art, folklore, literature, history, and politics. Prerequisite: POR 313 or instructor approval.

General Studies: HU, G

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

ROMANIAN (ROM)

ROM 101 Elementary Romanian. (5)

fall

Basic grammar with intensive drills in class and laboratory directed toward conversational fluency. 5 hours lecture, 1 hour lab.

ROM 201 Intermediate Romanian. (5)

fall

Continuation of ROM 101. Intensive drill of fundamentals in class and laboratory directed toward conversational fluency. 5 hours lecture, 1 hour lab. Prerequisite: ROM 101 or instructor approval.

ROM 313 Romanian Composition and Conversation. (3)

spring

Develops skills in written Romanian and correct oral expression. Must be taken in sequence with ROM 314. Prerequisite: ROM 201 or instructor approval.

ROM 314 Romanian Composition and Conversation. (3)

spring

Continuation of ROM 313. Develops skills in written Romanian and correct oral expression. Must be taken in sequence. Prerequisite: ROM 313 or instructor approval.

ROM 494 Special Topics. (1–4)

once a year

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

RUSSIAN (RUS)

RUS 101 Elementary Russian. (4)

fall, spring, summer

Structural grammar and basic vocabulary. Introduces and reinforces aural/oral reading and writing skills. 4 hours lecture, 1 hour lab. Fee.

RUS 102 Elementary Russian. (4)

spring and summer

See RUS 101. Fee. Prerequisite: RUS 101 (or its equivalent).

RUS 201 Intermediate Russian. (4)

fall and summer

Systematic review of grammar. Develops vocabulary through reading and writing. Drill in aural/oral skills. 4 hours lecture, 1 hour lab. Fee. Prerequisite: RUS 102 (or its equivalent).

General Studies: G

RUS 202 Intermediate Russian. (4)

spring and summer

See RUS 201. Fee. Prerequisite: RUS 201 (or its equivalent).

General Studies: G

RUS 211 Basic Russian Conversation. (3)

fall

Intensive aural/oral drill to supplement reading and grammatical skills acquired in RUS 101, 102, 201, and 202. Required of Russian majors. Fee. Prerequisite: RUS 102.

General Studies: G

RUS 212 Basic Russian Conversation. (3)*spring*

See RUS 211. Fee. Prerequisite: RUS 102.

*General Studies: G***RUS 303 Scientific Russian. (3)***fall*

Acquisition of scientific vocabulary through reading from current Russian scientific publications. Does not satisfy the Liberal Arts and Sciences language requirement for B.A. degree. Prerequisite: RUS 102.

RUS 304 Scientific Russian. (3)*spring*

See RUS 303. Prerequisite: RUS 102.

RUS 311 Russian Composition and Conversation. (3)*fall*

Develops writing ability and oral expression. Prerequisite: RUS 202.

*General Studies: G***RUS 312 Russian Composition and Conversation. (3)***spring*

See RUS 311. Prerequisite: RUS 202.

*General Studies: G***RUS 321 Survey of Russian Literature. (3)***once a year*

Main literary movements, authors, and significant works of prose, poetry, and drama from the beginning to the mid-19th century in translation. Prerequisite: RUS 202 (or its equivalent).

*General Studies: HU, H***RUS 322 Survey of Russian Literature. (3)***once a year*

Insight into the 19th- and early 20th-century Russian thought, life, and culture by reading translations of works of major writers. Prerequisite: RUS 202 (or its equivalent).

*General Studies: L/HU***RUS 323 Survey of Literature of the Soviet Era. (3)***once a year*

Main literary movements, prominent authors, and the most significant works of prose, poetry, and drama of the Soviet period from 1917–1991. Prerequisite: RUS 202 (or its equivalent).

*General Studies: L/HU, G***RUS 411 Advanced Composition and Conversation I. (3)***fall*

Improves aural discrimination and self-expression in oral and written skills, emphasizing vocabulary building. Subject materials drawn from current post-Soviet-Russian publications. Prerequisite: RUS 312.

*General Studies: G***RUS 412 Advanced Composition and Conversation II. (3)***spring*

See RUS 411. Prerequisite: RUS 312.

*General Studies: G***RUS 417 Applied Russian Phonetics. (3)***selected semesters*

General improvement in language skills through aural/oral training in Russian phonology and an analysis of Russian orthography. Prerequisite: RUS 102.

RUS 420 Russian Poetry. (3)*selected semesters*

Development of Russian poetry from its beginnings to the present, including both native and émigré poets. Topics in criticism and the study of poetics. Prerequisite: RUS 312 or instructor approval.

*General Studies: L/HU***RUS 421 Pushkin. (3)***selected semesters*Pushkin's poetry, plays, and prose fiction, including *Eugene Onegin*, *The Little Tragedies*, *Tales of Belkin*, *Queen of Spades*, and *The Captain's Daughter*. Taught in English. Does not satisfy the Liberal Arts and Sciences language requirement for B.A. degree.*General Studies: L/HU***RUS 423 Dostoyevsky. (3)***selected semesters*Dostoyevsky's major works of fiction, including *Crime and Punishment* and *Brothers Karamazov*. Taught in English. Does not satisfy the Liberal Arts and Sciences language requirement for B.A. degree.*General Studies: L/HU***RUS 424 Tolstoy. (3)***selected semesters*Tolstoy's major works, including *War and Peace* and *Anna Karenina*. Taught in English. Does not satisfy the Liberal Arts and Sciences language requirement for B.A. degree.*General Studies: L/HU***RUS 425 Chekhov. (3)***selected semesters*Chekhov's major works, representative short stories and major plays, including *The Cherry Orchard* and *Three Sisters*. Taught in English. Does not satisfy the Liberal Arts and Sciences language requirement for B.A. degree.*General Studies: L/HU***RUS 426 Literatures of the Nationalities of the Former Soviet Union. (3)***selected semesters*

Includes such authors as Belsevica, Kross, Venclova, Kupala, Khvylovy, Sevak, Nasri, Aitmatov, Charents, Cholpan. Prerequisite: RUS 312 or instructor approval.

*General Studies: L/HU, G***RUS 430 Russian Short Story. (3)***selected semesters*

Detailed study of representative works of the Russian short story genre. Includes authors from both Imperial and Soviet Russia. Prerequisite: RUS 312 or instructor approval.

*General Studies: L/HU***RUS 440 History of the Russian Language. (3)***selected semesters*

Principles of historical linguistics presented through the evolution of the Russian language from Proto-Indo-European to the present. Readings of historical documents in Old Russian and Old Church Slavonic. Prerequisite: RUS 312 or instructor approval.

RUS 441 Survey of Russian Culture. (3)*selected semesters*

Interplay of artistic, social, and political forces in the development of Russian culture from the Kievan period to the present. Exclusive use of Russian language source materials. Prerequisite: RUS 312 or instructor approval.

*General Studies: L/HU, G, H***RUS 494 Special Topics. (1–4)***selected semesters***RUS 499 Individualized Instruction. (1–3)***selected semesters***RUS 591 Seminar. (3)***selected semesters*

Topics in literary, linguistic, or other cultural studies.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.**SCANDINAVIAN (SCA)****SCA 250 Introduction to Scandinavian Culture. (3)***spring*

Scandinavian identity from an interdisciplinary perspective with historic overview. Lecture, discussion.

*General Studies: HU, G, H***SCA 314 Medieval Scandinavia. (3)***fall and spring*

Study in English translation of the Sagas, Edda, and Skaldic poetry, history and mythology of the Vikings.

SCA 315 Old Norse. (3)*fall and spring*

Readings and study of grammatical structures of Medieval Scandinavian with emphasis on the Sagas and Edda poetry and historical writings.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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SCA 316 Scandinavian Cinema. (3)

fall and spring

Presents Scandinavian films, with English subtitles, as representatives of contemporary and historical culture.

General Studies: HU, G

SCA 450 Masterpieces of Scandinavian Literature. (3)

spring

Scandinavian literature in translation in its cultural and historical contexts.

General Studies: L/HU

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

SPANISH (SPA)

SPA Note 1. Students who have completed their secondary education in a school where Spanish was the official language of instruction should begin their studies at the 325 level or above. No student who has completed more than two years of high school in a Spanish-speaking country, where Spanish is the medium of instruction in the school, is allowed to register in a Spanish language class below the 400 level.

SPA 101 Elementary Spanish. (4)

fall, spring, summer

Fundamentals of the language. Emphasizes listening, speaking, reading, and writing. Credit is allowed for only SPA 101 or 111. 4 hours lecture, 1 hour lab. Fee. See SPA Note 1.

SPA 102 Elementary Spanish. (4)

fall, spring, summer

See SPA 101. Credit is allowed for only SPA 102 or 111. Fee. See SPA Note 1. Prerequisite: SPA 101 (or its equivalent).

SPA 107 Spanish for International Professions I. (8)

fall

Accelerated program alternative to SPA 101, 102 sequence. Functional approach to needs of international professions. Fee. See SPA Note 1.

SPA 111 Fundamentals of Spanish. (4)

fall and spring

Primarily for students with two years of high school Spanish who need review to enter second-year study. Credit is allowed for only SPA 111 or both SPA 101 and 102. 4 hours lecture, 1 hour lab. Fee. See SPA Note 1.

SPA 201 Intermediate Spanish. (4)

fall, spring, summer

Continuation of fundamentals. Emphasizes the development of the skills of reading, listening comprehension, speaking, writing, and culture. 4 hours lecture, 1 hour lab. Fee. See SPA Note 1. Prerequisite: SPA 102 or 111.

General Studies: G

SPA 202 Intermediate Spanish. (4)

fall, spring, summer

See SPA 201. Fee. See SPA Note 1. Prerequisite: SPA 201 (or its equivalent).

General Studies: G

SPA 203 Intermediate Spanish for Bilinguals. (4)

fall

For Spanish-speaking students, in lieu of SPA 201. Composition, literature, conversation, grammar fundamentals. 4 hours lecture, 1 hour lab. Fee. See SPA Note 1. Prerequisite: SPA 102 or 111 or placement examination.

General Studies: G

SPA 204 Intermediate Spanish for Bilinguals. (4)

spring

For Spanish-speaking students, in lieu of SPA 202. Composition, literature, conversation, grammar fundamentals. 4 hours lecture, 1 hour lab. See SPA Note 1. Prerequisite: SPA 203 (or its equivalent).

General Studies: G

SPA 207 Spanish for International Professions II. (8)

spring

Continuation of SPA 107, alternative to SPA 201, 202 sequence.

Expansion of communicative proficiency in specific areas of international professions. Fee. See SPA Note 1. Prerequisite: SPA 107 or instructor approval.

General Studies: G

SPA 311 Spanish Conversation. (3)

fall and spring

Designed primarily for nonmajors to promote vocabulary building and communicative expression in Spanish through discussions based on cultural readings. See SPA Note 1. Prerequisite: SPA 202 (or its equivalent).

SPA 312 Spanish Conversation. (3)

fall and spring

See SPA 311. See SPA Note 1. Prerequisite: SPA 311 (or its equivalent).

SPA 313 Spanish Conversation and Composition. (3)

fall, spring, summer

Designed to develop skill and accuracy in spoken and written Spanish. Required of majors; SPA 313 and 314 must be taken in sequence.

See SPA Note 1. Prerequisite: SPA 202 (or its equivalent).

General Studies: G

SPA 314 Spanish Conversation and Composition. (3)

fall, spring, summer

See SPA 313. See SPA Note 1. Prerequisite: SPA 313 (or its equivalent).

General Studies: G

SPA 315 Spanish Conversation and Composition for Bilinguals. (3)

fall

Emphasizes comparing standard Spanish with regional Southwest Spanish. May be taken in lieu of SPA 313 and 314. See SPA Note 1. Prerequisite: SPA 202 or 204 or instructor approval.

SPA 316 Spanish Conversation and Composition for Bilinguals. (3)

spring

See SPA 315. See SPA Note 1. Prerequisite: SPA 315 (or its equivalent).

SPA 319 Business Correspondence and Communication. (3)

selected semesters

Organization and presentation of clear, effective business communications; vocabulary applicable to modern business usage. See SPA Note 1. Prerequisite: SPA 314 or 316 or instructor approval.

General Studies: G

SPA 325 Introduction to Hispanic Literature. (3)

fall and spring

Critical approach to and analysis of literary types, including poetry, drama, short story, and novel. Required of all majors. See SPA Note 1. Prerequisite: SPA 313.

General Studies: HU

SPA 400 Introduction to Spanish Linguistics. (3)

fall

Introduces the discipline and methods of linguistics through the study of Spanish data. Prerequisite: SPA 412 (or its equivalent).

SPA 412 Advanced Conversation and Composition. (3)

fall and spring

Oral and written Spanish communication skills, with particular attention given to developing fluency and facility. Required of majors. Prerequisite: SPA 314 or 316 or instructor approval.

General Studies: G

SPA 413 Advanced Spanish Grammar. (3)

fall

Intensive analysis of the Spanish language. Required of teaching majors. Prerequisite: SPA 314 or 316 or instructor approval.

General Studies: G

SPA 417 Spanish Phonetics and Phonology. (3)

fall

Introduces the theory and practice of Spanish phonetics and phonology. Prerequisite: SPA 412.

SPA 420 Applied Spanish Linguistics. (3)*spring*

Applies linguistic principles to the teaching of Spanish. Prerequisites: FLA 400 (or its equivalent); SPA 412.

*General Studies: L***SPA 421 Spanish in the Southwest. (3)***fall*

Discussion and linguistic analysis of Southwest Spanish. Prerequisite: SPA 412.

*General Studies: L/SB, C***SPA 425 Spanish Literature. (3)***fall and spring*

Surveys Spanish literature from its beginning to 1700. Prerequisite: SPA 325.

*General Studies: HU***SPA 426 Spanish Literature. (3)***fall and spring*

Surveys Spanish literature from 1700 to the present. Prerequisite: SPA 325.

*General Studies: HU***SPA 427 Spanish American Literature. (3)***fall and spring*

Surveys major works, figures, and movements from Colonial period to 1880. Prerequisite: SPA 325.

*General Studies: L***SPA 428 Spanish American Literature. (3)***fall and spring*

Surveys major works, figures, and movements from 1880 to the present. Prerequisite: SPA 325.

*General Studies: L, G***SPA 429 Mexican Literature. (3)***selected semesters*

Selected readings from pre-Columbian writers/poets (e.g., Macuilxóchitl) through the novel of the Revolution to the present. Prerequisite: SPA 325.

SPA 434 Drama of the Golden Age. (3)*spring*

Dramatic works of Lope de Vega, Calderón de la Barca, and their contemporaries. Prerequisite: SPA 325.

SPA 435 Cervantes—*Don Quijote*. (3)*fall**Don Quijote* and the development of the novel. Prerequisite: SPA 325.**SPA 454 19th-Century Spanish American Narrative. (3)***fall*

Principal works in the novel, short story, narrative fiction, and narrative (Gauchoesque) poetry. Prerequisite: SPA 325.

SPA 456 20th-Century Spanish American Fiction. (3)*spring*

Major works and movements. Prerequisite: SPA 325.

SPA 464 Mexican American Literature. (3)*fall*

Representative literature in Spanish and English by Mexican Americans, emphasizing sociocultural as well as literary values. Prerequisite: SPA 325.

*General Studies: HU***SPA 471 Civilization of the Spanish Southwest. (3)***spring*

Political, intellectual, social, economic, and artistic development of the Spanish-speaking people of the Southwest. Prerequisite: SPA 314 or 316 or instructor approval.

*General Studies: HU***SPA 472 Spanish American Civilization. (3)***fall*

Growth of the institutions and cultures of Spanish American people. Prerequisite: SPA 314 or 316 or instructor approval.

*General Studies: HU, G, H***SPA 473 Spanish Civilization. (3)***spring*

Political, intellectual, social, economic, and artistic development of the Spanish nation from its origin to the present. Prerequisite: SPA 314 or 316 or instructor approval.

*General Studies: HU/SB, G***SPA 485 Mexican American Short Story. (3)***selected semesters*

Critical study of contemporary short stories by Mexican American authors, with emphasis on their Spanish-language writings. Prerequisite: SPA 325 or instructor approval.

*General Studies: L***SPA 486 Mexican American Novel. (3)***selected semesters*

Social and literary contexts of representative novelists, emphasizing their Spanish-language writings. Prerequisite: SPA 325 or instructor approval.

SPA 487 Mexican American Drama. (3)*selected semesters*

Representative dramatic works, with emphasis on the history and development of this genre from its regional origins to the present. Prerequisite: SPA 325 or instructor approval.

SPA 494 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Introduction to Hispanic Linguistics (3)
- Lexicography. (3)

SPA 500 Bibliography and Research Methods. (3)*fall*

Required of all graduate students.

SPA 536 Generation of 1898. (3)*selected semesters*

Works of Unamuno, Baroja, Azorín, and their contemporaries, studied against the ideological background of the turn of century in Spain. Prerequisite: SPA 325.

SPA 540 History of the Spanish Language. (3)*spring*

Analyzes and discusses the development of Spanish from Vulgar Latin to the present day. Prerequisite: FLA 400 (or its equivalent).

SPA 541 Spanish Language in America. (3)*fall*

Discusses and analyzes various regional and social varieties of Spanish in the Americas. Prerequisite: FLA 400 (or its equivalent).

SPA 542 Studies in the Spanish of the Southwest. (3)*spring*

Examines bilingualism and the social and regional dialects of Spanish in the Southwest. Prerequisite: FLA 400 (or its equivalent).

SPA 543 Structure of Spanish. (3)*spring*

Analyzes and discusses data on selected topics in Spanish morphology, semantics, and syntax. Prerequisite: FLA 400 (or its equivalent).

SPA 544 Spanish Phonology. (3)*spring*

Surveys problems of Spanish phonology within the context of recent phonological theory. Prerequisite: FLA 400 (or its equivalent).

SPA 545 Concepts of Literary Criticism. (3)*spring*

Aims and methods of modern literary scholarship. Discusses major theories of literary analysis.

SPA 555 Spanish American Modernism. (3)*selected semesters*

Principal works and figures of literary modernism, 1880–1920, with emphasis on international literary context of the movement. Prerequisite: SPA 325.

SPA 557 Contemporary Spanish American Poetry. (3)*selected semesters*

Major works and problems in contemporary poetry and poetics, with emphasis on Paz, Parra, Cardenal, and new poetry since 1960. Prerequisite: SPA 325.

SPA 560 Medieval Spanish Literature. (3)*selected semesters*

Major figures and works of the Middle Ages in Spain.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

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SPA 561 Golden Age Spanish Prose Fiction. (3)

selected semesters

Major figures and works of the 16th and 17th centuries, with emphasis on the picaresque novel.

SPA 562 Golden Age Spanish Poetry. (3)

selected semesters

Major figures and works of the 16th and 17th centuries, with emphasis on lyric poetry.

SPA 563 Spanish Romanticism. (3)

selected semesters

Principal figures and works of the Spanish romanticism, with emphasis on international literary context of the movement.

SPA 564 19th-Century Spanish Prose Fiction. (3)

selected semesters

Principal figures and works of realism in the 19th-century novel, with emphasis on Galdós.

SPA 565 20th-Century Spanish Drama. (3)

selected semesters

Principal figures and works of Spanish dramatic literature from the Generation of 1898 to the present.

SPA 566 Generation of 1927. (3)

selected semesters

Major poets of the Generation of 1927, with emphasis on works of Lorca, Guillén, Salinas, and Aleixandre.

SPA 567 Contemporary Spanish Novel. (3)

selected semesters

Major works of post-Civil War Spanish fiction.

SPA 568 Cervantes. (3)

selected semesters

Extensive analysis of the prose and theater of Cervantes as a key figure of the Spanish Golden Age. Lecture, seminar.

SPA 570 Indigenous Literatures of Spanish America. (3)

selected semesters

Indigenous literary traditions, with emphasis on Nahuatl, Mayan, and Quechua literatures through readings in Spanish translations.

SPA 571 Colonial Spanish American Literature. (3)

selected semesters

Major figures and works from conquest to independence.

SPA 572 Spanish American Drama. (3)

selected semesters

Major contributions of Spanish American drama, with emphasis on contemporary dramatists.

SPA 573 Spanish American Essay. (3)

selected semesters

Major works of the essay, within the framework of intellectual history and literary movements.

SPA 574 Spanish American Vanguard Poetry. (3)

selected semesters

Examines poetic developments, 1920–1940, with emphasis on Huidobro, Vallejo, Neruda, and the international context of their works.

SPA 575 Contemporary Spanish American Novel. (3)

selected semesters

Principal novels of the *Nueva Narrativa Hispanoamericana*, within the context of contemporary theories of the narrative.

SPA 576 Contemporary Spanish American Short Story. (3)

selected semesters

Principal short stories of the *Nueva Narrativa Hispanoamericana*, within the context of contemporary theories of the narrative.

SPA 577 Regional Spanish American Literature. (3)

selected semesters

Figures and works of major national (Peru, Argentina, Chile, and Mexico) and regional (Caribbean) literatures. Topics offered on a rotating basis. May be repeated when topics vary.

SPA 578 Novel of the Mexican Revolution. (3)

selected semesters

Representative works and authors of this genre (Guzmán, Azuela, Urquiza, Muñoz, and Romero), including related or peripheral offshoots in indigenous novels.

SPA 581 Latin American Popular Culture. (3)

selected semesters

Studies in selected topics of Latin American popular culture, with emphasis on appropriate academic models for the critical analysis of these materials.

SPA 582 Studies in Latin American Film. (3)

selected semesters

Examines the role of film in contemporary Latin American culture; films viewed and analyzed as casebook examples. Seminar.

SPA 591 Seminar. (3)

selected semesters

Spanish and Spanish American literary, cultural, and linguistic topics.

SPA 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Cultural Studies/Semiotics of Culture

SPA 691 Figures and Works Seminar. (3)

selected semesters

Topics may be selected from Spanish and Spanish American literatures

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

SWEDISH (SWE)

SWE 101 Elementary Swedish. (4)

fall

Reading, writing, speaking, and understanding of basic Swedish. 4 hours lecture, 1 hour lab. Fee.

SWE 102 Elementary Swedish. (4)

spring

Reading, writing, speaking, and understanding of basic Swedish. 4 hours lecture, 1 hour lab. Fee. Prerequisite: SWE 101 (or its equivalent).



The Computing Commons offers students an abundance of resources.

Tim Trumble photo

SWE 201 Intermediate Swedish. (4)*fall*

Reviews Swedish grammar with emphasis on the development of the skills of speaking, listening comprehension, reading, and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: SWE 102 (or its equivalent).

SWE 202 Intermediate Swedish. (4)*spring*

Reviews Swedish grammar with emphasis on the development of the skills of speaking, listening comprehension, reading, and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: SWE 201 (or its equivalent).

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

THAI (THA)**THA 101 Elementary Thai I. (5)***fall*

Basic communication, reading, and writing skills. Intensive oral/aural classroom drill supplemented by prose readings in Thai script. 4 hours lecture, 1 hour lab. Fee.

THA 102 Elementary Thai II. (5)*spring*

Basic communication, reading, and writing skills. Intensive oral/aural classroom drill supplemented by prose reading. 4 hours lecture, 1 hour lab. Fee. Prerequisite: THA 101 (or its equivalent).

THA 201 Intermediate Thai I. (5)*fall*

Systematic review of grammar. Continued development of communication skills with increased emphasis on reading and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: THA 102 (or its equivalent).

*General Studies: G***THA 202 Intermediate Thai II. (5)***spring*

Systematic review of grammar. Continued development of communication skills with increased emphasis on reading and writing. 4 hours lecture, 1 hour lab. Fee. Prerequisite: THA 201 (or its equivalent).

General Studies: G

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

VIETNAMESE (VTN)**VTN 101 Elementary Vietnamese I. (5)***fall*

Basic skills in modern conversational Vietnamese and development of basic reading and writing skills, with special emphasis on tones. 4 hours lecture, 1 hour lab.

VTN 102 Elementary Vietnamese II. (5)*spring*

Basic skills in modern conversational Vietnamese and development of basic reading and writing skills, with special emphasis on tones. 4 hours lecture, 1 hour lab. Prerequisite: VTN 101 (or its equivalent).

VTN 201 Intermediate Vietnamese I. (5)*fall*

Improves speaking, listening, reading, and writing competence through dialogues, reading passages, pattern drill, and grammar and communicative exercises. 4 hours lecture, 1 hour lab. Prerequisite: VTN 102 (or its equivalent).

*General Studies: G***VTN 202 Intermediate Vietnamese II. (5)***spring*

Improves speaking, listening, reading, and writing competence through dialogues, reading passages, pattern drill, and grammar and communicative exercises. 4 hours lecture, 1 hour lab. Prerequisite: VTN 201 (or its equivalent).

General Studies: G

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Mathematics and Statistics

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PS A216

Andrew Bremner, Chair

Regents' Professor: Trotter

Professors: Armbruster, Bremner, Bustoz, Gardner, Hoppensteadt, Ihrig, Z. Jackiewicz, Kadell, Kawski, Kierstead, Kostelich, Kuang, Kuiper, Lai, Leonard, Lohr, McDonald, Mittelmann, Nicolaenko, Quigg, Renaut, Ringhofer, H.A. Smith, H.L. Smith, Thieme, Young

Associate Professors: Baer, Barcelo, Blount, Carlson, Childress, Driscoll, Farmer, Gelb, Hurlbert, D. Jones, J. Jones, Kurtz, Lopez, Mahalov, McCarter, Moore, Nikitin, Prewitt, Spielberg, Suslov, Swimmer, Taylor, Welfert

Assistant Professors: Czygrinow, Kaliszewski, Zandieh, Zuo

Senior Lecturers: Isom, Kolossa, Rody, Vaz, A. Zhu

Lecturers: Ashbrook, Abramson, Bloom, Downs, E. Jackiewicz, E. Jones, Kellgren, Kim, Maris, Martin, Miller, Odish, Ruedemann, Surgent, Tracogna, Trapuzzano, Turner, Walker, Ward, Y. Zhu

The Department of Mathematics and Statistics offers the B.A. and B.S. degrees in Mathematics. Students who plan to attend graduate school in mathematics or statistics should choose the B.S. degree.

The department also offers the B.S. degree in Computational Mathematical Sciences.

The department also offers a minor in Mathematics and an academic specialization in mathematics for students pursuing the B.A.E. degree in Secondary Education.

Related Field Course List. All students majoring in Mathematics need to refer to the related field course list. It is available from an advisor in PS A211, or from the depart-

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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ment Web site at math.la.asu.edu/~undergrd/underprog/degree/related-fields.html.

MATHEMATICS—B.A.

The B.A. degree in Mathematics requires a minimum of 36 semester hours of course work in mathematics and statistics, and additional course work in closely related fields, for a total of 51 semester hours. A grade of “C” or higher is required in all courses taken for the major. MAT 370 and 371 may not both be used to satisfy these degree requirements. The required course work has the following components:

Core Courses

MAT 270	Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271	Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272	Calculus with Analytic Geometry III <i>MA</i>	4
MAT 300	Mathematical Structures <i>L</i>	3
MAT 342	Linear Algebra	3
MAT 370	Intermediate Calculus	3
	or MAT 371 Advanced Calculus I (3)	3
Total		21

Computer Science Requirement

CSE 100	Principles of Programming with C++ <i>CS</i>	3
	or CSE 200 Concepts of Computer Science <i>CS</i> (3)	3
Total		3

Advanced Courses in Mathematics and Statistics

Two courses from the following list, both preferably taken from the same grouping.....6

Algebra, Topology, and Number Theory

MAT 410	Introduction to General Topology (3)
MAT 442	Advanced Linear Algebra (3)
MAT 443	Introduction to Abstract Algebra (3)
MAT 444	Intermediate Abstract Algebra (3)
MAT 445	Theory of Numbers (3)

Analysis and Applications

MAT 372	Advanced Calculus II (3)
MAT 461	Applied Complex Analysis (3)
MAT 472	Intermediate Real Analysis (3)

Applied Mathematics and Dynamics

MAT 451	Mathematical Modeling <i>CS</i> (3)
MAT 452	Introduction to Chaos and Nonlinear Dynamics (3)
MAT 455	Introduction to Fractals and Applications (3)

Computational Mathematics

MAT 420	Scientific Computing (3)
MAT 421	Applied Computational Methods <i>CS</i> (3)
MAT 423	Numerical Analysis I <i>CS</i> (3)
MAT 425	Numerical Analysis II <i>CS</i> (3)
MAT 427	Computer Arithmetic <i>CS</i> (3)

Differential Equations

MAT 462	Applied Partial Differential Equations (3)
MAT 475	Differential Equations (3)
MAT 476	Partial Differential Equations (3)

Discrete Mathematics

MAT 415	Introduction to Combinatorics (3)
MAT 416	Introduction to Graph Theory (3)
MAT 419	Introduction to Linear Programming <i>CS</i> (3)

Statistics and Probability

STP 420	Introductory Applied Statistics <i>CS</i> (3)
STP 421	Probability (3)
STP 425	Stochastic Processes (3)

STP 427	Mathematical Statistics (3)
STP 429	Experimental Statistics <i>CS</i> (3)

Additional Course Work in Mathematics and Statistics

Three courses in mathematics and statistics¹9

Related Field Course Work

Course work in mathematics, statistics, or related fields²12

¹ Acceptable mathematics courses are MAT 274 and upper-division MAT courses, with the exception of MAT 362, 485, and ASU West MAT 411. Acceptable statistics courses are upper-division STP courses.

² See “[Related Field Course List](#),” page 421.

MATHEMATICS—B.S.

The Department of Mathematics and Statistics has three avenues for earning a B.S. degree. The B.S. requirements are similar to the B.A. requirements, but they require more extensive courses in advanced mathematics. The program is flexible enough to allow students to focus their studies on mathematics, applied mathematics, or statistics. The statistics concentration offers extensive preparation in applied and theoretical statistics. The requirements for the B.S. degree with the statistics concentration are a subset of those for the B.S. degree. The requirements for the B.S. degree and for the B.S. degree with the computational mathematical sciences concentration are distinct; neither is a subset of the other.

B.S. Requirements. The B.S. degree in Mathematics requires a minimum of 42 semester hours of course work in mathematics and statistics, and additional course work in closely related fields, for a total of 55 semester hours. A grade of “C” or higher is required in all courses taken for the major. MAT 370 and 371 may not both be used to satisfy these degree requirements. The required course work has the following components:

Core Courses

MAT 270	Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271	Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272	Calculus with Analytic Geometry III <i>MA</i>	4
MAT 300	Mathematical Structures <i>L</i>	3
MAT 342	Linear Algebra	3
MAT 371	Advanced Calculus I	3
Total		21

Computer Science Requirement

CSE 200	Concepts of Computer Science <i>CS</i>	3
Total		3

Depth Requirement

Two courses chosen from the following list of advanced courses6

MAT 423	Numerical Analysis I <i>CS</i> (3)
MAT 425	Numerical Analysis II <i>CS</i> (3)
MAT 442	Advanced Linear Algebra (3)
MAT 444	Intermediate Abstract Algebra (3)
MAT 462	Applied Partial Differential Equations (3)
MAT 472	Intermediate Real Analysis I (3)
MAT 475	Differential Equations (3)
MAT 476	Partial Differential Equations (3)
STP 421	Probability (3)
STP 427	Mathematical Statistics (3)

Advanced Courses in Mathematics and Statistics¹

Two courses from the following list, both preferably taken from the same grouping.....6

Algebra, Topology, and Number Theory

- MAT 410 Introduction to General Topology (3)
- MAT 442 Advanced Linear Algebra (3)
- MAT 443 Introduction to Abstract Algebra (3)
- MAT 444 Intermediate Abstract Algebra (3)
- MAT 445 Theory of Numbers (3)

Analysis and Applications

- MAT 372 Advanced Calculus II (3)
- MAT 461 Applied Complex Analysis (3)
- MAT 472 Intermediate Real Analysis (3)

Applied Mathematics and Dynamics

- MAT 451 Mathematical Modeling CS (3)
- MAT 452 Introduction to Chaos and Nonlinear Dynamics (3)
- MAT 455 Introduction to Fractals and Applications (3)

Computational Mathematics

- MAT 420 Scientific Computing (3)
- MAT 421 Applied Computational Methods CS (3)
- MAT 423 Numerical Analysis I CS (3)
- MAT 425 Numerical Analysis II CS (3)
- MAT 427 Computer Arithmetic CS (3)

Differential Equations

- MAT 462 Applied Partial Differential Equations (3)
- MAT 475 Differential Equations (3)
- MAT 476 Partial Differential Equations (3)

Discrete Mathematics

- MAT 415 Introduction to Combinatorics (3)
- MAT 416 Introduction to Graph Theory (3)
- MAT 419 Introduction to Linear Programming CS (3)

Statistics and Probability

- STP 420 Introductory Applied Statistics CS (3)
- STP 421 Probability (3)
- STP 425 Stochastic Processes (3)
- STP 427 Mathematical Statistics (3)
- STP 429 Experimental Statistics CS (3)

Additional Course Work in Mathematics and Statistics²

Three courses in mathematics and statistics9

Related Fields Course Work³

Course work in mathematics, statistics, or related fields10

¹ Students who contemplate graduate work in mathematics should choose additional courses listed under the depth requirement to satisfy the advanced courses requirement.
² Acceptable mathematics courses are MAT 274 and upper division MAT courses, with the exception of MAT 310, 362, 485, and ASU West MAT 411. Acceptable statistics courses are 400-level STP courses.
³ See "Related Field Course List," page 421.

COMPUTATIONAL MATHEMATICAL SCIENCES—B.S.

The requirements for the B.S. degree in Mathematics and the B.S. degree in Computational Mathematical Sciences are distinct; neither is a subset of the other. A grade of "C" or higher is required in all courses taken for the major. MAT 370 and 371 may not both be used to satisfy these degree requirements. The required course work has the following components:

Core Courses

MAT 270 Calculus with Analytic Geometry I MA.....	4
MAT 271 Calculus with Analytic Geometry II MA.....	4
MAT 272 Calculus with Analytic Geometry III MA.....	4
MAT 274 Elementary Differential Equations MA.....	3
MAT 300 Mathematical Structures L.....	3
MAT 342 Linear Algebra.....	3
Total.....	21

Computer Science Requirement

CSE 200 Concepts of Computer Science CS.....	3
CSE 210 Object-Oriented Design and Data Structures CS.....	3
CSE 310 Data Structures and Algorithms.....	3
MAT 420 Scientific Computing.....	3
Total.....	12

Physics Requirement

Two semesters of introductory physics as shown.....	6 or 8
PHY 121 University Physics I: Mechanics SQ (3)* or PHY 151 Physics II SQ (4)	
PHY 131 University Physics II: Electricity and Magnetism SQ (3)* or PHY 150 Physics I SQ (4)	

* It is highly recommended that students taking PHY 121 and 131 also take the associated laboratory courses PHY 122 and 132.

Advanced Courses in Mathematics and Statistics

Choose one course from each of the following four groups.....12

Group One

- MAT 371 Advanced Calculus I (3)
- MAT 460 Vector Calculus (3)

Group Two

- MAE 471 Computational Fluid Dynamics (3)
or other course as approved by an advisor
- MAT 419 Introduction to Linear Programming CS (3)
- MAT 421 Applied Computational Methods CS (3)
- MAT 423 Numerical Analysis I CS (3)
- MAT 425 Numerical Analysis II CS (3)
- STP 429 Experimental Statistics CS (3)

Group Three

- MAT 372 Advanced Calculus II (3)
- MAT 427 Computer Arithmetic CS (3)
- MAT 451 Mathematical Modeling CS (3)
- MAT 452 Introduction to Chaos and Nonlinear Dynamics (3)
- MAT 461 Applied Complex Analysis (3)
- MAT 462 Applied Partial Differential Equations (3)
- MAT 475 Differential Equations (3)
- STP 420 Introductory Applied Statistics CS (3)
- STP 421 Probability (3)

One course not already chosen from *Group One* or *Two* (3)

Group Four

One course from either *Group One*, *Two*, or *Three*, or any other 400-level MAT or STP course except for MAT 485, and ASU West MAT 411 (3)

Second Science

Choose among the course combinations below for a one-year sequence in another other science, chosen from astronomy, biology, geology, or chemistry¹.....6-9

—AST 321 Introduction to Planetary and Stellar
 Literacy and Critical Thinking / MA mathematics / CS computer/statistics/
 quantitative applications / HU humanities and fine arts / SB social and
 behavioral sciences / SG natural science—general core courses / SQ natural
 science—quantitative / C cultural diversity in the United States / G global /
 H historical / See "General Studies," page 83.

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AST 322	Introduction to Galactic and Extragalactic Astrophysics	<i>SQ</i> ²	(3)
— or —			
BIO 187	General Biology I	<i>SG</i>	(4)
BIO 188	General Biology II	<i>SQ</i>	(4)
— or —			
GLG 101	Introduction to Geology I (Physical)	<i>SQ</i> ³	<i>G</i> (3)
GLG 102	Introduction to Geology II (Historical)	<i>SG</i> ⁴	<i>H</i> (3)
— or —			
Any two of CHM 113, 114, 115, 116, 117, and 118 as permitted by the Department of Chemistry and Biochemistry. ⁵			

- Other course combinations may be used upon approval of a departmental advisor.
- Both AST 113 and 321 or both AST 114 and 322 must be taken to secure *SQ* credit.
- Both GLG 101 and 103 must be taken to secure *SQ* credit.
- Both GLG 102 and 104 must be taken to secure *SG* credit.
- See the individual course listings for restrictions.

Advanced Science Course or Internship

One advanced course in a science for which a one-year course sequence in the same science is required, or an internship, subject to advisor approval ¹	.....3
MAT 484 Internship (3)	
Any upper-division course in plant biology (PLB), chemistry (CHM), or microbiology (MIC) (3)	
Any upper-division science or engineering course from the related field course list ² (3)	

- Other courses may be used to satisfy this requirement with the approval of a Department of Mathematics and Statistics advisor.
- Note that courses with prefixes ECN, FIN, MAT, PHI, and STP do not count toward this requirement. See [“Related Field Course List,” page 421](#).

Statistics Concentration Requirements. The B.S. degree in Mathematics with the concentration in statistics requires a minimum of 42 semester hours of course work in mathematics and statistics, plus a minimum of 13 semester hours in computer science and related fields, for a minimum of 55 semester hours of course work related to the major. A grade of “C” or higher is required in all courses taken for the major. MAT 370 and 371 may not both be used to satisfy these requirements. The course work has the following components:

Core Courses

MAT 270	Calculus with Analytic Geometry I	<i>MA</i>	.....4
MAT 271	Calculus with Analytic Geometry II	<i>MA</i>	.....4
MAT 272	Calculus with Analytic Geometry III	<i>MA</i>	.....4
MAT 300	Mathematical Structures	<i>L</i>	.....3
MAT 342	Linear Algebra		.....3
MAT 371	Advanced Calculus I		.....3
STP 420	Introductory Applied Statistics	<i>CS</i>	.....3
STP 421	Probability		.....3
STP 427	Mathematical Statistics		.....3
STP 429	Experimental Statistics	<i>CS</i>	.....3
Total			.....33

Computer Science Requirement

CSE 200	Concepts of Computer Science	<i>CS</i>	.....3
Total			.....3

Additional Advanced Courses in Mathematics and Statistics

Three courses from the following list	.....9		
MAT 274	Elementary Differential Equations	<i>MA</i>	(3)
MAT 372	Advanced Calculus II	(3)	
MAT 423	Numerical Analysis I	<i>CS</i>	(3)
MAT 442	Advanced Linear Algebra	(3)	
STP 425	Stochastic Processes	(3)	

Required Related Field Course Work

Statistics/probability, mathematics, or related fields*10
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* See [“Related Field Course List,” page 421](#).

Actuarial Science. The faculty in the Department of Mathematics and Statistics offer courses that cover the content of the mathematical examinations of the Society of Actuaries. See the department’s actuarial advisor for more information.

MINORS IN MATHEMATICS AND STATISTICS

The minor in Mathematics consists of a minimum of 20 semester hours. Required courses are as follows:

MAT 271	Calculus with Analytic Geometry II	<i>MA</i>	.....4
MAT 272	Calculus with Analytic Geometry III	<i>MA</i>	.....4
MAT 342	Linear Algebra		.....3
Total			.....11

Electives must be upper-division courses in mathematics (MAT) or Statistics and Probability (STP). Students may not apply MAT 362, 485, or a course not offered at the ASU main campus to the math minor, unless otherwise approved by a math department advisor.

The minor in Statistics consists of a minimum of 20 semester hours. Required courses are the following:

MAT 271	Calculus with Analytic Geometry II	<i>MA</i>	.....4
MAT 272	Calculus with Analytic Geometry III	<i>MA</i>	.....4
MAT 300	Mathematical Structures	<i>L</i>	.....3
STP 420	Introductory Applied Statistics	<i>CS</i>	.....3
STP 421	Probability		.....3
STP 427	Mathematical Statistics		.....3
	or STP 429 Experimental Statistics	<i>CS</i>	(3)
Total			.....20

The minor in Computational Mathematical Sciences consists of a minimum of 20 semester hours. Required courses are the following:

MAT 271	Calculus with Analytic Geometry II	<i>MA</i>	.....4
MAT 272	Calculus with Analytic Geometry III	<i>MA</i>	.....4
MAT 342	Linear Algebra		.....3
MAT 420	Scientific Computing		.....3
MAT 421	Applied Computational Methods	<i>CS</i>	.....3
MAT 423	Numerical Analysis I	<i>CS</i>	.....3
	or MAT 425 Numerical Analysis II	<i>CS</i>	(3)
Total			.....20

It is recommended that students take MAT 243 Discrete Mathematical Structures.

SECONDARY EDUCATION—B.A.E.

Mathematics. Students pursuing the major teaching field may choose from two options.

Option One. With this option, the academic specialization consists of the following required courses:

CSE 100 Principles of Programming with C++ CS	3
or CSE 200 Concepts of Computer Science CS (3)	
MAT 270 Calculus with Analytic Geometry I MA	4
MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 300 Mathematical Structures L	3
MAT 310 Introduction to Geometry	3
MAT 342 Linear Algebra	3
MAT 370 Intermediate Calculus	3
or MAT 371 Advanced Calculus I (3)	
MAT 443 Introduction to Abstract Algebra	3
or MAT 445 Theory of Numbers (3)	
MTE 483 Mathematics in the Secondary School	3
STP 420 Introductory Applied Statistics CS	3
Total	36

The methods in academic specialization courses for mathematics are MTE 482 Methods of Teaching Mathematics in Secondary School and MTE 494 Special Topics: Advanced Methods of Teaching Secondary Mathematics. They are required as part of the Initial Teacher Certification program but cannot be counted as part of the 36-hour major requirement.

Option Two. This option may be exercised only in combination with option two under [“Chemistry,” page 363](#), or [“Physics,” page 441](#). The program consists of 30 semester hours in mathematics. Required courses are as follows:

MAT 270 Calculus with Analytic Geometry I MA	4
MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 300 Mathematical Structures L	3
MAT 310 Introduction to Geometry	3
MAT 342 Linear Algebra	3
MAT 370 Intermediate Calculus	3
or MAT 371 Advanced Calculus I (3)	
or MAT 460 Vector Calculus (3)	
MAT 443 Introduction to Abstract Algebra	3
Total	27

Recommended

CSE 100 Principles of Programming with C++ CS	3
or CSE 200 Concepts of Computer Science CS (3)	

Minor Teaching Field. The minor teaching field is a minor in mathematics for presecondary teachers, consisting of the following required courses:

MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 300 Mathematical Structures L	3
MAT 310 Introduction to Geometry	3
MAT 342 Linear Algebra	3
MAT 370 Intermediate Calculus	3
or MAT 371 Advanced Calculus I (3)	
Total	20

GRADUATE PROGRAMS

The faculty in the Department of Mathematics and Statistics offer programs leading to the degrees of Master of Natural Science, M.A., and Ph.D. See the *Graduate Catalog* for requirements.

MATHEMATICS (MAT)

MAT 106 Intermediate Algebra. (3)

fall, spring, summer

Topics from basic algebra such as linear equations, polynomials, factoring, exponents, roots, and radicals. Prerequisite: 1 year of high school algebra.

MAT 114 College Mathematics. (3)

fall, spring, summer

Applications of basic college-level mathematics to real-life problems. Appropriate for students whose major does not require MAT 117 or 170. Prerequisite: MAT 106 or 2 years of high school algebra.

General Studies: MA

MAT 117 College Algebra. (3)

fall, spring, summer

Linear and quadratic functions, systems of linear equations, logarithmic and exponential functions, sequences, series, and combinatorics. Prerequisite: MAT 106 or 2 years of high school algebra.

General Studies: MA

MAT 119 Finite Mathematics. (3)

fall, spring, summer

Topics from linear algebra, linear programming, combinatorics, probability, and mathematics of finance. Prerequisite: MAT 117 (or its equivalent).

General Studies: MA

MAT 170 Precalculus. (3)

fall, spring, summer

Intensive preparation for calculus (MAT 260, 270, and 290). Topics include functions (including trigonometric), matrices, polar coordinates, vectors, complex numbers, and mathematical induction. Prerequisite with a grade of “B” or higher: MAT 106. Prerequisite with a grade of “C” or higher: MAT 117 or two years of high school algebra.

General Studies: MA

MAT 210 Brief Calculus. (3)

fall, spring, summer

Differential and integral calculus of elementary functions with applications. Not open to students with credit for MAT 260, 270, or 290. Prerequisite: MAT 117 (or its equivalent).

General Studies: MA

MAT 242 Elementary Linear Algebra. (2)

fall, spring, summer

Introduces matrices, systems of linear equations, determinants, vector spaces, linear transformations, and eigenvalues. Emphasizes development of computational skills. Prerequisite: 1 semester of calculus or instructor approval.

MAT 243 Discrete Mathematical Structures. (3)

fall, spring, summer

Logic, sets, functions, elementary number theory and combinatorics, recursive algorithms, and mathematical reasoning, including induction. Emphasizes connections to computer science. Prerequisite: 1 semester of calculus or computer programming.

MAT 251 Calculus for Life Sciences. (3)

fall and spring

Differential and integral calculus of elementary functions. Introduces differential and difference equations. Emphasizes applications to the life sciences. Not open to students with credit for MAT 210, 260, or 270. Prerequisite: MAT 170 (or its equivalent).

General Studies: MA

MAT 260 Technical Calculus I. (3)

selected semesters

Analytic geometry, differential, and integral calculus of elementary functions, emphasizing physical interpretation and problem solving. Not open to students with credit for MAT 210, 270, or 290. Prerequisite: MAT 170 (or its equivalent).

General Studies: MA

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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MAT 261 Technical Calculus II. (3)

selected semesters

Continuation of MAT 260. Prerequisite: MAT 260 or instructor approval.

General Studies: MA

MAT 262 Technical Calculus III. (3)

selected semesters

Infinite series, an introduction to differential equations and elementary linear algebra. Prerequisite: MAT 261 (or its equivalent).

General Studies: MA

MAT 270 Calculus with Analytic Geometry I. (4)

fall, spring, summer

Real numbers, limits and continuity, and differential and integral calculus of functions of 1 variable. Not open to students with credit for MAT 290. The sequence MAT 270 and 271 may be substituted for MAT 290 to satisfy requirements of any curriculum. Fee. Prerequisite with a grade of "C" or higher: MAT 170 or satisfactory score on placement examination.

General Studies: MA

MAT 271 Calculus with Analytic Geometry II. (4)

fall, spring, summer

Methods of integration, applications of calculus, elements of analytic geometry, improper integrals, sequences, and series. Not open to students with credit for MAT 291. The sequence MAT 270, 271, 272 may be substituted to satisfy requirements for MAT 290 and 291. Fee. Prerequisite with a grade of "C" or higher: MAT 270 (or its equivalent).

General Studies: MA

MAT 272 Calculus with Analytic Geometry III. (4)

fall, spring, summer

Vector-valued functions of several variables, multiple integration, and introduction to vector analysis. The sequence MAT 270, 271, 272 may be substituted to satisfy requirements for MAT 290 and 291. Fee. Prerequisite with a grade of "C" or higher: MAT 271 (or its equivalent).

General Studies: MA

MAT 274 Elementary Differential Equations. (3)

fall, spring, summer

Introduces ordinary differential equations, adapted to the needs of students in engineering and the sciences. Prerequisite: MAT 271 (or its equivalent); MAT 272 (or its equivalent) recommended.

General Studies: MA

MAT 275 Modern Differential Equations. (3)

fall and spring

Introduces differential equations, theoretical and practical solution techniques. Applications. Problem solving using Matlab. Lecture, computing lab. Fee. Pre- or corequisite: MAT 271 (or its equivalent).

General Studies: MA

MAT 290 Calculus I. (5)

selected semesters

Differential and integral calculus of elementary functions; topics from analytic geometry essential to the study of calculus. Prerequisite: MAT 170 (or its equivalent).

General Studies: MA

MAT 291 Calculus II. (5)

selected semesters

Further applications of calculus, partial differentiation, multiple integrals, and infinite series. Prerequisite: MAT 290 (or its equivalent).

MAT 294 Special Topics. (1–4)

selected semesters

MAT 300 Mathematical Structures. (3)

fall and spring

Logic and set theory, induction, functions, order and equivalence relations, cardinality. Emphasizes writing proofs. Prerequisite: 1 semester of calculus or instructor approval.

General Studies: L

MAT 310 Introduction to Geometry. (3)

spring

Congruence, area, parallelism, similarity and volume, and Euclidean and non-Euclidean geometry. Prerequisite: MAT 272 (or its equivalent).

MAT 340 Theory of Interest. (3)

fall and spring

Compound interest, discount rates, annuities, present values, depreciation, and bond valuations. Prerequisites: MAT 243 (or 300 or instructor approval); 1 semester of calculus.

MAT 342 Linear Algebra. (3)

fall, spring, summer

Linear equations, matrices, determinants, vector spaces, bases, linear transformations and similarity, inner product spaces, eigenvectors, orthonormal bases, diagonalization, and principal axes. Pre- or corequisite: MAT 272 (or its equivalent).

MAT 343 Applied Linear Algebra. (3)

fall and spring

Solving linear systems, matrices, determinants, vector spaces, bases, linear transformations, eigenvectors, norms, inner products, decompositions, applications. Problem solving using Matlab. Lecture, computing lab. Fee. Pre- or corequisite: MAT 271 (or its equivalent).

MAT 351 Mathematical Methods for Genetic Analysis. (3)

fall and spring

Discrete mathematics, probability, statistics, and associated computer packages. Applications to genomics, bioinformatics, forensics, and DNA/protein sequence patterns. Fee. Prerequisite: MAT 251 or 270 or instructor approval.

General Studies: CS

MAT 362 Advanced Mathematics for Engineers and Scientists. (3)

fall, spring, summer

Vector analysis, Fourier analysis, and partial differential equations. Prerequisites: MAT 272 and 274 (or their equivalents).

MAT 370 Intermediate Calculus. (3)

fall and spring

Theory behind basic 1-variable calculus: continuity, derivative, Riemann integral, sequences, and series. Not open to students who have received a "C" or higher in MAT 371. Students may not count both MAT 370 and 371 toward a mathematics degree. Prerequisites: MAT 272, 300.

MAT 371 Advanced Calculus I. (3)

fall and spring

Real numbers, completeness, sequences/series, continuity, uniform theorems, derivative, Riemann integral, pointwise/uniform convergence, Taylor's theorem. Students may not count both MAT 370 and 371 toward a mathematics degree. Prerequisite: MAT 272 or 300 or instructor approval.

MAT 372 Advanced Calculus II. (3)

spring

Open, closed, compact sets in \mathbb{R}^n continuity, differentiation, partial differentiation, integration in \mathbb{R}^n . Inverse/implicit function theorems. Not open to students with credit for MAT 460. Prerequisite: MAT 371. Pre- or corequisite: MAT 342.

MAT 410 Introduction to General Topology. (3)

once a year

Topological spaces, metric spaces, compactness, connectedness, and product spaces. Prerequisite: MAT 300 or 371 or instructor approval.

MAT 415 Introduction to Combinatorics. (3)

fall

Topics include proof techniques, permutations, combinations; counting techniques including recurrence relations, generating functions, inclusion-exclusion; Ramsey theory and combinatorial designs. Prerequisites: both MAT 300 (or 243) and 342 (or 242) or only instructor approval.

MAT 416 Introduction to Graph Theory. (3)

spring

Topics include trees, cycles, matchings, planarity, connectivity, hamiltonicity, colorings, graph algorithms, and other advanced topics. Prerequisites: both MAT 300 (or 243) and 342 (or 242) or only instructor approval.

MAT 419 Introduction to Linear Programming. (3)

spring

Simplex method, duality, and network flows. Applications to game theory, geometry, combinatorics, graph theory, and posets. Prerequisites: a combination of CSE 100 (or 200 or 210) and MAT 300 (or 243) and 342 (or 242) or only instructor approval.

General Studies: CS

MAT 420 Scientific Computing. (3)*fall*

Surveys and applies programming languages, libraries, and scientific visualization tools. Programming assignments emphasize software development skills. Lecture, lab. Fee. Prerequisites: a combination of CSE 200 and MAT 274 and 342 (or their equivalents) or only instructor approval.

MAT 421 Applied Computational Methods. (3)*fall and spring*

Numerical methods for quadrature, differential equations, roots of non-linear equations, interpolation, approximation, linear equations, floating-point arithmetic, and roundoff error. Prerequisites: both MAT 271 (or its equivalent) and fluency in computer programming (preferably FORTRAN) or only instructor approval.

General Studies: CS**MAT 423 Numerical Analysis I. (3)***fall*

Analysis and algorithms for numerical solutions linear/nonlinear equations, direct solvers, iterative procedures, optimization. Determination of eigenvalues. Elementary computer arithmetic. Prerequisites: both MAT 342 and fluency in computer programming or only instructor approval.

General Studies: CS**MAT 425 Numerical Analysis II. (3)***spring*

Analysis of and algorithms for numerical interpolation, integration, and differentiation. Numerical solution of ordinary differential equations, and method of lines. Those seeking a methods survey course should take MAT 421. Prerequisites: both MAT 274 and fluency in computer programming or only instructor approval. MAT 371 recommended.

General Studies: CS**MAT 427 Computer Arithmetic. (3)***selected semesters*

Number systems, hardware/software arithmetic, overflow, significance, rounding, multiple precision, and automatic error control; impact on languages, architectures, robust programming, and software development. Prerequisite: only CSE 100 (or 200) or both MAT 421 and 423 (or 425) or only instructor approval.

General Studies: CS**MAT 442 Advanced Linear Algebra. (3)***fall*

Fundamentals of linear algebra, dual spaces, invariant subspaces, canonical forms, bilinear and quadratic forms, and multilinear algebra. Prerequisites: both MAT 300 and 342 or only instructor approval.

MAT 443 Introduction to Abstract Algebra. (3)*fall*

Introduces concepts of abstract algebra. Not open to students with credit for MAT 444. Prerequisites: both MAT 300 and 342 or only instructor approval.

MAT 444 Intermediate Abstract Algebra. (3)*spring*

Basic theory of groups, rings, and fields, including an introduction to Galois theory. Appropriate as preparation for MAT 543. Prerequisite: MAT 443 or graduate standing or instructor approval.

MAT 445 Theory of Numbers. (3)*spring*

Prime numbers, unique factorization theorem, congruences, Diophantine equations, primitive roots, and quadratic reciprocity theorem. Prerequisites: both MAT 300 and 342 or only instructor approval.

MAT 447 Cryptography. (3)*fall and spring*

Block ciphers, stream ciphers, congruence arithmetic, information theory, public key cryptosystems, key exchange, electronic signatures. Prerequisites: MAT 242 (or 342), 300.

MAT 451 Mathematical Modeling. (3)*spring*

Detailed study of 1 or more mathematical models that occur in the physical or biological sciences. May be repeated for credit with instructor approval. Prerequisites: both MAT 242 (or 342) and 274 or only instructor approval.

General Studies: CS**MAT 452 Introduction to Chaos and Nonlinear Dynamics. (3)***fall*

Properties of nonlinear dynamical systems; dependence on initial conditions; strange attractors; period doubling; bifurcations; symbolic dynamics; Smale-Birkhoff theorem; and applications. Prerequisites: MAT 274, 342 (or 242); MAT 371 is recommended.

MAT 455 Introduction to Fractals and Applications. (3)*spring*

Fractals; self-similar structures, fractals with iterated function systems of maps, computing fractals, fractal dimensions, chaotic dynamics on fractals, applications. Prerequisites: MAT 274, 342 (or 242); MAT 371 recommended.

MAT 460 Vector Calculus. (3)*spring*

Vectors, curvilinear coordinates, Jacobians, implicit function theorem, line and surface integrals, Green's, Stokes', and divergence theorems. Not open to students with credit for MAT 372. Prerequisites: MAT 242 (or 342), 272, 274.

MAT 461 Applied Complex Analysis. (3)*fall and summer*

Analytic functions, complex integration, Taylor and Laurent series, residue theorem, conformal mapping, and harmonic functions. Prerequisite: MAT 272 (or its equivalent).

MAT 462 Applied Partial Differential Equations. (3)*spring*

Second-order partial differential equations, emphasizing Laplace, wave, and diffusion equations. Solutions by the methods of characteristics, separation of variables, and integral transforms. Prerequisites: MAT 242 (or 342), 274.

MAT 472 Intermediate Real Analysis I. (3)*fall*

Introduces analysis in metric spaces with emphasis on the real line. Appropriate as preparation for MAT 570. Prerequisites: MAT 300, 342.

MAT 473 Intermediate Real Analysis II. (3)*spring*

Analysis in \mathbb{R}^n : implicit function theorem, introduction to manifolds, Lebesgue integration, change of variables formula, convergence theorems for integrals. Prerequisite: MAT 472 or instructor approval.

MAT 475 Differential Equations. (3)*fall*

Asymptotic behavior of solutions of linear and nonlinear ordinary differential equations, stability, Sturm-Liouville problems, boundary value problems, and singular point behavior of autonomous systems. Prerequisites: MAT 242 (or 342), 274.

MAT 476 Partial Differential Equations. (3)*spring*

First-order quasilinear, second-order linear (wave, Laplace, heat). Characteristics, harmonic functions, maximum principles, Fourier series, separation of variables. Prerequisites: MAT 274 (or 475), 372 (or 472).

MAT 484 Internship. (1–12)*selected semesters***MAT 485 History of Mathematics. (3)***selected semesters*

Topics from the history of the origin and development of mathematical ideas. Prerequisite: MAT 272 (or its equivalent).

MAT 502 Neural Modeling. (3)*fall and spring*

Mathematical modeling electrochemical processes in nerve. Cable theory, neuronal branching, spines, bifurcation analysis of excitable membrane models. Prerequisite: MAT 274.

MAT 503 Mathematical Cell Physiology. (3)*fall and spring*

Mathematical modeling of dynamical aspects of cell physiology. Diffusion, membrane transport, intracellular calcium channel kinetics, calcium oscillations and waves. Lecture, computing lab.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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MAT 504 Mathematical Aspects of Biotechnology. (3)

fall and spring

Bacterial growth, bacterial genetics, gene expression, stoichiometry of metabolic pathways, random walks, diffusion processes, biofilms. Prerequisite: instructor approval.

MAT 505 Perturbation Methods. (3)

selected semesters

Nonlinear oscillations, strained coordinates, renormalization, multiple scales, boundary layers, matched asymptotic expansions, turning point problems, and WKBJ method. Cross-listed as MAE 505. Credit is allowed for only MAE 505 or MAT 505.

MAT 514 Enumerative Combinatorics I. (3)

fall

First semester of a systematic development of enumerative combinatorics, including elementary counting techniques, sieve methods, and partially ordered sets. Prerequisite: graduate standing or instructor approval.

MAT 515 Enumerative Combinatorics II. (3)

spring

Second semester of a systematic development of enumerative combinatorics, including lattices, exponential structures, symmetric functions, and selected special topics. Prerequisite: MAT 514 or instructor approval.

MAT 516 Graph Theory I. (3)

fall

First semester of a systematic development of graph theory, including matchings, connectivity, arboricity, planarity, coloring, network flows. Prerequisite: graduate standing or instructor approval.

MAT 517 Graph Theory II. (3)

spring

Second semester of a systematic development of graph theory, including dense and sparse graphs, Ramsey theory, hamiltonicity, random graphs, minors. Prerequisite: MAT 516 or instructor approval.

MAT 518 Combinatorial Optimization I. (3)

fall

First semester of a systematic development of combinatorial optimization, including linear programming, duality, primal-dual algorithms, network flow algorithms, weighted matchings. Prerequisite: graduate standing or instructor approval.

MAT 519 Combinatorial Optimization II. (3)

spring

Second semester of a systematic development of combinatorial optimization, including matroid algorithms, theory of NP-completeness, polynomial time approximation, dynamic programming. Prerequisite: MAT 518 or instructor approval.

MAT 520 Numerical Linear Algebra. (3)

fall

Direct solution of linear systems, iterative methods, eigenvalues and eigenvectors, singular value decomposition, the QR algorithm, error propagation, arithmetic, and stability. Prerequisites: both MAT 342 and 423 (or 421) or only instructor approval.

MAT 521 Iterative Methods. (3)

spring

Numerical methods for solving linear/nonlinear systems of equations (symmetric, nonsymmetric). Iterative methods for linear systems, conjugate gradients, multigrid methods, preconditioning, Krylov methods. Prerequisites: both MAT 371 and 423 (or 421) or only instructor approval.

MAT 523 Numerical Optimization. (3)

selected semesters

Linear programming, unconstrained nonlinear minimization, line search algorithms, conjugate gradients, quasi-Newton methods, constrained nonlinear optimization, gradient projection, and penalty methods. Prerequisite: MAT 342 or 371 or 460 or 520 (or its equivalent) or instructor approval.

MAT 524 Parallel Numerical Algorithms. (3)

selected semesters

Algorithms for massively parallel, hypercube architectures; "parallel" FORTRAN; solution of linear, nonlinear systems; partial differential equations; iterative methods; multigrid; domain decomposition. Prerequisites: both MAT 371 and 423 (or 421) or only instructor approval.

MAT 530 Numerical Solution of Ordinary Differential Equations. (3)

fall

One-step, linear multistep methods; consistency, order, stability, convergence; discretization, roundoff errors, error estimation, adaptive strategy; implementation, software for nonstiff equations. Prerequisites: both MAT 371 and 423 (or 421) or only instructor approval.

MAT 531 Numerical Solution of Stiff Differential Systems. (3)

spring

Runge-Kutta methods, order conditions, construction of highly stable methods, order stars, error estimation, stepsize selection, contractivity properties, linear multistep methods. Prerequisites: both MAT 371 and 423 (or 421) or only instructor approval.

MAT 533 Computational Elliptic and Parabolic Partial Differential Equations. (3)

fall

Parabolic and elliptic equations, finite difference, finite element methods, stability, consistency, convergence, practical aspects, applications, software. Prerequisites: both MAT 371 and 423 (or 421) or only instructor approval.

MAT 534 Computational Hyperbolic Partial Differential Equations. (3)

spring

Numerical solutions of hyperbolic PDEs, finite difference methods, well-posedness, stability, consistency, convergence, adaptive grids; Maxwell's equations, elastic wave propagation; Navier-Stokes. Prerequisites: both MAT 371 and 423 (or 421) or only instructor approval.

MAT 535 Spectral Methods for Partial Differential Equations. (3)

selected semesters

Spectral, pseudospectral theory; Galerkin, collocation methods; Tau-methods, global approximation properties, stability; convergence; solutions for linear, nonlinear systems. Prerequisites: both MAT 371 and 423 (or 421) or only instructor approval.

MAT 543 Abstract Algebra. (3)

fall

Groups, modules, rings and fields, Galois theory, homological algebra, and the representation theory. Prerequisite: MAT 444 or instructor approval.

MAT 544 Abstract Algebra. (3)

spring

Continuation of MAT 543. Prerequisite: MAT 543 or instructor approval.

MAT 551 Linear Operators and Integral Equations. (3)

spring

Bounded linear and compact operators on Hilbert spaces. Linear integral equations, Fredholm and Hilbert-Schmidt theory, and approximate methods. Distributions. Prerequisites: MAT 242 and 462 (or their equivalents).

MAT 555 Fractal Geometry. (3)

selected semesters

Geometry and analysis of fractal sets; definitions of dimensions; calculating dimensions; projections, products of fractals; random fractals; multifractal measures; and applications. Prerequisites: MAT 371, 455; MAT 472 recommended.

MAT 560 Dynamical Systems Methods in Fluid Dynamics. (3)

fall

Applies modern dynamical systems methods to fluid mechanics: bifurcations, normal forms, nonlinear dynamics, pattern formation, mixing, and Lagrangian chaos. Prerequisite: graduate standing or instructor approval.

MAT 562 Nonlinear Analysis of PDEs in Fluids. (3)

spring

Sobolev spaces; incompressible Euler and Navier-Stokes equations; weak and strong solutions; attractors and the connection with turbulence; geophysical applications. Prerequisite: graduate standing or instructor approval.

MAT 570 Real Analysis. (3)

spring

Lebesgue integration, selected function spaces, differentiation, abstract measure theory, and elements of functional analysis. Prerequisite: MAT 372 or instructor approval.

MAT 571 Real Analysis. (3)*fall*

Continuation of MAT 570. Prerequisite: MAT 570 or instructor approval.

MAT 572 Complex Analysis. (3)*fall*

Analytic functions, series and product representations, entire and meromorphic functions, normal families, Riemann mapping theorem, harmonic functions, and Riemann surfaces. Prerequisite: MAT 371 or instructor approval.

MAT 573 Complex Analysis. (3)*spring*

Continuation of MAT 572. Prerequisite: MAT 572 or instructor approval.

MAT 574 Theory of Ordinary Differential Equations. (3)*selected semesters*

Systems, existence proofs, singularities, asymptotic behavior of solutions, boundedness of solutions, eigenvalues and eigenfunctions, and perturbation theory. Prerequisite: MAT 372 or instructor approval.

MAT 575 Theory of Ordinary Differential Equations and Dynamical Systems. (3)*selected semesters*

Geometric approach to ODEs and dynamical systems; (un)stable, center manifolds; structural stability; normal forms; averaging; chaos; persistence. May be repeated for credit with instructor approval. Prerequisites: both MAT 452 and 475 or only MAT 574 or only instructor approval.

MAT 576 Theory of Partial Differential Equations. (3)*selected semesters*

Existence and uniqueness theorems, boundary value and initial value problems, characteristics, Green's functions, maximum principle, distributions, and weak solutions. Prerequisite: knowledge of Lebesgue integration or instructor approval.

MAT 577 Theory of Partial Differential Equations. (3)*selected semesters*

Continuation of MAT 576. Prerequisite: MAT 576 or instructor approval.

MAT 578 Functional Analysis. (3)*selected semesters*

Locally convex, normed, and Hilbert spaces. Linear operators, spectral theory, and application to classical analysis. Prerequisite: MAT 472 or 571 or instructor approval.

MAT 579 Functional Analysis. (3)*selected semesters*

Continuation of MAT 578. Prerequisite: MAT 578 or instructor approval.

MAT 591 Seminar. (1–12)*selected semesters*

Topics may include the following:

- Algebra. (1–3)
- Analysis. (1–3)
- Applied Mathematics. (1–3)
- Combinatorial Mathematics. (1–3)
- Mathematical Logic. (1–3)
- Numerical Analysis. (1–3)
- Topology. (1–3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," [page 56](#).

MATHEMATICS EDUCATION (MTE)**MTE 180 Theory of Elementary Mathematics. (3)***fall, spring, summer*

Number systems, intuitive geometry, elementary algebra, and measurement. Intended for prospective elementary school teachers. Fee. Prerequisite: MAT 117 (or its equivalent).

MTE 181 Theory of Elementary Mathematics. (3)*once a year*

Continuation of MTE 180. Fee. Prerequisite: MTE 180 or instructor approval.

MTE 380 Arithmetic in the Elementary School. (3)*once a year*

Historical numeration systems, overview of elementary number theory, including primes, factorization, divisibility, bases, modular systems, linear congruence, and continued fractions. Prerequisite: MTE 181 or instructor approval.

MTE 381 Geometry in the Elementary School. (3)*selected semesters*

Informal geometry, including concepts of length, area, volume, similarity, and congruence. Classification of figures, straightedge and compass constructions, and motion geometry. Prerequisite: MTE 380 or instructor approval.

MTE 482 Methods of Teaching Mathematics in Secondary School. (3)*fall*

Examines secondary school curricular material and analyzes instructional devices. Teaching strategies, evaluative techniques, diagnosis, and remediation and problem solving. Fee. Prerequisite: instructor approval.

MTE 483 Mathematics in the Secondary School. (3)*spring*

Topics in geometry, number theory, algebra, and analysis. Emphasizes unifying principles. Prerequisite: MAT 310 or instructor approval.

MTE 484 Theory of Elementary Mathematics Internship. (3)*fall and spring*

Employs hands-on activities and manipulatives to advance mathematical understanding in second- to fourth-grade students.

MTE 494 Special Topics. (1–4)*fall and spring*

Topics may include the following:

- Advanced Methods of Teaching Secondary Mathematics. (3)
Continuation of MTE 482. Prerequisite: MTE 482.

MTE 585 Modern Geometry for Teachers. (3)*once a year*

Euclidean, projective, and non-Euclidean geometries. Fee. Prerequisite: instructor approval.

MTE 587 Analysis for Teachers. (3)*selected semesters*

Subject matter in mathematics appropriate for accelerated programs in secondary schools, including analytic geometry and calculus. Prerequisite: instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," [page 56](#).

STATISTICS AND PROBABILITY (STP)**STP 220 Conceptual Statistics. (3)***fall and spring*

Treats the concepts and vocabulary needed to evaluate statistical reports on health, technology, and society. Aggressively emphasizes understanding over computation. Lecture, teamwork. Prerequisite: MAT 114 or 117 (or its equivalent).

*General Studies: CS***STP 226 Elements of Statistics. (3)***fall, spring, summer*

Basic concepts and methods of statistics, including descriptive statistics, significance tests, estimation, sampling, and correlation. Not open to majors in mathematics or the physical sciences. Prerequisite: MAT 114 or 117 (or its equivalent).

*General Studies: CS***STP 326 Intermediate Probability. (3)***fall and spring*

Probability models and computations, joint and conditional distributions, moments, and families of distributions. Topics in stochastic processes, simulation, and statistics. Prerequisite: MAT 210 (or its equivalent).

General Studies: CS

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," [page 83](#).

COLLEGE OF LIBERAL ARTS AND SCIENCES

STP 420 Introductory Applied Statistics. (3)

fall, spring, summer

Introductory probability, descriptive statistics, sampling distributions, parameter estimation, tests of hypotheses, chi-square tests, regression analysis, analysis of variance, and nonparametric tests. Prerequisite: MAT 117 (or its equivalent).

General Studies: CS

STP 421 Probability. (3)

fall

Laws of probability, combinatorial analysis, random variables, probability distributions, expectations, moment-generating functions, transformations of random variables, and central limit theorem.

Prerequisites: MAT 272 and 300 and STP 420 (or their equivalents).

STP 425 Stochastic Processes. (3)

spring

Markov chains, stationary distributions, pure jump processes, 2D order processes, and other topics in stochastic processes. Prerequisites: MAT 342; STP 421.

STP 427 Mathematical Statistics. (3)

spring

Limiting distributions, interval estimation, point estimation, sufficient statistics, and tests of hypotheses. Prerequisites: STP 420, 421.

STP 429 Experimental Statistics. (3)

spring

Statistical inference for controlled experimentation. Multiple regression, correlation, analysis of variance, multiple comparisons, and nonparametric procedures. Prerequisite: STP 420 (or its equivalent).

General Studies: CS

STP 525 Advanced Probability. (3)

selected semesters

Measure-theoretic foundations of probability, distribution functions and characteristic functions, laws of large numbers and central limit theorems, conditional probabilities, martingales, and topics in stochastic processes. Prerequisites: both MAT 571 and STP 421 or only instructor approval.

STP 526 Theory of Statistical Linear Models. (3)

fall

Multinormal distribution, distribution of quadratic forms, full and nonfull rank models, generalized inverses, unbalanced data, variance components, and the large sample theory. Prerequisites: STP 427; knowledge of matrix algebra.

STP 530 Applied Regression Analysis. (3)

fall

Method of least squares, simple and multiple linear regression, polynomial regression, analysis of residuals, dummy variables, and model building. Prerequisite: STP 420 (or its equivalent).

STP 531 Applied Analysis of Variance. (3)

spring

Factorial designs, balanced and unbalanced data, fixed and random effects, randomized blocks, Latin squares, analysis of covariance, and multiple comparisons. Prerequisite: STP 420 (or its equivalent).

STP 532 Applied Nonparametric Statistics. (3)

fall

One-sample test, tests of 2 or more related or independent samples, measures of correlation, and tests of trend and dependence. Prerequisite: STP 420 (or its equivalent).

STP 533 Applied Multivariate Analysis. (3)

spring

Discriminant analysis, principal components, factor analysis, cluster analysis, and canonical correlation. Prerequisite: STP 420 (or its equivalent).

STP 534 Applied Discrete Data Analysis. (3)

selected semesters

Models for discrete and count data, measures of association, and log-linear and regression models for contingency tables. Prerequisite: STP 420 (or its equivalent).

STP 535 Applied Sampling Methodology. (3)

spring

Simple random, stratified, cluster sampling; variance estimation in complex surveys; nonparametric superpopulation approaches; nonresponse models; computational methods. Prerequisite: STP 420 (or its equivalent).

STP 591 Seminar. (1–12)

selected semesters

Topics may include the following:

- Probability. (1–3)
- Statistics. (1–3)

STP 593 Applied Project. (1–12)

selected semesters

STP 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Microbiology

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480/965-1457

LSE 210

Edward A. Birge, Chair

Professors: Burke, Harrington, Jacobs, Misra, Mossman, Schmidt

Associate Professors: Birge, Hoffman, Hogue, Stout

Assistant Professors: Chang, Garcia-Pichel

Clinical Faculty: Downs, Lefevre, Mass, Roberts

MICROBIOLOGY—B.S.

The B.S. degree in Microbiology consists of a minimum of 41 semester hours in microbiology and approved related fields. Students majoring in Microbiology are required to take the following courses:

BIO 187 General Biology I <i>SG</i>	4
BIO 188 General Biology II <i>SQ</i>	4
BIO 340 General Genetics.....	4
Choose between the course combinations below.....	8
BCH 361 Principles of Biochemistry (3)	
BCH 367 Elementary Biochemistry Laboratory (1)	
CHM 231 Elementary Organic Chemistry <i>SQ</i> ¹ (3)	
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> ¹ (1)	
— or —	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
MIC 206 Microbiology Laboratory <i>SG</i> ²	1
MIC 220 Biology of Microorganisms.....	3
MIC 302 Advanced Bacteriology Laboratory <i>L</i> ³	2
MIC 360 Bacterial Physiology.....	3
MIC 401 Research Paper <i>L</i> ³	1
Total.....	30

¹ Both CHM 231 and 235 must be taken to secure SQ credit.

² Both MIC 205 and 206 must be taken to secure SG credit.

³ Both MIC 302 and 401 must be taken to secure L credit.

A minimum of 11 semester hours of upper-division electives in microbiology or approved related fields must be taken.

These elective hours must include two courses chosen from the following:

MIC 421 Experimental Immunology	2
MIC 446 Techniques in Molecular Biology/Genetics Lab.....	2
MIC 470 Bacterial Diversity and Systematics	4
MIC 494 ST: Clinical Bacteriology Laboratory	3
MIC 495 Undergraduate Research	2

In addition, students are required to fulfill the university mathematical studies requirements with MAT 210 (or 270, 290, or 294) as their MA course and BIO 420 (or any CSE course that meets the CS requirement). The required supplemental courses are as follows:

CHM 113 General Chemistry <i>SQ</i>	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i>	5
PHY 111 General Physics <i>SQ</i> *	3
PHY 112 General Physics <i>SQ</i> *	3
PHY 113 General Physics Laboratory <i>SQ</i> *	1
PHY 114 General Physics Laboratory <i>SQ</i> *	1
Total	17

* Both PHY 111 and 113 or PHY 112 and 114 must be taken to secure *SQ* credit.

CLINICAL LABORATORY SCIENCES—B.S.

The goal of the Clinical Laboratory Sciences degree program is to prepare individuals to practice in the field of clinical laboratory sciences, which includes the major disciplines of clinical chemistry, hematology, [immuno-hematology](#), immunology, and microbiology. Employment opportunities exist in hospital, private, physician, and research laboratories and in government, sales, management, and education. After obtaining a B.S. degree in Clinical Laboratory Sciences, the graduate is eligible for national certification by examination.

A student majoring in Clinical Laboratory Sciences is required to take 40 hours of clinical laboratory sciences courses. Also required are the following courses:

BCH 361 Principles of Biochemistry.....	3
BIO 360 Animal Physiology.....	3
CHM 113 General Chemistry <i>SQ</i>	4
CHM 231 Elementary Organic Chemistry <i>SQ</i> ¹	3
MIC 205 Microbiology <i>SG</i> ²	3
or MIC 220 Biology of Microorganisms (3)	
MIC 206 Microbiology Laboratory <i>SG</i> ²	1
Total	17

¹ Both CHM 231 and 235 must be taken to secure *SQ* credit.

² Both MIC 205 and 206 must be taken to secure *SG* credit.

Equivalent courses may be substituted upon approval of an advisor. Students must consult with the clinical laboratory sciences advisor to select general electives courses. Completion of the degree is dependent upon acceptance of the student into the accredited professional study program, which consists of 40 hours of clinical laboratory sciences courses. The university does not guarantee all students to be

accepted into the professional study program due to space limitations at the clinical affiliates and restrictions of program accreditation. For more information on acceptance procedures and program standards, contact the department for a program brochure. For proper course planning, students must meet with a clinical laboratory sciences advisor.

MINOR IN MICROBIOLOGY

The minor in Microbiology consists of a minimum of 24 semester hours. Required courses are as follows:

BIO 187 General Biology I <i>SG</i>	4
BIO 188 General Biology II <i>SQ</i>	4
BIO 340 General Genetics.....	4
MIC 206 Microbiology Laboratory <i>SG</i> ¹	1
MIC 220 Biology of Microorganisms	3
MIC 302 Advanced Bacteriology Laboratory <i>L</i> ²	2
MIC 360 Bacterial Physiology	3
Total	21

¹ Both MIC 205 and 206 must be taken to secure *SG* credit.

² Both MIC 302 and 401 must be taken to secure *L* credit.

The remaining upper-division microbiology courses are chosen in consultation with an advisor. Students majoring in Biology may not minor in Microbiology.

GRADUATE PROGRAMS

The faculty in the Department of Microbiology offer programs leading to the degrees of Master of Natural Science, M.S., and Ph.D. See the *Graduate Catalog* for requirements.

The department participates in the interdisciplinary program for the M.S. and Ph.D. degrees in Molecular and Cellular Biology. See the *Graduate Catalog* for courses, faculty, and program information, or call 480/965-0743 for more information.

CLINICAL LABORATORY SCIENCES/ MEDICAL TECHNOLOGY (CLS)

CLS 100 Introduction to Clinical Laboratory Sciences. (1)

fall

Introduces the field of clinical laboratory sciences. Required for Clinical Laboratory Sciences majors.

CLS 310 Principles of Clinical Chemistry I. (6)

spring

Theory and application of principles of clinical chemistry, with emphasis on laboratory techniques, pathophysiology, methods of analysis, and assessment of procedure. 3 hours lecture, 9 hours lab. Fee. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 320 Principles of Clinical Microbiology I. (6)

spring

Theory and application of principles of clinical microbiology with emphasis on isolation and identification of medically significant fungi and bacteria. 3 hours lecture, 9 hours lab. Fee. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

CLS 330 Principles of Clinical Hematology I/Body Fluids. (3)

fall

Theory and application of principles in hematology, with emphasis on techniques to evaluate blood dyscrasias and analyze body fluids. 2 hours lecture, 3 hours lab. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 410 Principles of Clinical Chemistry II. (2)

summer

Continuation of CLS 310 with emphasis on principles of advanced clinical chemistry. 1 hour lecture, 3 hours lab. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 411 Advanced Applications of Clinical Chemistry. (4)

fall

Clinical application of theory/techniques from CLS 310 and 410. Emphasizes operation of common laboratory instrumentation and clinical correlation. Minimum 180 hours practicum. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 420 Principles of Microbiology II. (2)

summer

Disease mechanisms and identification of medically significant parasites, Mycobacteria, Actinomycetes, Chlamydia, Rickettsia, Mycoplasma, and viruses. 1 hour lecture, 3 hours lab. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 421 Advanced Applications of Clinical Microbiology. (4)

spring

Practical laboratory application of the principles of specimen collection, processing, detection, identification, and antimicrobial testing of medically significant bacteria, fungi, and parasites. Minimum 180 hours practicum. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 430 Principles of Clinical Hematology II/Hemostasis. (3)

fall

Theory and applications of principles in hematology with emphasis on etiology, pathophysiology, clinical manifestations, and treatment of blood dyscrasias/hemostatic defects. 2 hours lecture, 3 hours lab. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 431 Advanced Applications of Clinical Hematology. (4)

spring

Practical laboratory application of methods/techniques used to evaluate and diagnose blood dyscrasias/hemostatic defects. Applied techniques in body fluid analysis. Minimum 180 hours practicum. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 440 Principles of Clinical Immunology/Immunohematology. (4)

fall

Theoretical and practical application of clinical immunology and immunohematology. Emphasizes serological techniques that aid disease diagnosis and blood donor selection. 3 hours lecture, 3 hours lab. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 441 Advanced Applications of Clinical Immunology/Immunohematology. (3)

spring

Practical laboratory application of the principles of serological methods used in diagnosing disease and selecting blood components for transfusion therapy. Minimum 135 hours practicum. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

CLS 450 Principles of Clinical Laboratory Administration. (2)

fall and spring

Principles of management, with emphasis on the clinical laboratory. Basic management process, personnel supervision, identification, and allocation of resources. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

General Studies: L (if credit also earned in CLS 460)

CLS 460 Principles of Clinical Laboratory Education. (1)

spring

Principles of learning, with application to the development of instructional objectives, strategies, and evaluation for teaching-learning situations in the laboratory. Prerequisite: admission to the Clinical Laboratory Sciences professional study program.

General Studies: L (if credit also earned in CLS 450)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

MICROBIOLOGY (MIC)

MIC 205 Microbiology. (3)

fall, spring, summer

Basic course for students without credit in BIO 188, emphasizing general principles; role of microorganisms in health, ecology, and applied fields. May not be used for Microbiology major credit unless a diagnostic test is passed. Prerequisites: both BIO 100 (or PLB 108) and CHM 101 or only instructor approval.

General Studies: SG (if credit also earned in MIC 206)

MIC 206 Microbiology Laboratory. (1)

fall, spring, summer

Principles and laboratory techniques used in identifying and handling microorganisms. 3 hours lab. Fee. Pre- or corequisite: MIC 205 or 220.

General Studies: SG (if credit also earned in MIC 205)

MIC 220 Biology of Microorganisms. (3)

fall and spring

Basic course for students with credit in BIO 188. Detailed study of microbial cells, their structure, genetics, physiology, and taxonomy. Corequisites: BIO 187; CHM 115.

MIC 302 Advanced Bacteriology Laboratory. (2)

fall and spring

Advanced laboratory techniques in bacterial growth, physiology, genetics, and microscopy. Required of Microbiology majors. 4 hours lab. Fee. Prerequisites: completion of General Studies L requirement and either (a) MIC 206 and 220 or (b) MIC 205 and 206 and instructor approval.

General Studies: L (if credit also earned in MIC 401)

MIC 360 Bacterial Physiology. (3)

fall and spring

Mechanisms and control of cell metabolism, structures, and functions. Prerequisite: MIC 220. Pre- or corequisite: BCH 361 or instructor approval.

MIC 380 Medical Parasitology. (3)

fall

Parasitic diseases of humans, including life cycle events and clinical manifestations. Prerequisite: MIC 205 or 220.

MIC 381 Pathogenic Microbes. (3)

spring

Host-microbial interactions in infectious disease, with emphasis on pathogenesis, host defenses, and molecular mechanisms of microbial virulence. Prerequisite: MIC 360 or 6 hours in microbiology with instructor approval.

MIC 394 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Disease and AIDS in America

MIC 401 Research Paper. (1)

fall, spring, summer

Paper of 15 or more pages based on library or laboratory research in collaboration with a faculty member. Required of all Microbiology majors. Prerequisites: MIC 302; completion of General Studies L requirement.

General Studies: L (if credit also earned in MIC 302)

MIC 420 Immunology: Molecular and Cellular Foundations. (3)

fall

Molecular and cellular foundations of immunology. Antibody/antigen interactions, cellular response, cytokines, immunogenetics, immunoregulation, autoimmunity, psychoneuroimmunology research/medical perspectives. Prerequisites: both CHM 231 (or 331) and MIC 205 (or 220) or only instructor approval.

MIC 421 Experimental Immunology. (2)*fall and spring*

Introduces the basic techniques, methods, and assays used in immunology. 6 hours lab. Fee. Prerequisites: a combination of CHM 231 and 331 and MIC 302 or only instructor approval.

MIC 425 Advanced Immunology. (3)*selected semesters*

Survey of recent advances in immunology, including lymphocyte membranes, lymphokines/biochemistry, molecular genetics, theoretical immunology, immunoregulation, neuroimmunology, and immunologic diseases. Prerequisite: MIC 420 or instructor approval.

MIC 441 Bacterial Genetics. (3)*spring*

Survey of genetic exchange and regulatory processes in bacteria and their viruses. Bacteria and viruses as tools in genetic engineering. Prerequisites: both BIO 340 and MIC 205 (or 220) or only instructor approval.

MIC 442 Bacterial Genetics Laboratory. (1)*spring*

Techniques of mutagenesis, mapping, and strain and genetic library construction. 4 hours lab. Prerequisites: MIC 206, 302. Pre- or corequisite: MIC 441.

MIC 445 Techniques in Molecular Biology/Genetics. (2)*fall and spring*

Molecular genetic principles: plasmid construction, purification, and characterization; PCR; mutageneses; hybridization and sequence analysis; protein quantitation; immunologic detection and electrophoresis. Cross-listed as MBB 445. Credit is allowed for only MBB 445 or MIC 445. Prerequisites: both BIO 340 and MIC 302 or only instructor approval.

MIC 446 Techniques in Molecular Biology/Genetics Lab. (2)*fall and spring*

Molecular genetic techniques; plasmid construction, purification, and characterization; PCR; mutageneses; hybridization and sequence analysis; protein quantitation; immunologic detection and electrophoresis. Cross-listed as MBB 446. Credit is allowed for only MBB 446 or MIC 446. Pre- or corequisite: MBB 445 or MIC 445.

MIC 461 Geomicrobiology. (3)*spring*

Past and present interactions among microbial life, geological materials, and biogeochemical cycles involving carbon, sulfur, phosphate, nitrogen, and metals. Cross-listed as GLG 461. Credit is allowed for only GLG 461 or MIC 461. Prerequisites: introductory courses in chemistry and microbiology (or geological sciences); instructor approval.

MIC 470 Bacterial Diversity and Systematics. (4)*fall*

Biology, classification, and enrichment culture of the nonpathogenic bacteria. 2 hours lecture, 6 hours lab. Fee. Prerequisite: MIC 302.

MIC 485 General Virology. (3)*fall*

Fundamental nature of viruses, their replication, pathogenesis, and ecology. Prerequisites: both BIO 340 and CHM 331 or only instructor approval.

MIC 486 General Virology Laboratory. (2)*selected semesters*

Fundamentals of virus detection, isolation and assay; propagation of virus in mammalian cell culture; recombinant virus and vector construction. 6 hours lab. Prerequisite: MIC 302. Pre- or corequisite: MIC 485.

MIC 494 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Clinical Bacteriology Laboratory. (3)
- Service Learning (Bioreach). (3)

MIC 495 Undergraduate Research. (1–6)*fall, spring, summer*

Supervised research in microbiology. May be repeated for credit. Lab. Prerequisites: MIC 206, 220, 302; instructor approval.

MIC 527 Neuroimmunology. (3)*selected semesters*

Studies mind's influence on immunity and the immune system's influence on the mind, neuroimmunologic diseases, and the neuroimmunological circuitry involved. Seminar. Prerequisite: MIC 420 or instructor approval.

MIC 581 Molecular Mechanism of Pathogenesis. (3)*selected semesters*

Pathogenic mechanisms and host responses in viral and/or bacterial diseases. Prerequisites: both MIC 381 and 420 or only instructor approval.

MIC 585 Molecular Virology. (3)*fall*

Selected topics concerning molecular aspects of eukaryotic virus replication and pathogenesis. Prerequisite: instructor approval.

MIC 591 Seminar. (1–12)*fall and spring*

Topics may include the following:

- Bacterial Ecology. (1–3)
- Current Research in Microbiology. (1–3)
- Enzymology. (1–3)
- Genetic Engineering. (1–3)
- Genetics. (1–3)
- Immunology. (1–3)
- Molecular Virology. (1–3)
- Neuroimmunology. (1–3)
- Pathogenic Bacteriology. (1–3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Military Science

Army ROTC

www.asu.edu/clas/military

480/965-3318

TCB 104

Lt. Col. Scott Crawford, Chair

Professor: Crawford

Assistant Professors: Beattie, Fischer, Hopkins, Rollins, Rudolph, Waller

Instructors: Fox, Oldroyd, Ringenoldus, Robinson

Clinical Associate Professor: Cox

PURPOSE

The Department of Military Science curriculum consists of the basic course (MIS 101, 102, 201, and 202) and the advanced course (MIS 301, 302, 401, and 402). The goal of this professional education curriculum is to prepare students with leadership potential to be commissioned as U.S. Army officers. Objectives include developing the following characteristics in students: leadership and managerial skills, the

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

ability to think creatively, the ability to speak and write effectively, appreciation of the requirements for national security, and an understanding of the nature and functions of the U.S. Army. Upon successful completion of the advanced course and graduation, qualified students receive commissions in the Active Army (on a competitive basis), U.S. Army Reserve, or Army National Guard.

In addition to the military science curriculum, core courses in the field of national defense studies are both an integral and parallel source of the department's program. Integrally, they provide MIS courses at all levels with topical intensity and highlight such professionally related areas as military technology; weapons procurement; national intelligence, secrecy, and counterintelligence; civil-military relations; security coalitions and regional defense communities; national, regional, and global levels of strategy; generalship skill-in-action; deterrence dynamics and structure; military doctrine; service-branch livelihood, appropriations rivalry, and interservice cooperation; personnel recruitment, morale, training, advancement, and bureaucratic organization; military reform; threat and threat perception; military-historical experience and analogy; media and biographical insights; the rationale and matrices of security analysis and research; and independently selectable topics.

The department also fields an independent but parallel set of 400-level courses in the areas of geostrategic, politico-strategic, and national defense policy and analysis—available to students irrespective of Reserve Officers' Training Corps (ROTC) status, departmental major, or college affiliation—for assigned credit toward General Studies, social science, and global awareness requirements for graduation. (See [“Classification of Courses,” page 55](#), for a description of course 499 Individualized Instruction.)

GENERAL QUALIFICATIONS

Basic Course. Any student who is enrolled in ASU (or approved by the professor of military science) can enter into military science basic classes. It is strongly recommended that the student be in good physical shape because some of the curriculum requires physical exertion.

Advanced Course. Any student who is enrolled in ASU (or approved by the professor of military science) may participate in military science advanced classes. However, to be fully enrolled in the advanced course and compete for and obtain a commission in the U.S. Army, students must meet the following requirements:

1. be a citizen of the United States (noncitizens may enroll but must obtain citizenship before commissioning);
2. be of sound physical condition and pass the U.S. Army physical fitness test;
3. meet the required professional military educational requirements; and
4. be at least 17 years of age for entrance into the advanced course and be able to complete all commissioning requirements before age 27.

Only those students in the basic and advanced courses who meet the required standards according to military regu-

lations are eligible to receive financial assistance through the U.S. Army. Faculty of the Department of Military Science are available during normal office hours to answer questions or provide counseling.

The following are various options open to students who wish to obtain a commission in the U.S. Army. Contact the Department of Military Science personnel for more information.

Four-Year Program. Students may enroll in Army ROTC during their freshman year. They take the basic course during the first two years, receiving a total of 12 semester hours of credit for four semesters of study. Upon satisfying the requirements, they enter the advanced course, where they earn 12 additional semester hours for four semesters of study. Students are also required to attend a five-week advanced summer camp at Fort Lewis, Washington, between their junior and senior years. All commissioned officers must meet certain Professional Military Education requirements by completing courses in English, math, and computer literacy. Selected majors such as nursing, engineering, and architecture, among others, may require an additional semester or two, or summer school, to complete all requirements for a degree and commission without excessive course overloads. Upon successful completion of the advanced course and requirements for a degree, students are commissioned as second lieutenants in the Active Duty Army, U.S. Army Reserve, or Army National Guard.

Two-Year Program. Students must have at least two academic years of college work remaining, either at the undergraduate or graduate level. The student must also have reached academic junior status. This program is open to all students with the exception of three- and four-year Army ROTC scholarship winners (see [“Scholarship Programs,” page 434](#)). Students seeking enrollment in the two-year program should make application during the spring semester of the calendar year in which they desire to enter the program. They must provide SAT/ACT scores and pass the Army physical fitness test. After successfully completing a paid five-week basic camp, students may enroll in the advanced course. (The camp is conducted during June and July at Fort Knox, Kentucky.) Students who have previous military experience or who are currently members of the National Guard or Reserves may be admitted directly into the two-year program, provided they are academic juniors. They then follow the same program and meet the same requirements as stated for advanced course students in the four-year program.

Qualifications for Admittance to the Advanced Course. The following qualifications are required for admittance to the advanced course:

1. successful completion of the basic course for the students in the four-year ROTC program; for the students in the two-year program, selection for and completion of the six-week basic summer camp or prior military service;
2. score at least 950 on SAT or 19 on ACT;
3. passing the Army physical examination;

4. achieving and maintaining the minimum cumulative GPA required for graduation in the student's selected major, but no less than 2.00;
5. attainment of at least junior class standing; and
6. maintenance of full-time student status.

Pay and Allowances. Each advanced course student receives one-half the pay of a second lieutenant during attendance at the six-week advanced camp. Uniforms, housing, and meals are provided at camp without cost to the students, and they are reimbursed at the current mileage rate for travel to and from the camp. Students who attend basic camp receive the pay of an army recruit during attendance at basic camp as well as the current mileage rate for travel to and from the camp. All students in the advanced course, regardless of scholarship status, are paid about \$1,500 tax-free for each of these two years.

Simultaneous Membership Program. Under this program, ROTC students may simultaneously be members of the Army Reserves or the National Guard. The combination of advance course allowance and pay for Army Reserve or National Guard participation provides more than \$1,250 for each semester's involvement.

Scholarship Programs. The Army ROTC offers scholarship programs for outstanding young men and women who are motivated toward a career as professional officers in the U.S. Army. These scholarships are awarded in varying amounts for tuition. In addition, the scholarship pays \$150.00 per month subsistence allowance and \$225.00 each semester for textbooks and supplies. A scholarship for four years is available to freshmen who enter the four-year program. Applications must be submitted in accordance with a schedule furnished by high school counselors. Selection is made on a nationwide basis. Scholarships are also available for three- and two-year periods, commencing with the sophomore and junior years of ROTC respectively. Applications are open to all students in good standing with the university; previous ROTC or military experience is not required for application for three- and two-year scholarships. Selection is made by a review board on campus. Acceptance of any of the three scholarship programs requires a service commitment to serve in the Active Army for a period of up to four years after commissioning and graduation.

Active Duty Requirements. Graduates of Army ROTC may serve as officers in the Active Army, Army National Guard, or Army Reserves. Active duty commitments may vary from four years to as little as three months. Scholarship students have up to a four-year active duty commitment.

Graduate and Professional Studies Programs. A delay of up to four years in call to active duty is available to outstanding students who desire to earn graduate or professional degrees. Special programs for graduate and professional studies are available to both active Army appointees and Reserve component appointees in the following areas: medicine, osteopathy, and clinical psychology.

MILITARY SCIENCE (MIS)

MIS 101 Introduction to the Military I. (3)

fall

Overview of mission, organization, and structure of the Army and its role in national defense; discussion of current military issues. 3 hours lecture/conference, 2 hours lab.

MIS 102 Introduction to the Military II. (3)

spring

Introduces problem-solving methods, critical thinking, decision making, and group cohesion as applied in a military environment. 3 hours lecture/conference, 2 hours lab. Prerequisite: MIS 101.

MIS 201 Introduction to Leadership Dynamics I. (3)

fall

Introduces interpersonal dynamics involved in military team operations; theory and application of military leadership principles. 3 hours lecture/conference, 2 hours lab.

MIS 202 Introduction to Leadership Dynamics II. (3)

spring

Continuation of MIS 201. 3 hours lecture/conference, 2 hours lab. Prerequisite: MIS 201.

MIS 205 ROTC Basic Camp. (4)

summer

6-week training program emphasizing practical hands-on skills and leadership development. Taken in lieu of MIS 101, 102, 201, 202. Conducted at Fort Knox, Kentucky.

MIS 301 Advanced Military Science I. (3)

fall

Theory and dynamics of the individual soldier and military units in offensive combat operations. 2 hours lecture/conference, 1.5 hours of Leadership Practical Application, 1 2-day field exercise, 3 1-day field exercises. Fee. Prerequisites: MIS 101 and 102 and 201 and 202 (or their equivalents). Corequisite: EPE 105 Physical Education Activity (Army Master Fitness).

MIS 302 Advanced Military Science II. (3)

spring

Theory and dynamics of military units in defensive combat operations. 2 hours lecture/conference, 1.5 hours Leadership Practical Application, 1 3-day field exercise, 2 1-day field exercises. Fee. Prerequisites: MIS 101 and 102 and 201 and 202 (or their equivalents). Corequisite: EPE 105 Physical Education Activity (Army Master Fitness).

MIS 303 ROTC Advanced Camp. (4)

summer

6-week training program emphasizing leadership development and advanced military skills, including tactics, land navigation, and physical training. Conducted at Fort Lewis, Washington. Prerequisites: MIS 301, 302.

MIS 401 Advanced Military Science III. (3)

fall

Military legal system; preparation and conduct of military training; leadership development; ethics and professionalism of the military officer. 3 hours lecture/conference, 2 hours Leadership Practical Application, 1 2-day field exercise, 3 1-day field exercises. Fee. Prerequisites: MIS 301, 302. Corequisite: EPE 105 Physical Education Activity (Army Master Fitness).

MIS 402 Advanced Military Science IV. (3)

spring

Military correspondence; career planning and personal affairs in service; conduct of training; leadership development; ethics and professionalism of the military officer. 3 hours lecture, 2 hours Leadership Practical Application, 1 3-day field exercise, 2 1-day field exercises. Fee. Prerequisites: MIS 301, 302. Corequisite: EPE 105 Physical Education Activity (Army Master Fitness).

MIS 410 American Defense Policy I. (3)

fall

Evolution, organization, and execution of U.S. national security policy. *General Studies: SB*

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

MIS 412 American Defense Policy II. (3)

spring
Contemporary problems and analytical issues in the formation and implementation of U.S. national security. Prerequisite: MIS 410.
General Studies: SB

MIS 414 Comparative Defense Policy Analysis. (3)

fall
Historical problems and analytical issues in the evolution, organization, application, and control of effective military establishments in various political systems.
General Studies: SB

MIS 416 Soviet/C.I.S. Foreign and Defense Policies. (3)

spring
Analyzes foreign and security policies of the Soviet Union/C.I.S. and of the successor states to the Warsaw Pact.
General Studies: SB

MIS 499 Individualized Instruction: National Defense Analysis. (1-3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Molecular and Cellular Biology

lsvl.la.asu.edu/mcb

480/965-0743

LSE 411

Bertram L. Jacobs, Director, Interdisciplinary Committee

GRADUATE PROGRAMS

The interdisciplinary M.S. and Ph.D. degrees with a major in Molecular and Cellular Biology are administered by the Interdisciplinary Committee on Molecular and Cellular Biology. The participating faculty are drawn primarily from four core departments (the Departments of Biology, Chemistry and Biochemistry, Microbiology, and Plant Biology), with additional faculty from the Departments of Anthropology and Physics and Astronomy.

For more information, contact the director or see the *Graduate Catalog*.

MOLECULAR AND CELLULAR BIOLOGY (MCB)

See the *Graduate Catalog* for the MCB courses.

Molecular Biosciences and Biotechnology

lifesciences.asu.edu/mbb

Department of Plant Biology

480/965-3414

LSE 218

Department of Microbiology

480/965-1457

LSE 210

J. Kenneth Hooper, Chair
Edward A. Birge, Codirector

MOLECULAR BIOSCIENCES AND BIOTECHNOLOGY—B.S.

The interdepartmental B.S. degree in Molecular Biosciences and Biotechnology is designed to prepare students for productive careers in rapidly expanding areas within the life sciences, such as biotechnology, medicine, and biomedical research or any area of biology at the molecular and cellular level. Courses and faculty are drawn primarily from the Departments of Plant Biology and Microbiology, with additional participation by the Departments of Biology and Chemistry and Biochemistry.

General Program

The B.S. degree program consists of a minimum of 54 semester hours of course work in required courses plus two courses in mathematics specifically designed for this program. The required major courses (22 total semester hours) are as follows:

MBB 245 Cellular and Molecular Biology <i>SQ</i>	3
MBB 246 Cellular and Molecular Biology Laboratory <i>SQ</i>	1
MBB 343 Genetic Engineering and Society <i>L</i>	4
MBB 484 Internship	6
or MBB 499 Individualized Instruction (6).....	6
MBB 490 Capstone: Issues in Biotechnology	4
MIC 206 Microbiology Laboratory <i>SG*</i>	1
MIC 220 Biology of Microorganisms	3
Total	22

* Both MIC 205 and 206 must be taken for SG credit.

Choose two or more of the following courses (or combinations) for a total of seven to nine semester hours:

BIO 340 General Genetics.....	4
BIO 353 Cell Biology	3
BIO 494 ST: Cell Biotechnology.....	4
MBB 350 Applied Genetics.....	4
MBB 445 Techniques in Molecular Biology/Genetics.....	2
MBB 446 Techniques in Molecular Biology/Genetics Lab ¹	2
MIC 420 Immunology: Molecular and Cellular Foundations.....	3

MIC 421 Experimental Immunology ²	2
Total	7-9

- ¹ MBB 446 is taken with 445.
- ² MIC 421 is taken with 420.

Required supplemental courses in biology, chemistry, mathematics and physics (28 total semester hours) are as follows (a minimum of “C” is required for all course work):

BCH 361 Principles of Biochemistry.....	3
BCH 367 Elementary Biochemistry Laboratory.....	1
CHM 113 General Chemistry <i>SQ</i>	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i>	5
CHM 231 Elementary Organic Chemistry <i>SQ</i> ¹	3
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> ¹	1
MAT 251 Calculus for Life Sciences <i>MA</i>	3
PHY 111 General Physics <i>SQ</i> ²	3
PHY 112 General Physics <i>SQ</i> ³	3
PHY 113 General Physics Laboratory <i>SQ</i> ²	1
PHY 114 General Physics Laboratory <i>SQ</i> ³	1
Total	28

- ¹ Both CHM 231 and 235 must be taken to secure *SQ* credit.
- ² Both PHY 111 and 113 must be taken to secure *SQ* credit.
- ³ Both PHY 112 and 114 must be taken to secure *SQ* credit.

Satisfaction of the university computer/statistics/quantitative applications requirement is met with MAT 351 Mathematical Methods for Genetic Analysis (3), in which a minimum of “C” is required.

Additional courses are available in the life or physical sciences for elective credit.

MOLECULAR BIOSCIENCES/BIOTECHNOLOGY (MBB)

MBB 245 Cellular and Molecular Biology. (3)

fall and spring
Concepts that underlie relationships between cellular and subcellular structure and function, and integration of major metabolic and genetic processes. Prerequisite: life science major or preprofessional student in health-related sciences.

General Studies: SQ (if credit also earned in MBB 246)

MBB 246 Cellular and Molecular Biology Laboratory. (1)

fall and spring
Experiments that illustrate relationships between structure, function, and genetic processes at the cellular and molecular level. Lab. Prerequisite: MBB 245.

General Studies: SQ (if credit also earned in MBB 245)

MBB 343 Genetic Engineering and Society. (4)

fall
Introduces genetic engineering, with emphasis on applications (gene therapy, DNA fingerprinting, bioremediation, transgenic animals and plants). 3 hours lecture, 3 hours lab. Cross-listed as BIO 343. Credit is allowed for only BIO 343 or MBB 343. Prerequisites: preferably both MBB 245 and 246 or only BIO 188 (or its equivalent).

General Studies: L

MBB 350 Applied Genetics. (4)

spring
Introduces molecular genetics with emphasis on application of genetics in solving biological questions and engineering organisms in biotechnology. 2 hours lecture, 6 hours lab. Cross-listed as PLB 350. Credit is allowed for only MBB 350 or PLB 350. Fee. Prerequisites: preferably both MBB 245 and 246 or only BIO 188 (or its equivalent).

MBB 445 Techniques in Molecular Biology/Genetics. (2)

fall and spring
Molecular genetic principles: plasmid construction, purification, and characterization; PCR; mutagenesis; hybridization and sequence analysis; protein quantitation, immunologic detection, and electrophoresis. Cross-listed as MIC 445. Credit is allowed for only MBB 445 or MIC 445. Prerequisites: both BIO 340 and MIC 302 or only instructor approval.

MBB 446 Techniques in Molecular Biology/Genetics Lab. (2)

fall and spring
Molecular genetic techniques; plasmid construction, purification, and characterization; PCR; mutagenesis; hybridization and sequence analysis; protein quantitation; immunologic detection and electrophoresis. Cross-listed as MIC 446. Credit is allowed for only MBB 446 or MIC 446. Pre- or corequisite: MBB 445 or MIC 445.

MBB 484 Internship. (3)

selected semesters

MBB 490 Capstone: Issues in Biotechnology. (2)

fall and spring
Integrates science and humanities within problem-solving exercises dealing with intellectual property, ethics, regulatory issues, business practices, and commercialization. Prerequisite: Molecular Biosciences/Biotechnology major or instructor approval.

General Studies: L

MBB 499 Individualized Instruction. (3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

Department of Philosophy

www.asu.edu/philosophy

480/965-3394

PS A524

Brad Armendt, Chair

Regents’ Professors: Maienschein, Murphy

Professors: Cohen, Creath, Fitch, French, Humphrey, White

Associate Professors: Armendt, Blackson, de Marneffe, Guleserian, Kobes, McGregor, Reynolds

Assistant Professor: Devlin

Lecturer: Bolton

PHILOSOPHY—B.A.

The major in Philosophy consists of 45 semester hours, 33 of which must be upper-division hours. In addition to the 45 semester hours, the mathematics proficiency requirement must be met by completing MAT 117 or higher. In exceptional cases, up to nine semester hours may be in related fields as approved by the undergraduate advisor. Required courses are as follows:

PHI 300 Philosophical Argument and Exposition <i>L</i>	3
PHI 301 History of Ancient Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 302 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 303 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 304 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 305 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 306 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 307 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 308 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 309 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
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PHI 311 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 312 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 313 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
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PHI 315 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 316 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 317 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 318 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 319 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 320 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 321 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 322 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
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PHI 398 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 399 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3
PHI 400 History of Modern Philosophy <i>HU, CS, computer/statistics/</i>	3

COLLEGE OF LIBERAL ARTS AND SCIENCES

PHI 305 Ethical Theory <i>HU</i>	3
or PHI 335 History of Ethics <i>HU</i> (3)	
PHI 312 Theory of Knowledge <i>HU</i>	3
or PHI 314 Philosophy of Science <i>HU</i> (3)	
PHI 316 Metaphysics <i>HU</i>	3
or PHI 317 Philosophy of Mind <i>HU</i> (3)	
PHI 333 Introduction to Symbolic Logic.....	3
Choose two courses below.....	6
PHI 401 Rationalism (3)	
PHI 402 Empiricism <i>HU</i> (3)	
PHI 403 Contemporary Analytic Philosophy <i>HU</i> (3)	
PHI 413 Advanced Symbolic Logic (3)	
PHI 420 Topics in Philosophy (3)	
PHI 494 Special Topics (3)	
Total.....	27

Exceptions by special permission of the chair only. PHI 420 may be repeated for credit.

Students planning to do graduate work in philosophy should consult with an advisor to develop an appropriate selection of courses at the 300 and 400 levels. A minimum grade of “C” is necessary for each course used to fulfill the major requirements. See [“College Degree Requirements,” page 330.](#)

History and Philosophy of Science. The faculty in the Department of Philosophy offer courses bearing the HPS prefix. With the consent of the director of undergraduate studies, these courses may be taken to satisfy the requirements of the Philosophy major.

MINOR IN PHILOSOPHY

A minor in Philosophy consists of 18 semester hours, of which at least 12 must be in the upper division and approved by an advisor in the department. All courses must be passed with a minimum grade of “C.”

CERTIFICATE IN ETHICS

The Ethics Certificate consists of 18 semester hours approved by an advisor in the department. The student must take PHI 305 or 335. At least 15 hours must be chosen from PHI 105, 304, 305, 306, 307, 309, 310, 335, and (when its topic is within ethics) PHI 420. One course outside this list, and perhaps outside the department, may be used with written approval from the Director of Undergraduate Studies. All courses must be passed with a minimum grade of “C.”

CERTIFICATE IN HISTORY AND PHILOSOPHY OF SCIENCE

The History and Philosophy of Science Certificate consists of 18 semester hours, of which at least 12 must be in the upper division and approved by an advisor in the department. At least nine semester hours must be HPS, and three semester hours must be PHI 314 Philosophy of Science. All courses must be passed with a minimum grade of “C.”

CERTIFICATE IN SYMBOLIC SYSTEMS

The Certificate in Symbolic Systems consists of 28 semester hours approved by an advisor in the Department of Philosophy and divided evenly between computer science and engineering, psychology, and philosophy as follows:

1. CSE 200, 210, and 240;
2. PSY 230 and 290 and either PSY 323, 324, or 437; and
3. either PHI 312 or 314, either PHI 315 or 317, and either PHI 319 or 333.

Students must satisfy the prerequisites for the listed courses. With written approval from the director of undergraduate studies in the Department of Philosophy, one substitution of a course from outside this list may be made. All courses must be passed with a minimum grade of “C.”

GRADUATE PROGRAM

The faculty in the Department of Philosophy offer a graduate program leading to the M.A. and Ph.D. degrees. See the *Graduate Catalog* for requirements.

HISTORY AND PHILOSOPHY OF SCIENCE (HPS)

HPS 311 Origins, Evolution, and Creation. (3)

selected semesters

Examines scientific, mythic, and religious ideas relating to origins (particularly human). Place of antievolutionism and “scientific creationism” in American culture. Lecture, discussion. Cross-listed as BIO 344/HUM 371/REL 383. Credit is allowed for only BIO 344 or HPS 311 or HUM 371 or REL 383.

HPS 322 History of Science. (3)

once a year

Development and application of scientific thinking from ancient times through the 17th century.

General Studies: HU, H

HPS 323 History of Science. (3)

selected semesters

Development and application of scientific thinking from the 18th century to the present.

General Studies: HU, H

HPS 325 Chinese Science and Medicine. (3)

selected semesters

Explores development of Chinese traditions dealing with the natural world, science, and medicine. Lecture, discussion. Cross-listed as HST 385. Credit is allowed for only HPS 325 or HST 385.

General Studies: HU, G, H

HPS 330 History of Biology: Conflicts and Controversies. (3)

selected semesters

Focuses on 19th and 20th centuries, considering biology as a discipline. Evolution, problems of heredity, development, and cell theory. Cross-listed as BIO 316. Credit is allowed for only BIO 316 or HPS 330.

General Studies: H

HPS 331 History of Medicine. (3)

once a year

Scientific study of the human body, changing theories of disease, evolution of practical opinions on treatment, and the emerging institutionalization of medical practice. Cross-listed as BIO 318. Credit is allowed for only BIO 318 or HPS 331.

General Studies: H

HPS 332 The Darwinian Revolution. (3)

selected semesters

Intellectual and cultural history of Darwinism and modern evolutionary theory and their impact on 19th- and 20th-century thought. Lecture, discussion. Cross-listed as BIO 346/HUM 372. Credit is allowed for only BIO 346 or HPS 332 or HUM 372.

HPS 340 Biology and Society. (3)

spring

Explores interactions between biological sciences and society, e.g., biomedical, environmental, ethical, historical, legal, philosophical, political, and social issues. Lecture, discussion. Cross-listed as BIO 311. Credit is allowed for only BIO 311 or HPS 340. Prerequisites: both BIO 187 and 188 or only BIO 193 (or 100).

HPS 377 Nature in Context. (3)*fall*

Explores perspectives on the nature of nature, the history of ecology, and the rise of environmentalism. Seminar. Cross-listed as HON 377. Credit is allowed for only HON 377 or HPS 377.

HPS 402 Technology, Society, and Human Values. (3)*once a year*

Values that motivate humankind to create technology. Areas of conflict and resolution of conflict between values and technology. Readings and discussions with visiting lecturers. Prerequisite: junior standing.

HPS 410 Professional Values in Science. (3)*once a year*

Considers issues related to values in science such as collaboration, finances, legal issues, media, mentoring, ownership of ideas, scientific integrity. Discussion, student projects. Cross-listed as BIO 416. Credit is allowed for only BIO 416 or HPS 410.

General Studies: L

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

PHILOSOPHY (PHI)**PHI 101 Introduction to Philosophy. (3)***fall, spring, summer*

Explores issues that philosophers have traditionally considered, including morality, reality, and knowledge.

*General Studies: HU***PHI 103 Principles of Sound Reasoning. (3)***fall, spring, summer*

Fallacies, validity, and soundness of arguments. May include syllogistic, elementary symbolic, inductive logic, and scientific method. Prerequisite: ENG 101 or 105.

*General Studies: L/HU***PHI 105 Introduction to Ethics. (3)***once a year*

Philosophical examination of such questions as, How should we live? Is morality a social invention? Does anything matter?

*General Studies: HU***PHI 300 Philosophical Argument and Exposition. (3)***spring*

Develops techniques of philosophical argument and exposition. Frequent written exercises. Course content may vary with instructor. Prerequisites: major; instructor approval.

*General Studies: L***PHI 301 History of Ancient Philosophy. (3)***fall*

History of Western philosophy from its beginnings through the Hellenistic period.

*General Studies: HU, H***PHI 302 History of Modern Philosophy. (3)***spring*

History of Western philosophy from the Renaissance through Kant.

*General Studies: HU, H***PHI 304 Existentialism. (3)***selected semesters*

Covers such topics as absurdity, authenticity, the meaning of life and death, responsibility, and subjectivity. May include readings in phenomenology.

*General Studies: HU***PHI 305 Ethical Theory. (3)***once a year*

Current theories about the nature of morality (metaethics) and about what is right and wrong (normative ethics). Prerequisite: PHI 105 or 306 or 307 or 309 or 335 or instructor approval.

*General Studies: HU***PHI 306 Applied Ethics. (3)***fall, spring, summer*

Philosophical discussion of contemporary moral and political issues, such as abortion, euthanasia, animal rights, affirmative action, and sexual rights.

*General Studies: HU***PHI 307 Philosophy of Law. (3)***once a year*

Nature and source of law and its relation to morality. Legal rights, legal enforcement of morals, civil disobedience, liability and responsibility, punishment, judicial reasoning, justice, property, and differences between theories of natural and positive law.

*General Studies: HU***PHI 308 Philosophy of Art. (3)***once a year*

Central problems in philosophy of art, e.g., the nature of a work of art, modern and traditional theories of art, aesthetic perception and experience, and objectivity and relativity in art criticism.

*General Studies: HU***PHI 309 Social and Political Philosophy. (3)***once a year*

Alternative principles and methods relevant to problems of human association and conflict; discusses justice and power, freedom and equality, and autonomy and order. Prerequisite: PHI 105 or 305 or 335 or instructor approval.

*General Studies: HU***PHI 310 Environmental Ethics. (3)***once a year*

Examines a full range of philosophical positions pertaining to our moral relationship to the natural world; anthropocentrism, individualism, biocentrism.

*General Studies: HU***PHI 311 Philosophy in Literature. (3)***once a year*

Selected works of literature introducing philosophical problems such as the nature of moral goodness and people's relation to the world and other people.

*General Studies: HU***PHI 312 Theory of Knowledge. (3)***once a year*

Nature, sources, and limits of human knowledge. Topics may include truth, a priori knowledge, empirical knowledge, perception, induction, and skepticism. Prerequisite: PHI 101 or 103 or 300 or 301 or 302 or 333.

*General Studies: HU***PHI 314 Philosophy of Science. (3)***once a year*

Structure and justification of scientific theories, explanation, and theory change. Roles of observation and laws, theoretical concepts and entities, reduction, probability, confirmation, space and time, and causation.

*General Studies: HU***PHI 315 Philosophy of Language. (3)***once a year*

Problems pertaining to the nature of language, including meaning, reference, truth, definition, analyticity, translatability, synonymy, and contributions of contemporary linguistics. Prerequisite: PHI 103 or 300 or 333.

*General Studies: HU***PHI 316 Metaphysics. (3)***once a year*

Problems pertaining to the nature of reality. Topics may include nature of person, minds, substance, universals, space, time, causation, and modality. Prerequisite: PHI 101 or 103 or 300 or 301 or 333.

*General Studies: HU***PHI 317 Philosophy of Mind. (3)***once a year*

Nature of consciousness. Common sense view of mind, behaviorism, materialism, dualism, functionalism, self-knowledge, and knowledge of other minds. Prerequisite: PHI 101 or 103 or 300 or 301 or 302 or 333.

General Studies: HU

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

PHI 318 Philosophy of Religion. (3)

once a year

Classical arguments for the existence of God. Argument from evil against the existence of God. Justification of religious belief.

General Studies: HU

PHI 319 Philosophy of Computing. (3)

selected semesters

Philosophical problems surrounding the theory of computation. Turing machines, mind and AI, neural network computing, ethics, and epistemology of computing. Lecture, lab, discussion.

General Studies: CS/HU

PHI 325 Philosophy of Social Science. (3)

selected semesters

Philosophical problems surrounding the aims, structure, and methods of the social sciences.

General Studies: HU/SB

PHI 332 19th-Century Philosophy. (3)

selected semesters

History of 19th-century philosophical thought, emphasizing either the German or the British traditions. Prerequisite: PHI 302.

General Studies: HU

PHI 333 Introduction to Symbolic Logic. (3)

once a year

Symbolic techniques, emphasizing deductions and proofs in the propositional and 1st-order predicate calculi.

PHI 335 History of Ethics. (3)

once a year

Major works of moral philosophy, both ancient and modern, such as those by Plato, Aristotle, Hobbes, Hume, Kant, and Mill. Prerequisite: PHI 101 or 105 or 305 or 306 or 307 or 309 or instructor approval.

General Studies: HU

PHI 401 Rationalism. (3)

selected semesters

Examines classical philosophical rationalism, as in Descartes, Spinoza, Malebranche, or Leibniz. Contemporary rationalist thought may also be examined. Prerequisites: PHI 302 and 305 (or 309 or 312 or 316 or 317).

PHI 402 Empiricism. (3)

selected semesters

Examines representatives of either classical or contemporary philosophical empiricism, e.g., Bacon, Hobbes, Locke, Butler, Berkeley, Reid, Hume, Mill, Carnap, and Ayer. Prerequisites: PHI 302 and 305 (or 309 or 312 or 316 or 317).

General Studies: HU

PHI 403 Contemporary Analytic Philosophy. (3)

once a year

Aims and methods of such 20th-century philosophers as Frege, Moore, Russell, Wittgenstein, Carnap, Ayer, Wisdom, Ryle, Austin, Strawson, Quine, and Sellars, with application to metaphysics and epistemology. Prerequisites: PHI 302 and 312 (or 314 or 315 or 316 or 317 or 401 or 402).

General Studies: HU

PHI 413 Advanced Symbolic Logic. (3)

selected semesters

Properties of formal systems axiomatizing propositional and 1st-order predicate logic. May also include modal logic, number theory, and limits of logicism. Prerequisite: PHI 333.

PHI 420 Topics in Philosophy. (3)

once a year

Course descriptions on file in department. May be repeated for credit. Topics may include the following:

- History of Philosophy
- Metaphysics/Epistemology
- Philosophy of Language/Logic
- Philosophy of Science
- Value Theory

Prerequisite: a relevant upper-division PHI course or instructor approval.

PHI 494 Special Topics. (3)

selected semesters

PHI 590 Reading and Conference. (1–12)

selected semesters

PHI 591 Seminar. (1–12)

once a year

Topics may include the following:

- Aesthetics. (1–3)
- Epistemology. (1–3)
- Ethics. (1–3)
- History of Philosophy. (1–3)
- Logic. (1–3)
- Metaphysics. (1–3)
- Philosophy of Language. (1–3)
- Philosophy of Law. (1–3)
- Philosophy of Science. (1–3)
- Social and Political Philosophy. (1–3)

Prerequisite: Philosophy graduate student or instructor approval.

PHI 592 Research. (1–15)

selected semesters

PHI 599 Thesis. (1–12)

fall and spring

PHI 790 Reading and Conference. (1–12)

selected semesters

PHI 792 Research. (1–15)

selected semesters

PHI 799 Dissertation. (1–15)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Physics and Astronomy

phy.asu.edu

480/965-3561

PS F470

Barry G. Ritchie, Chair

Regents' Professors: Smith, Spence, Starrfield

Professors: Alarcon, Bauer, Bennett, Burstein, Chamberlin, Comfort, Cowley, Doak, Dow, Hester, Kaufmann, Lindsay, Menéndez, Page, Ponce, Rez, Ritchie, Sankey, Scheinfein, Schmidt, Tillery, Tsen, Tsong, Venables, Windhorst, Wyckoff

Associate Professors: Aannestad, Culbertson, Drucker, Herbots, Marzke

Assistant Professors: Lebed, Shumway

PHYSICS—B.S.

Students majoring in Physics may pursue one of two options.

Option I. Designed for students who wish to pursue physics at the bachelor or graduate degree levels, option I consists of the following required courses:

Choose between the course combinations below.....4

PHY 150 Physics I *SQ* (4)

_____ *or* _____

PHY 121 University Physics I: Mechanics *SQ*¹ (3)

PHY 122 University Physics Laboratory I *SQ*¹ (1)

DEPARTMENT OF PHYSICS AND ASTRONOMY

Choose between the course combinations below.....4

PHY 151 Physics II *SQ* (4)
 _____ or _____

PHY 131 University Physics II: Electricity and Magnetism *SQ*² (3)
 PHY 132 University Physics Laboratory II *SQ*² (1)

PHY 201 Mathematical Methods in Physics I.....3
 PHY 252 Physics III *SQ*4
 PHY 302 Mathematical Methods in Physics II.....2
 PHY 310 Classical Particles, Fields, and Matter I.....3
 PHY 311 Classical Particles, Fields, and Matter II3
 PHY 314 Quantum Physics I.....3
 PHY 315 Quantum Physics II.....3
 PHY 333 Electronic Circuits and Measurements3
 PHY 334 Advanced Laboratory I2
 PHY 412 Classical Particles, Fields, and Matter III3
 PHY 416 Quantum Physics III3
 PHY 441 Statistical and Thermal Physics I.....3
 PHY 465 Advanced Laboratory II.....2

Total45

- ¹ Both PHY 121 and 122 must be taken to secure SQ credit.
² Both PHY 131 and 132 must be taken to secure SQ credit.

Supporting mathematics courses are as follows:

Choose between the course combinations below..... 12 or 10

MAT 270 Calculus with Analytic Geometry I *MA* (4)
 MAT 271 Calculus with Analytic Geometry II *MA* (4)
 MAT 272 Calculus with Analytic Geometry III *MA* (4)
 _____ or _____

MAT 290 Calculus I *MA* (5)
 MAT 291 Calculus II (5)

Additional courses in physics and related fields are selected with the approval of the advisor. French, German, or Russian is strongly recommended to fulfill the foreign language requirement.

Option II. The interdisciplinary option II is designed for students who wish to obtain an undergraduate physics preparation for entry into other professions or graduate programs. A total of 53 hours are required, including the following courses:

Choose between the course combinations below.....4

PHY 150 Physics I *SQ* (4)
 _____ or _____

PHY 121 University Physics I: Mechanics *SQ*¹ (3)
 PHY 122 University Physics Laboratory I *SQ*¹ (1)

Choose between the course combinations below.....4

PHY 151 Physics II *SQ* (4)
 _____ or _____

PHY 131 University Physics II: Electricity and Magnetism *SQ*² (3)
 PHY 132 University Physics Laboratory II *SQ*² (1)

PHY 201 Mathematical Methods in Physics I.....3
 PHY 252 Physics III *SQ*4
 PHY 302 Mathematical Methods in Physics II.....2
 PHY 310 Classical Particles, Fields, and Matter I.....3
 PHY 311 Classical Particles, Fields, and Matter II3

PHY 314 Quantum Physics I.....3
 PHY 315 Quantum Physics II.....3
 PHY 333 Electronic Circuits and Measurements3
 PHY 334 Advanced Laboratory I2
 PHY 412 Classical Particles, Fields, and Matter III3
 PHY 441 Statistical and Thermal Physics I.....3

Total40

- ¹ Both PHY 121 and 122 must be taken to secure SQ credit.
² Both PHY 131 and 132 must be taken to secure SQ credit.

The remaining courses are selected from physics and an area of concentration as approved by the student's advisor. Possible areas of concentration are astronomy, astrophysics, materials science, physical chemistry, applied mathematics, geophysics, biological physics, philosophy of science, scientific journalism, and premedical and prelaw programs. French, German, or Russian is strongly recommended to fulfill the foreign language requirement.

Supporting mathematics courses are as follows:

Choose between the course combinations below..... 12 or 10

MAT 270 Calculus with Analytic Geometry I *MA* (4)
 MAT 271 Calculus with Analytic Geometry II *MA* (4)
 MAT 272 Calculus with Analytic Geometry III *MA* (4)
 _____ or _____

MAT 290 Calculus I *MA* (5)
 MAT 291 Calculus II (5)

Emphasis in Astronomy

The astronomy faculty offer courses in astronomy both for nonscience majors and for science and physics majors. For an emphasis in astronomy, the following courses (or their equivalents) should be taken:

AST 321 Introduction to Planetary and Stellar Astrophysics *SQ*¹3
 AST 322 Introduction to Galactic and Extragalactic Astrophysics *SQ*²3
 AST 421 Astrophysics I3
 AST 422 Astrophysics II3
 AST 499 Individualized Instruction3

Total15

- ¹ Both AST 113 and 321 must be taken to secure SQ credit.
² Both AST 114 and 322 must be taken to secure SQ credit.

MINOR IN ASTRONOMY

The minor in Astronomy consists of a minimum of 24 semester hours. Required courses are as follows:

AST 113 Astronomy Laboratory I *SQ*¹1
 AST 114 Astronomy Laboratory II *SQ*²1
 AST 321 Introduction to Planetary and Stellar Astrophysics *SQ*¹3
 AST 322 Introduction to Galactic and Extragalactic Astrophysics *SQ*²3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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Choose between the course combinations below.....	4
PHY 150 Physics I <i>SQ</i> (4)	
_____ or _____	
PHY 121 University Physics I: Mechanics <i>SQ</i> ³ (3)	
PHY 122 University Physics Laboratory I <i>SQ</i> ³ (1)	
Choose between the course combinations below.....	4
PHY 151 Physics II <i>SQ</i> (4)	
_____ or _____	
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ⁴ (3)	
PHY 132 University Physics Laboratory II <i>SQ</i> ⁴ (1)	
PHY 252 Physics III <i>SQ</i>	4
Approved upper-division electives.....	4
Total	24

¹ Both AST 113 and 321 must be taken to secure SQ credit.

² Both AST 114 and 322 must be taken to secure SQ credit.

³ Both PHY 121 and 122 must be taken to secure SQ credit.

⁴ Both PHY 131 and 132 must be taken to secure SQ credit.

Electives are chosen with the approval of an astronomy advisor from upper-division courses in physics and astronomy.

MINOR IN PHYSICS

The minor in Physics consists of a minimum of 29 semester hours. Required courses are as follows:

Choose between the course combinations below.....	4
PHY 150 Physics I <i>SQ</i> (4)	
_____ or _____	
PHY 121 University Physics I: Mechanics <i>SQ</i> ¹ (3)	
PHY 122 University Physics Laboratory I <i>SQ</i> ¹ (1)	
Choose between the course combinations below.....	4
PHY 151 Physics II <i>SQ</i> (4)	
_____ or _____	
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ² (3)	
PHY 132 University Physics Laboratory II <i>SQ</i> ² (1)	
PHY 201 Mathematical Methods in Physics I.....	3
PHY 252 Physics III <i>SQ</i>	4
PHY 302 Mathematical Methods in Physics II.....	2
PHY 310 Classical Particles, Fields, and Matter I.....	3
PHY 311 Classical Particles, Fields, and Matter II.....	3
PHY 314 Quantum Physics I.....	3
Approved electives.....	3
Total	29

¹ Both PHY 121 and 122 must be taken to secure SQ credit.

² Both PHY 131 and 132 must be taken to secure SQ credit.

Electives are chosen with the approval of the physics advisor from upper-division courses in physics and astronomy.

SECONDARY EDUCATION—B.A.E.

Physics. Two options are available for physics as the major teaching field.

Option One. The major teaching field consists of 42 semester hours. Required courses are as follows:

Choose between the course combinations below.....	4
PHY 150 Physics I <i>SQ</i> ¹ (4)	
_____ or _____	
PHY 121 University Physics I: Mechanics <i>SQ</i> ² (3)	
PHY 122 University Physics Laboratory I <i>SQ</i> ² (1)	
Choose between the course combinations below.....	4
PHY 151 Physics II <i>SQ</i> ¹ (4)	
_____ or _____	
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ³ (3)	
PHY 132 University Physics Laboratory II <i>SQ</i> ³ (1)	
PHY 201 Mathematical Methods in Physics I.....	3
PHY 252 Physics III <i>SQ</i> ¹	4
PHY 302 Mathematical Methods in Physics II.....	2
PHY 310 Classical Particles, Fields, and Matter I.....	3
PHY 311 Classical Particles, Fields, and Matter II.....	3
PHY 333 Electronic Circuits and Measurements.....	3
PHY 361 Introductory Modern Physics.....	3
or PHY 314 Quantum Physics I (3)	
PHY 480 Methods of Teaching Physics.....	3
or PHY 484 Internship: Physics Teaching (1–4)	
Approved electives.....	10
Total	42

¹ PHY 111, 112, 113, and 114 or equivalents may be substituted for PHY 150, 151, and 252 with approval of the advisor.

² Both PHY 121 and 122 must be taken to secure SQ credit.

³ Both PHY 131 and 132 must be taken to secure SQ credit.

Electives are chosen in physics or other closely related fields, subject to the approval of the advisor.

Option Two. Option two consists of 32 semester hours in physics and an additional 30 semester hours in chemistry (see “[Minor in Chemistry](#),” page 363) or mathematics (see “[Minors in Mathematics and statistics](#),” page 424). The physics portion of this program requires the following courses:

Choose between the course combinations below.....	4
PHY 150 Physics I <i>SQ</i> ¹ (4)	
_____ or _____	
PHY 121 University Physics I: Mechanics <i>SQ</i> ² (3)	
PHY 122 University Physics Laboratory I <i>SQ</i> ² (1)	
Choose between the course combinations below.....	4
PHY 151 Physics II <i>SQ</i> ¹ (4)	
_____ or _____	
PHY 131 University Physics II: Electricity and Magnetism <i>SQ</i> ³ (3)	
PHY 132 University Physics Laboratory II <i>SQ</i> ³ (1)	
PHY 201 Mathematical Methods in Physics I ⁴	3
PHY 252 Physics III <i>SQ</i> ¹	4
PHY 302 Mathematical Methods in Physics II.....	2
PHY 310 Classical Particles, Fields, and Matter I.....	3
PHY 311 Classical Particles, Fields, and Matter II.....	3
PHY 333 Electronic Circuits and Measurements.....	3
PHY 361 Introductory Modern Physics.....	3
or PHY 314 Quantum Physics I (3)	

PHY 480 Methods of Teaching Physics ⁵	3
or PHY 484 Internship: Physics Teaching (1–4)	—
Total	32

- ¹ PHY 111, 112, 113, and 114 or equivalents may be substituted for PHY 150, 151, and 252 with approval of the advisor.
- ² Both PHY 121 and 122 must be taken to secure SQ credit.
- ³ Both PHY 131 and 132 must be taken to secure SQ credit.
- ⁴ Physics/Math option: MAT 274 plus MAT 342 may be substituted for PHY 201.
- ⁵ Physics/Chemistry option: CHM 480 may be substituted for PHY 480.

Minor Teaching Field. The minor teaching field consists of 24 semester hours. Required courses are as follows:

Choose between the course combinations below	4
PHY 150 Physics I SQ ¹ (4)	—
_____ or _____	
PHY 121 University Physics I: Mechanics SQ ² (3)	
PHY 122 University Physics Laboratory I SQ ² (1)	
Choose between the course combinations below	4
PHY 151 Physics II SQ ¹ (4)	—
_____ or _____	
PHY 131 University Physics II: Electricity and Magnetism SQ ³ (3)	
PHY 132 University Physics Laboratory II SQ ³ (1)	
PHY 201 Mathematical Methods in Physics I	3
PHY 252 Physics III SQ ¹	4
PHY 314 Quantum Physics I	3
or PHY 361 Introductory Modern Physics (3)	
PHY 480 Methods of Teaching Physics	3
or PHY 484 Internship: Physics Teaching (1–4)	
Approved elective	3
Total	24

- ¹ PHY 111, 112, 113, and 114 may be substituted for PHY 150, 151, and 252, or equivalents, with approval of the advisor.
- ² Both PHY 121 and 122 must be taken to secure SQ credit.
- ³ Both PHY 131 and 132 must be taken to secure SQ credit.

The remaining hours are selected from upper-division courses in physics or astronomy (including AST 113 and 114), subject to approval of the advisor.

GRADUATE PROGRAMS

The faculty in the Department of Physics and Astronomy offer programs leading to the degrees of Master of Natural Science, M.S., and Ph.D. See the *Graduate Catalog* for requirements.

ASTRONOMY (AST)

AST 111 Introduction to Solar Systems Astronomy. (3)

fall

History, properties of light, instruments, study of solar system and nearby stars. For nonscience majors. Optional lab (AST 113). *General Studies: SQ (if credit also earned in AST 113)*

AST 112 Introduction to Stars, Galaxies, and Cosmology. (3)

spring

Structure and evolution of stars, star clusters, galaxies, cosmology. For nonscience majors. Optional lab (AST 114). *General Studies: SQ (if credit also earned in AST 114)*

AST 113 Astronomy Laboratory I. (1)

fall

Astronomical observations and experiments designed to increase familiarity with the sky, telescopes, and astronomical measurements. 2.5 hours lab. Pre- or corequisites: AST 111 (or 321); a working knowledge of high school algebra and geometry.

General Studies: SQ (if credit also earned in AST 111 or 321)

AST 114 Astronomy Laboratory II. (1)

spring

Similar to AST 113, but material chosen to supplement AST 112 and 322. 2.5 hours lab. Pre- or corequisites: AST 112 (or 322); a working knowledge of high school algebra and geometry.

General Studies: SQ (if credit also earned in AST 112 or 322)

AST 321 Introduction to Planetary and Stellar Astrophysics. (3)

fall

Physical laws; celestial mechanics; properties of planets, the sun, and other stars; formation and evolution of stars and planetary systems.

Prerequisites: MAT 270 (or 290); PHY 150.

General Studies: SQ (if credit also earned in AST 113)

AST 322 Introduction to Galactic and Extragalactic Astrophysics. (3)

spring

Evolved stars, introduction to relativity, galaxies and interstellar matter, structure and dynamics of galaxies, cosmology. Prerequisite: AST 321 or instructor approval.

General Studies: SQ (if credit also earned in AST 114)

AST 421 Astrophysics I. (3)

fall

Selected astrophysical topics, including: stellar evolution, star formation, interstellar medium, galactic structure, extragalactic astronomy, high-energy astrophysics, and cosmology. Prerequisites: AST 321, 322; PHY 311, 314.

AST 422 Astrophysics II. (3)

spring

Same range of astrophysical topics as for AST 421 but different specific topics are emphasized in a given year. Prerequisites: AST 321, 322; PHY 311, 314.

AST 499 Individualized Instruction. (3)

selected semesters

AST 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Astronomical Data Taking and Data Reduction
- Cosmology and High-Energy Astrophysics
- Extragalactic Astronomy
- Galactic Structure
- Interstellar Medium and Gaseous Astrophysics
- Stellar Interiors and Stellar Evolution

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

PHYSICAL SCIENCES (PHS)

PHS 110 Fundamentals of Physical Science. (4)

fall and spring

One-semester survey of the principles of physics and chemistry. Presumes understanding of elementary algebra. 3 hours lecture, 2 hours lab.

General Studies: SQ

PHS 208 Patterns in Nature. (4)

fall and spring

Project-oriented science course with computer training to develop critical thinking and technical skills for student-oriented K–12 science lessons. Lecture, lab. Cross-listed as STE 208. Credit is allowed for only PHS 208 or STE 208. Fee. Prerequisite: a college-level course in science or instructor approval.

General Studies: SQ

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

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PHS 484 Physical Science Internship. (3)

fall and spring

Applies scientific concepts discussed and demonstrated in PHS 208 to teach middle school students. Focuses on hands-on experience.

PHS 505 Energy and the Environment. (3)

summer

Current problems in energy resources, production, consumption, and conservation. Studio. Prerequisite: instructor approval.

PHS 510 Inquiry Physical Science I. (3)

summer

Inquiry approach to physical science, standards-based, intended for elementary school teachers. Topics selected: kinematics, dynamics, electricity, magnetism, light, astronomy. Studio. Prerequisite: instructor approval.

PHS 520 Inquiry Physical Science II. (3)

summer

Inquiry approach to physics and astronomy, standards-based, intended for middle school teachers. Emphasizes technology and modeling. Studio. Prerequisite: instructor approval.

PHS 530 Methods of Physics Teaching I. (3)

summer

Inquiry approach to high school physics teaching. Studio. Prerequisite: instructor approval.

PHS 531 Methods of Physics Teaching II. (3)

summer

Extension of modeling techniques introduced in PHY 580. Studio. Prerequisite: PHS 530 or instructor approval.

PHS 534 Methods of Teaching Physical Science I, II, III. (3)

summer

Design of curriculum and conduct of instruction for physical science courses. Studio. Prerequisite: instructor approval.

PHS 540 Integrated Physics and Chemistry. (3)

summer

Collaborative inquiry methods for teaching and coordinating physics and chemistry. Studio. Prerequisite: CHM 480 or PHS 530 or PHY 480 or instructor approval.

PHS 542 Integrated Mathematics and Physics. (3)

summer

Mathematical models and modeling as an integrating theme for secondary mathematics and physics. Studio. Prerequisite: instructor approval.

PHS 550 Physics and Astronomy. (3)

summer

Astronomy curricula and projects for secondary school, with emphasis on the role of physics in astronomy. Studio. Prerequisite: instructor approval.

PHS 556 Astrophysics. (3)

summer

Structure and evolution of stars, galaxies, and the universe. For secondary school teachers. Studio. Prerequisite: instructor approval.

PHS 560 Matter and Light. (3)

summer

Interactions of light with matter. Lasers and spectroscopy. Studio. Prerequisite: instructor approval.

PHS 564 Light and Electron Optics. (3)

summer

Principles and practice of electron-optical instruments. Studio. Prerequisite: instructor approval.

PHS 570 Spacetime Physics. (3)

summer

Special and general theories of relativity with implications for space and time travel. Studio. Prerequisite: instructor approval.

PHS 581 Structure of Matter and Its Properties. (3)

summer

Models of matter and its properties. Studio. Prerequisite: instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

PHYSICS (PHY)

PHY 101 Introduction to Physics. (4)

fall and spring

Emphasizes applications of physics to life in the modern world. Presumes understanding of elementary algebra. 3 hours lecture, 1 recitation, 2 hours lab.

General Studies: SQ

PHY 105 Basic Physics. (3)

fall

One-semester survey of the principles of physics. Primarily for students who intend to take PHY 121, 131 but have not taken high school physics. 3 hours lecture, 1 recitation. Prerequisites: algebra and trigonometry.

PHY 111 General Physics. (3)

fall, spring, summer

Noncalculus treatment of the principles of physics for nonphysics majors. Students whose curricula require a laboratory course must also register for PHY 113. 3 hours lecture, 1 recitation. Prerequisite: trigonometry.

General Studies: SQ (if credit also earned in PHY 113)

PHY 112 General Physics. (3)

fall, spring, summer

Continuation of PHY 111. Students whose curricula require a laboratory course must also register for PHY 114. Prerequisite: PHY 111.

General Studies: SQ (if credit also earned in PHY 114)

PHY 113 General Physics Laboratory. (1)

fall, spring, summer

Elementary experiments in physics. Requires outside preparation for experiments and report writing. May be taken concurrently with, or subsequent to, PHY 111. 2 hours lab.

General Studies: SQ (if credit also earned in PHY 111)

PHY 114 General Physics Laboratory. (1)

fall, spring, summer

See PHY 113. May be taken concurrently with, or subsequent to, PHY 112.

General Studies: SQ (if credit also earned in PHY 112)

PHY 121 University Physics I: Mechanics. (3)

fall, spring, summer

Kinematics; Newton's laws; work, energy, momentum, conservation laws; dynamics of particles, solids, and fluids. 3 hours lecture, 1 hour recitation. Prerequisite: MAT 270 or 290 or instructor approval.

General Studies: SQ (if credit also earned in PHY 122)

PHY 122 University Physics Laboratory I. (1)

fall, spring, summer

Lab accompanying PHY 121. Pre- or corequisite: PHY 121.

General Studies: SQ (if credit also earned in PHY 121)

PHY 131 University Physics II: Electricity and Magnetism. (3)

fall, spring, summer

Electric charge and current, electric and magnetic fields in vacuum and in materials, and induction. AC circuits, displacement current, and electromagnetic waves. 3 hours lecture, 1 hour recitation. Prerequisites: MAT 271 (or 291 or instructor approval); PHY 121. Corequisite: MAT 272 or instructor approval.

General Studies: SQ (if credit also earned in PHY 132)

PHY 132 University Physics Laboratory II. (1)

spring and summer

Lab accompanying PHY 131. Pre- or corequisite: PHY 131.

General Studies: SQ (if credit also earned in PHY 131)

PHY 150 Physics I. (4)

spring

Introductory physics for majors. Kinematics, Newton's Laws, basic forces, energy, momentum, special relativity. 3 hours lecture, 3 hours lab. Prerequisite: MAT 270 or 290 (or its equivalent).

General Studies: SQ

PHY 151 Physics II. (4)

fall

Continuation of PHY 150. Electromagnetic fields; Ampere's and Faraday's Laws; Maxwell's equations; basic circuit elements. 3 hours lecture, 3 hours lab. Prerequisites: MAT 271 (or 291 or its equivalent); PHY 121, 122 (or 150).

General Studies: SQ

PHY 190 Seminar: Physics as a Curriculum and a Profession. (1)
fall and spring

Seminar for new Physics majors. Instruction and information on curriculum, departmental functions, and professional preparation. Weekly meetings and excursions. Pass/fail grading.

PHY 201 Mathematical Methods in Physics I. (3)

spring

Differential equations, linear equations, vectors, matrices, Fourier series, and numerical methods. 2 hours lecture, 2 hours lab. Prerequisite: MAT 272 (or its equivalent). Corequisite: PHY 252.

General Studies: CS

PHY 241 University Physics III. (3)

fall and spring

Thermodynamics, kinetic theory, physical and wave optics, relativity, photons, matter waves, atomic physics. 3 hours lecture, 1 hour recitation. Prerequisites: PHY 131; nonmajor.

PHY 252 Physics III. (4)

spring

Continuation of PHY 151. Wave physics, oscillations, harmonic systems, physical optics, thermodynamics, kinetic theory. 3 hours lecture, 3 hours lab. Prerequisites: MAT 272 (or its equivalent); PHY 131 and 132 (or 151 or its equivalent). Corequisite: PHY 201.

General Studies: SQ

PHY 302 Mathematical Methods in Physics II. (2)

fall

Continuation of PHY 201. Vector calculus, complex variables, partial differential equations, special functions, numerical methods. 1 hour lecture, 3 hours lab. Prerequisite: PHY 201 (or its equivalent).

PHY 310 Classical Particles, Fields, and Matter I. (3)

fall

Particle kinematics, mechanics, conservation laws, particle motion in force fields, dynamics of two-body systems, reference frames, rigid body motion, relativity. Corequisites: both PHY 302 and 314 or only instructor approval.

PHY 311 Classical Particles, Fields, and Matter II. (3)

spring

Electrostatic and gravitational fields, Poisson and Laplace equations, dielectric materials, magnetic fields and materials, magnetic induction, Faraday's Law. Prerequisites: PHY 302, 310. Corequisite: PHY 315 or instructor approval.

PHY 314 Quantum Physics I. (3)

fall

Photons, models of the atom, wave properties of matter, introduction to wave mechanics, 1-dimensional systems in quantum mechanics. Prerequisites: PHY 201 and 252 (or their equivalents). Corequisites: both PHY 302 and 310 or only instructor approval.

PHY 315 Quantum Physics II. (3)

spring

General principles of quantum mechanics, 3-dimensional problems, approximation methods, spin, introduction to many-particle systems. Prerequisites: PHY 302, 310, 314. Corequisite: PHY 311 or instructor approval.

PHY 333 Electronic Circuits and Measurements. (3)

fall and spring

Basic principles of electronic circuit analysis and measurement techniques using modern instrumentation and computer-aided analysis of data. 1 hour lecture, 3 hours lab; required equivalent effort outside of lab. Corequisite: PHY 201 or instructor approval.

PHY 334 Advanced Laboratory I. (2)

spring

Selected experiments from contemporary physics. Emphasizes modern instrumentation, computer-assisted acquisition and analysis of data, and report form writing. Lecture, lab. Prerequisites: PHY 310, 314, 333.

General Studies: L (if credit also earned in PHY 420)

PHY 361 Introductory Modern Physics. (3)

fall and spring

Special relativity and introductory quantum theory with applications drawn from atomic, nuclear, and solid-state physics. 3 hours lecture, 1 recitation. Prerequisite: PHY 131.

PHY 412 Classical Particles, Fields, and Matter III. (3)

fall

Electromagnetic fields of moving charges, Maxwell's equations, harmonic phenomena, oscillations, waves, electromagnetic radiation, covariant electromagnetism, introduction to general relativity. Prerequisites: PHY 311, 333. Corequisite: PHY 416 or instructor approval.

PHY 416 Quantum Physics III. (3)

fall

Introduces the quantum theory of atoms, molecules, solids and nuclei, Dirac's equation. Prerequisites: PHY 311, 315. Corequisite: PHY 412 or instructor approval.

PHY 420 Research Paper. (1)

fall and spring

Scientific report writing. Culminates in a paper based on library or laboratory research or both. Taken in conjunction with other courses as approved. Conference. Prerequisite: instructor approval.

General Studies: L (if credit also earned in PHY 334)

PHY 441 Statistical and Thermal Physics I. (3)

fall

Statistical and experimental basis of heat, temperature, and entropy. Mechanical and statistical basis of the laws of thermodynamics. Applications of macroscopic thermodynamics. Phase equilibrium. Prerequisites: PHY 311, 315.

PHY 442 Statistical and Thermal Physics II. (3)

spring

Principles and applications of statistical mechanics. Quantum statistics of ideal gases and simple solids. Equilibrium of phases and chemical species. Transport theory. Irreversible processes and fluctuation. Prerequisite: PHY 441.

PHY 452 Physical Optics. (3)

fall

Principles of reflection, refraction, diffraction. Additional topics from contemporary optics may include Fourier transform spectroscopy, linear systems theory, holography. 2 hours lecture, 2 hours lab. Prerequisites: PHY 302, 311, 315. Corequisite: PHY 412.

PHY 462 Nuclear and Particle Physics. (3)

spring

Static properties of nuclei, natural and induced radioactivity, nuclear reactions, nuclear models and energy levels, mesons and hyperons, and interaction of photons and electrons with matter. Prerequisites: PHY 311, 315.

PHY 465 Advanced Laboratory II. (2)

fall and spring

Continuation of PHY 334. Students are encouraged to substitute laboratory research project in consultation with faculty sponsor. Prerequisite: PHY 334.

PHY 466 Advanced Laboratory III. (1–3)

fall and spring

Continuation of PHY 465. Prerequisite: PHY 465.

PHY 480 Methods of Teaching Physics. (3)

spring

Evaluation of various approaches to the teaching of high school physics. Preparation of demonstrations and experiments. Organization of a laboratory. Designed for secondary school physics teachers. Prerequisite: instructor approval.

PHY 481 Solid-State Physics. (3)

spring

Structure, elastic properties, and dynamics of crystals; electron motions in crystals under applied fields. Prerequisites: PHY 311, 315.

PHY 484 Internship: Physics Teaching. (1–4)

fall, spring, summer

Preparation for high school physics teaching. Student works closely with a faculty member in the elementary physics program. May be repeated for a total of 6 semester hours. Prerequisite: instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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PHY 495 Project Research. (1–3)

fall and spring

Supervised project in physics or astrophysics. May be repeated for credit. Prerequisite: instructor approval.

PHY 498 Pro-Seminar. (1–7)

selected semesters

PHY 501 Methods of Theoretical Physics. (3)

fall and spring

Provides mathematical foundations for graduate students in basic and applied physics. Complex variables, vector spaces, operators, matrices, ordinary differential equations, integral equations and transforms, and special functions. May include additional topics.

PHY 502 Methods of Theoretical Physics. (3)

fall and spring

Continuation of PHY 501. Prerequisite: PHY 501.

PHY 521 Classical Mechanics. (3)

fall

Variational principles, Lagrange's and Hamilton's equations, rigid body motion, canonical transformations, Hamilton-Jacobi theory.

PHY 523 Relativity. (3)

selected semesters

Special and general theories of relativity. Prerequisite: PHY 532 or instructor approval.

PHY 531 Advanced Electricity and Magnetism. (3)

fall

Electrostatics and magnetostatics; potential theory and theory of constitutive relations; Maxwell's equations; the wave equation, plane electromagnetic waves, cavities, and wave guides.

PHY 532 Electrodynamics. (3)

spring

Special theory of relativity, covariant formulation of electromagnetic interactions; inhomogeneous wave equations, Lienard-Wiechert potentials, and radiation fields; interactions of charged particles and electromagnetic waves, scattering, dispersion. Prerequisites: both PHY 412 and 531 or only instructor approval.

PHY 541 Statistical Physics. (3)

fall

Probability theory and principles of statistical inference; evaluating experimental data; foundations of statistical mechanics; general laws of thermodynamics from microscopic theories; calculation of specific properties of bulk matter.

PHY 551 X-Ray and Electron Diffraction. (3)

spring

Fresnel and Fraunhofer diffraction in integral formulation; diffraction of x rays and neutrons by crystal lattices; structures of solids, including crystal structure analysis; theory and techniques of electron microscopy/diffraction of crystalline/noncrystalline specimens. Prerequisite: PHY 481 or instructor approval.

PHY 561 Nuclear Physics. (3)

fall and spring

Two-nucleon interaction, Clebsch-Gordon coefficients, internucleon forces, meson theory and high-energy scattering, nuclear binding energy, nuclear models, transition probability estimates, nuclear reactions, and beta decay. Prerequisite: PHY 576 or instructor approval.

PHY 562 Nuclear Physics. (3)

fall and spring

Continuation of PHY 561. Prerequisite: PHY 561 or instructor approval.

PHY 568 Elementary Particle Physics. (3)

selected semesters

Classification of particles; phenomenology of strong, electromagnetic, and weak interactions, cross sections, and decay rates; isotopic spin and higher symmetries; structure of reaction amplitudes. Prerequisite: PHY 577.

PHY 569 Elementary Particle Theory. (3)

selected semesters

Continuation of PHY 568. Prerequisite: PHY 568.

PHY 571 Quantum Physics. (3)

spring

Reviews modern physics, chemistry, math. Differential equation, operator, matrix formulations. Free particle, bound-state problems. Examples across physics and astronomy. Prerequisites: a combination of modern physics and linear and complex algebra and differential equations or only instructor approval.

PHY 576 Quantum Theory. (3)

fall and spring

Abstract approach to quantum mechanics in Hilbert space; observables and their corresponding operators, eigenstates, and eigenvalues; quantum dynamics; approximation methods; systems of identical particles; angular momentum and group representation theory; collision processes; relativistic quantum theory. Prerequisite: PHY 521.

PHY 577 Quantum Theory. (3)

fall and spring

Continuation of PHY 576. Prerequisite: PHY 576.

PHY 578 Relativistic Quantum Theory. (3)

fall and spring

Relativistic 1-particle equations, Klein-Gordon equation, Dirac equation, 2D quantization, theory of scattering, S-matrix, Feynman diagrams, quantum electrodynamics, and renormalization procedures. Prerequisite: PHY 577.

PHY 579 Relativistic Quantum Theory. (3)

fall and spring

Continuation of PHY 578. Prerequisite: PHY 578.

PHY 580 Practicum. (1–12)

selected semesters

PHY 581 Solid-State Physics. (3)

fall

Quantum theory of solids, including phonons, lattice-specific heats, band-structure models, Fermi surfaces, thermal expansion, plasmons, electron-phonon interactions, and scattering by lattice defects. Pre- or corequisite: PHY 576.

PHY 582 Solid-State Physics. (3)

spring

Elements of transport theory, thermal conduction, electronic conduction in metals, mobility in semiconductors, Hall effect, magnetoresistance, and selected topics of current research. Prerequisite: PHY 581.

PHY 587 Quantum Optics. (3)

fall and spring

Quantization of the electromagnetic field. Quantum theory of coherence, photon counting, photon states, lasers, density operators, and atomic Raman scattering. Prerequisite: PHY 576.

PHY 588 Quantum Optics. (3)

fall and spring

Continuation of PHY 587. Prerequisite: PHY 587.

PHY 592 Research. (1–12)

selected semesters

PHY 598 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Quantum Mechanics. (3)
spring
- Quantum Physics. (3)
spring

PHY 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Plant Biology

lifesciences.asu.edu/plantbiology

480/965-3414

LSE 218

J. Kenneth Hooper, Chair

Professors: Arntzen, Backhaus, Frasch, Hooper, Klopatek, Nash, Sommerfeld, Trelease, Vermaas, Webber, Young

Associate Professors: Briggs, Clark, Day, Martin, Pigg, Ramakrishna, Roberson, Stromberg, Stutz, Szarek, Towill, Wu

Assistant Professors: Rhoads, Wojciechowski

Assistant Research Professors: Hu, Joshi, Mor, Walmsley

Associate Research Scientists: Bingham, LoBrutto

Senior Research Specialist: Sharp

Herbarium Curator: Landrum

PLANT BIOLOGY—B.S.

The Department of Plant Biology provides four curricular options to meet the needs of students whose interests are in rapidly expanding areas within the life sciences. Students may choose the general program option which allows the opportunity to develop strength in one area or discipline. Others may choose to design a more specific, but interdisciplinary, program in one of the following three optional concentrations: environmental science and ecology, plant biochemistry and molecular biology, and urban horticulture.

Each concentration promotes interaction between diverse groups and captures the growing interdisciplinary nature of scientific investigations. When one of these options is chosen, the title will appear on transcripts and other university documents.

The four curricular options prepare students for careers in technical, industrial, and educational fields as well as professional degree programs in medicine or research and post-graduate education in the life sciences.

The Department of Plant Biology, in cooperation with the Department of Microbiology, also administers the B.S. degree program in Molecular Biosciences/Biotechnology. This major is for students interested in molecular and cellular biology and its application to biotechnology. For more information about this area of study, see "[Molecular Biosciences and Biotechnology](#)," page 436

General Program

The B.S. degree in Plant Biology consists of a minimum of 38 semester hours in plant biology and approved life science and physical science courses. Required courses are as follows:

PLB 200	Biology of Plants <i>SQ</i> *	3
PLB 201	Biology of Plants Laboratory <i>SQ</i> *	1
PLB 306	Plant Anatomy	4
PLB 308	Plant Physiology	4
BIO 320	Fundamentals of Ecology	3
	or BIO 340 General Genetics (4)	
BIO 353	Cell Biology	3
PLB 484	Internship	3
	or PLB 499 Individualized Instruction (3)	
Total		21–22

* Both PLB 200 and 201 must be taken to secure SQ credit.

The remaining hours to bring the total to 38 are selected from among relevant courses in plant biology, other life sciences, and physical sciences.

Required supplemental courses in chemistry and mathematics are as follows (a minimum of "C" is required for all course work):

CHM 113	General Chemistry <i>SQ</i>	4
CHM 115	General Chemistry with Qualitative Analysis <i>SQ</i>	5
	Choose between the organic chemistry course combinations below	4 or 8
CHM 231	Elementary Organic Chemistry <i>SQ</i> * (3)	
CHM 235	Elementary Organic Chemistry Laboratory <i>SQ</i> * (1)	
	or	
CHM 331	General Organic Chemistry (3)	
CHM 332	General Organic Chemistry (3)	
CHM 335	General Organic Chemistry Laboratory (1)	
CHM 336	General Organic Chemistry Laboratory (1)	
MAT 251	Calculus for Life Sciences <i>MA</i>	3
Total		16 or 20

* Both CHM 231 and 235 must be taken to secure SQ credit.

Courses meeting the university computer/statistics/quantitative applications requirement are as follows (a minimum of "C" is required for all course work):

PLB 430	Statistical Analyses in Environmental Science <i>CS</i>	3
	or PLB 432 Computer Applications in Biology <i>CS</i> (3)	
	or BIO 415 Biometry <i>CS</i> (4)	

Special Concentration Programs

Three special concentration programs are optional. Students who wish to pursue the general program in Plant Biology are not obligated to choose one of these specific programs. Each special concentration program is expected to be interdisciplinary and contain course work outside both the department and the College of Liberal Arts and Sciences. Each concentration includes hands-on technical training.

Environmental Science and Ecology. The B.S. degree in Plant Biology with a concentration in environmental science and ecology consists of a minimum of 44 semester hours in plant biology and approved life science and physical science courses. Required courses are as follows:

L literacy and critical inquiry / MA mathematics / CS computer/statistics/quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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BIO 320	Fundamentals of Ecology3
Choose between the geology course combinations below.....4		
GLG 101	Introduction to Geology (Physical) <i>SQ</i> , <i>G</i> ¹ (3)	
GLG 103	Introduction to Geology I—Laboratory <i>SQ</i> ¹ (1)	
———— or ————		
GLG 110	Geologic Disasters and the Environment <i>SG</i> , <i>G</i> ² (3)	
GLG 111	Geologic Disasters Laboratory <i>SG</i> ² (1)	
———— or ————		
GPH 111	Introduction to Physical Geology <i>SQ</i> (4)	
PLB 200	Biology of Plants <i>SQ</i> ³.....3	
PLB 201	Biology of Plants Laboratory <i>SQ</i> ³.....1	
PLB 310	The Flora of Arizona.....4	
PLB 322	Environmental Science (Major).....3	
PLB 420	Plant Ecology: Organisms and Populations.....3	
	or PLB 421 Plant Ecology: Communities and Ecosystems (3)	
PLB 484	Internship.....3	
	or PLB 499 Individualized Instruction (3)	
Total	.....	24

¹ Both GLG 101 and 103 must be taken to secure *SQ* credit.

² Both GLG 110 and 111 must be taken to secure *SG* credit.

³ Both PLB 200 and 201 must be taken to secure *SQ* credit.

The remaining hours to bring the total to 44 are selected from among relevant courses in plant biology, other life sciences, and physical sciences.

Required supplemental courses in chemistry and mathematics are as follows (a minimum of “C” is required for all course work):

CHM 113	General Chemistry <i>SQ</i>.....4
CHM 115	General Chemistry with Qualitative Analysis <i>SQ</i>.....5
CHM 231	Elementary Organic Chemistry <i>SQ</i> *.....3
CHM 235	Elementary Organic Chemistry Laboratory <i>SQ</i> *.....1
MAT 251	Calculus for Life Sciences <i>MA</i>.....3
Total	.....16

* Both CHM 231 and 235 must be taken to secure *SQ* credit.

Courses meeting the university computer/statistics/quantitative applications requirement are as follows (a minimum of “C” is required for all course work):

PLB 430	Statistical Analyses in Environmental Science <i>CS</i>.....3
	or PLB 432 Computer Applications in Biology <i>CS</i> (3)
	or BIO 415 Biometry <i>CS</i> (4)
	or STP 420 Introductory Applied Statistics <i>CS</i> (3)

Plant Biochemistry and Molecular Biology. The B.S. degree in Plant Biology with a concentration in biochemistry and molecular biology consists of 56 semester hours.

The required major courses are as follows:

BIO 353	Cell Biology.....3
MBB 245	Cellular and Molecular Biology <i>SQ</i> *.....3
MBB 246	Cellular and Molecular Biology Laboratory <i>SQ</i> *.....1
PLB 308	Plant Physiology.....4
PLB 350	Applied Genetics.....4
PLB 444	Plant Growth and Development.....3
PLB 484	Internship.....3
	or PLB 499 Individualized Instruction (3)
Total	.....21

* Both MBB 245 and 246 must be taken to secure *SQ* credit.

Required supplemental courses in biochemistry, chemistry, mathematics, and physics are as follows (a minimum of “C” is required for all course work):

Choose between the course combinations below..... 4 or 9	
BCH 361	Principles of Biochemistry (3)
BCH 367	Elementary Biochemistry Laboratory (1)
———— or ————	
BCH 461	General Biochemistry (3)
BCH 462	General Biochemistry (3)
BCH 467	Analytical Biochemistry Laboratory <i>L</i> (3)
CHM 113	General Chemistry <i>SQ</i>.....4
CHM 115	General Chemistry with Qualitative Analysis <i>SQ</i>.....5
CHM 231	Elementary Organic Chemistry <i>SQ</i> ¹.....3
CHM 235	Elementary Organic Chemistry Laboratory <i>SQ</i> ¹.....1
MAT 251	Calculus for Life Sciences <i>MA</i>.....3
PHY 111	General Physics <i>SQ</i> ².....3
PHY 112	General Physics <i>SQ</i> ³.....3
PHY 113	General Physics Laboratory <i>SQ</i> ².....1
PHY 114	General Physics Laboratory <i>SQ</i> ³.....1
Total	..... 28 or 33

¹ Both CHM 231 and 235 must be taken to secure *SQ* credit.

² Both PHY 111 and 113 must be taken to secure *SQ* credit.

³ Both PHY 112 and 114 must be taken to secure *SQ* credit.

The remaining hours to bring the total to 56 are selected from among relevant courses in plant biology, other life sciences, and physical sciences.

Courses meeting the university computer/statistics/quantitative applications requirement are as follows (a minimum of “C” is required for all course work):

BIO 406	Computer Applications in Biology <i>CS</i>.....3
	or MAT 351 Mathematical Methods for Genetic Analysis <i>CS</i> (3)

Urban Horticulture. The B.S. degree in Plant Biology concentrating in urban horticulture consists of a minimum of 46 semester hours in plant biology and approved life science and physical science courses.

Required courses are as follows:

PLB 200	Biology of Plants <i>SQ</i> *.....3
PLB 201	Biology of Plants Laboratory <i>SQ</i> *.....1
PLB 260	Plants in Cities: Introduction to Urban Horticulture <i>SG</i>.....4
PLB 306	Plant Anatomy.....4
	or PLB 308 Plant Physiology (4)
	or BIO 320 Fundamentals of Ecology (3)
PLB 362	Landscape Plants.....3
PLB 364	Urban Forestry.....3
PLB 366	Intiorscape.....3
	or PLB 372 Turf Management (3)
	or PLB 472 Greenhouse/Nursery Management (3)
PLB 370	Environmental Landscape Management.....3
PLB 414	Plant Pathology <i>L</i>.....3
PLB 484	Internship.....3
PLB 498	PS: Urban Horticulture.....1
Total	.....30–31

* Both PLB 200 and 201 must be taken to secure *SQ* credit.

The remaining hours to bring the total to 46 are selected from relevant courses in plant biology, other life sciences, and physical sciences.

Required supplemental courses in chemistry mathematics, and soils are as follows (a minimum of "C" is required for all course work):

CHM 101 Introductory Chemistry <i>SQ</i>	4
CHM 231 Elementary Organic Chemistry <i>SQ</i> *.....	3
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> *.....	1
Choose between the course combinations below.....	4
ERS 130 Introduction to Environmental Science <i>SQ</i> (4)	
————— <i>or</i> —————	
ERS 225 Soils (3)	
ERS 226 Soils Laboratory (1)	
MAT 251 Calculus for Life Sciences <i>MA</i>	3
Total	15

* Both CHM 231 and 235 must be taken to secure *SQ* credit.

Courses meeting the university computer/statistics/quantitative applications requirement are as follows (a minimum of "C" is required for all course work):

PLB 430 Statistical Analyses in Environmental Science <i>CS</i>	3
or PLB 432 Computer Applications in Biology <i>CS</i> (3)	
or BIO 415 Biometry <i>CS</i> (4)	
Total	3-4

PLANT BIOLOGY MINOR

The minor can be designed after the curricular options offered by the department. Variations to the minor for the plant biochemistry and molecular biology option are also listed below. Courses not available for credit for majors in the life sciences cannot be used for the minor. A Plant Biology minor is not available to students majoring in the life sciences.

The minor consists of a minimum of 24 semester hours. Required courses are as follows:

PLB 200 Biology of Plants <i>SQ</i> *.....	3
PLB 201 Biology of Plants Laboratory <i>SQ</i> *.....	1
PLB 306 Plant Anatomy.....	4
or PLB 308 Plant Physiology (4)	
or PLB 310 The Flora of Arizona (4)	
Total	8

* Both PLB 200 and 201 must be taken to secure *SQ* credit.

The remaining 12 hours are selected by the student through consultation with an academic advisor. Eight of these 12 hours must be in upper-division courses in the life sciences or other advisor-approved areas.

Plant Biochemistry and Molecular Biology Option

BIO 353 Cell Biology.....	3
or PLB 308 Plant Physiology (4)	
or PLB 350 Applied Genetics(4)	
MBB 245 Cellular and Molecular Biology <i>SQ</i> *.....	3
MBB 246 Cellular and Molecular Biology Laboratory <i>SQ</i> *.....	1
Total	7-8

* Both MBB 245 and 246 must be taken to secure *SQ* credit.

The remaining 12 to 13 hours are selected by the student through consultation with an academic advisor. Eight of these 12 to 13 hours must be in upper-division courses in the life sciences or other advisor-approved areas.

GRADUATE PROGRAMS

The faculty in the Department of Plant Biology offer programs leading to the degrees of M.S. and Ph.D. The faculty also participate in programs leading to the Master of Natural Science degree when one of the concentrations is plant biology. The department participates in the interdisciplinary program for the M.S. and Ph.D. degrees in Molecular and Cellular Biology. Other select faculty collaborate in the interdisciplinary concentration in ecology.

PLANT BIOLOGY (PLB)

PLB 108 Concepts in Plant Biology. (4)

fall, spring, summer

Introduces concepts of plant biology that are of human relevance using commercially important, edible, and medicinal plants as examples. Not for majors in the biological sciences. 3 hours lecture, 3 hours lab. Fee.

General Studies: SQ

PLB 200 Biology of Plants. (3)

fall and spring

Analyzes the structure/function interaction for plant cells and tissues and properties that emerge in whole plants. Prerequisites: high school biology and chemistry.

General Studies: SQ (if credit also earned in PLB 201)

PLB 201 Biology of Plants Laboratory. (1)

fall and spring

Lab/field experiments to teach techniques and protocols of the scientific process; reinforces concepts from lecture by asking questions and solving problems. Lab. Prerequisites: high school biology and chemistry.

General Studies: SQ (if credit also earned in PLB 200)

PLB 300 Comparative Plant Diversity. (4)

fall

Surveys major plant groups and other photosynthetic organisms. Emphasizes comparative data analysis, evolutionary inference, and phylogenetic methods. 3 hours lecture, 3 hours lab. Fee. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent).

General Studies: L/SG

PLB 302 Plants and Civilization. (3)

fall

Plants and plant products used by people throughout the world. Cultivation, processing, and uses in modern life (beverages, fibers, foods, medicinals, and perfumes). Prerequisites: preferably both PLB 200 and 201 (or 108) or only BIO 187 (or its equivalent).

PLB 304 Biology of Algae and Fungi. (3)

spring

Ecology, economics, and evolutionary diversity of the algae and fungi. Traditional and modern biotechnological uses. 2 hours lecture, 3 hours lab. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent).

PLB 305 Desert Annuals and Cacti. (3)

fall

Adaptive biology of select plants. Analyzes diverse traits permitting survival in deserts: reproduction, structure, and physiology. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent).

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

PLB 306 Plant Anatomy. (4)

fall

Development and mature structure of tissues of vascular plants; patterns and modifications of the leaf, stem, root, and flower. 3 hours lecture, 3 hours lab. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent).

PLB 308 Plant Physiology. (4)

spring

Concepts of plant function: carbon metabolism, energy acquisition, regulation of growth and development, stress responses, and water and nutrient uptake. Fee. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent); CHM 101 (or 115 or 231).

PLB 310 The Flora of Arizona. (4)

spring

Principles of taxonomy; identification of Arizona plants. 2 hours lecture, 6 hours lab. Fee. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent).

PLB 400 Lichenology. (3)

spring in odd years

Chemistry, ecology, physiology, and taxonomy of lichens. 2 hours lecture, 3 hours lab. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent).

PLB 402 Mycology. (3)

spring

Fungal morphology and systematics with an introduction to fungal cell biology, ecology, economic significance, and growth and development. 2 hours lecture, 3 hours lab. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent) or only MIC 206.

PLB 404 Phycology. (4)

spring

Algae (both fresh water and marine forms), emphasizing field collection and identification of local representatives. Morphological, ecological, and economic aspects of the algae. 3 hours lecture, 3 hours lab. Fee. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent).

PLB 407 Plant Fossils and Evolution. (4)

spring in odd years

Broad survey of plant life of the past, including the structure of plant fossils, their geologic ranges, geographic distribution, and paleoenvironment. 3 hours lecture, 3 hours lab or field trip. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent).

PLB 410 Angiosperm Taxonomy. (3)

spring

Principles underlying angiosperm phylogeny. 2 hours lecture, 3 hours lab. Prerequisite: PLB 310 or instructor approval.

PLB 411 Trees and Shrubs of Arizona. (3)

fall

Identification of woody plants from desert, chaparral, and forest habitats in Arizona. 1 hour lecture, 3 hours lab, field trips. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent) or only instructor approval.

PLB 412 Cytogenetics. (3)

selected semesters

Chromosomal basis of inheritance. Cross-listed as BIO 441. Credit is allowed for only BIO 441 or PLB 412. Prerequisite: BIO 340.

PLB 413 Cytogenetics Laboratory. (2)

selected semesters

Microscopic analysis of meiosis, mitosis, and aberrant cell division. 6 hours lab. Cross-listed as BIO 442. Credit is allowed for only BIO 442 or PLB 413. Pre- or corequisite: BIO 441 or PLB 412.

PLB 414 Plant Pathology. (3)

spring

Identification and control of biotic and abiotic factors that cause common disease problems to plants. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 (or its equivalent) or only instructor approval.

General Studies: L

PLB 416 Medical Botany. (4)

summer

Explores plants affecting human health: modern- and folk-usage medicinal plants. Quality control, clinical evidence, plant chemistry, and ethnopharmacology. 3 hours lecture, 3 hours lab. Prerequisites:

preferably both PLB 200 and 201 or only BIO 187 (or its equivalent) or only instructor approval.

PLB 484 Internship. (3)

selected semesters

PLB 498 Pro-Seminar. (1–7)

fall and spring

Topics may include the following:

- Plant Biology Internship. (3)
Applies a simplified version of PLB 108 to teach fifth-grade children by planting gardens and conducting indoor plant experiments.

PLB 499 Individualized Instruction. (3)

selected semesters

PLB 502 Perspectives in Plant Biology. (3)

fall

Introduces major areas of research within the department with the goal of broadening knowledge to enable multidisciplinary research and communication. Prerequisite: instructor approval.

PLB 583 OTS: Fieldwork in Tropical Biology. (6–8)

spring and summer

Intensive field-orientated classes with Organization for Tropical Studies (OTS) in Costa Rica with emphasis on research in ecology and systematics. Lecture, lab, fieldwork. Cross-listed as BIO 583. Credit is allowed for only BIO 583 or PLB 583. Prerequisites: graduate standing; a course in basic ecology.

PLB 591 Seminar. (1)

fall and spring

Environmental Science and Ecology

PLB 320 Environmental Science (Nonmajor). (3)

fall

Environmental and biological concepts used to understand ecological systems with specific references to problems caused by humans. Cannot be used for major credit in the biological sciences. Cross-listed as BIO 319. Credit is allowed for only BIO 319 or PLB 320.
General Studies: G

PLB 322 Environmental Science (Major). (3)

fall

Nature of environmental and biological interaction: historical and modern examples, regional and global issues. Participation in environmental problem-solving activities. Lecture, lab. Prerequisites: preferably both PLB 200 and 201 or both GLG 110 and 111 or only GPH 111.

PLB 420 Plant Ecology: Organisms and Populations. (3)

spring in odd years

Factors and controls on the physiological ecology and organization of plants and plant populations using empirical and theoretical approaches. 2 hours lecture, 3 hours lab. Fee. Prerequisite: BIO 320 or PLB 322 (or its equivalent).

PLB 421 Plant Ecology: Communities and Ecosystems. (3)

spring in even years

Plant community organization, field sampling techniques, and the structure and function of terrestrial ecosystems emphasizing the role of vegetation. 2 hours lecture, 3 hours lab. Fee. Prerequisite: BIO 320 or PLB 322 (or its equivalent).

PLB 422 Plant Geography. (3)

selected semesters

Plant communities of the world and their interpretation, emphasizing North American plant associations. Cross-listed as GPH 422. Credit is allowed for only GPH 422 or PLB 422. Prerequisites: preferably both PLB 200 and 201 or only BIO 187 or only GPH 111.

PLB 430 Statistical Analyses in Environmental Science. (3)

spring

ANOVAS, 1-way classification of factorial and partially hierarchic designs; introductory multivariate statistics. Prerequisite: MAT 210 (or its equivalent).

General Studies: CS

PLB 432 Computer Applications in Biology. (3)

fall

Computer analysis techniques in biology emphasizing data entry, management and analysis, and graphic portrayal. Employs mainframe and microcomputers. 2 hours lecture, 3 hours lab. Cross-listed as BIO

406. Credit is allowed for only BIO 406 or PLB 432. Prerequisites: both BIO 187 and MAT 117 (or 210) or only instructor approval.

General Studies: CS

PLB 434 Landscape Ecological Analysis and Modeling. (3)

spring in odd years

Technical methods of landscape ecological analyses. Includes mathematical and statistical examination and modeling of landscape ecological patterns and processes. Prerequisites: both BIO 320 and 406 or only PLB 432 (or its equivalent).

PLB 520 Plant Structural Adaptation. (1–3)

selected semesters

Adaptive traits of leaf size/unique growth form on energy transfer efficiency; stomatal architecture and water-use efficiency; applications of stable isotopes. Prerequisite: BIO 320 or PLB 306 (or 308 or its equivalent).

PLB 522 Plant Photosynthetic Adaptation. (1–3)

selected semesters

Evolution and ecology of C4 and CAM; adaptive traits improving competitive ability in natural environments; comparative physiology of desert plants. Prerequisite: PLB 308 or instructor approval.

PLB 524 Methods in Environmental Plant Physiology. (3)

spring in odd years

Techniques to measure and quantify microclimate and mass transfer. Supporting principles. 2 hours lecture, 3 hours lab. Prerequisite: BIO 320 or PLB 308.

Plant Biochemistry and Molecular Biology

PLB 350 Applied Genetics. (4)

spring

Introduces molecular genetics with emphasis on application of genetics in solving biological questions and engineering organisms in biotechnology. 2 hours lecture, 6 hours lab. Cross-listed as MBB 350. Credit is allowed for only MBB 350 or PLB 350. Fee. Prerequisites: preferably both MBB 245 and 246 or only BIO 188 (or its equivalent).

PLB 440 Photobiology. (3)

selected semesters

Principles underlying the effects of light on growth, development, and behavior of plants, animals, and microorganisms. Cross-listed as BIO 464. Credit is allowed for only BIO 464 or PLB 440. Prerequisites: CHM 231 (or 331); 12 hours in life sciences.

PLB 444 Plant Growth and Development. (3)

spring

Molecular basis of development, role of signal transduction pathways/gene regulation in control of organ formation, pollination, germination, and growth. Prerequisite: BIO 353.

PLB 530 Introduction to Structural and Molecular Biology. (4)

spring

Structure and function of cells, proteins, membranes, and the genome; gene expression and biogenesis of structures; application of computer imaging. Cross-listed as CBS 530. Credit is allowed for only CBS 530 or PLB 530. Prerequisites: one year of biology; one semester of organic chemistry.

PLB 540 Plant Biochemistry. (3)

selected semesters

Structure/function relationships of molecules, emphasizing processes unique to plants: carbon fixation, synthesis of storage products, pigments, and secondary metabolites. Prerequisites: both BCH 361 and PLB 308 or only instructor approval.

PLB 550 Plant Molecular Biology. (2)

spring in odd years

Biochemistry and molecular biology of plant organelles, including protein targeting, plant viruses, and molecular designs for plant improvements. Prerequisite: instructor approval.

PLB 552 Plant Genetic Engineering. (3)

spring

Plant transformation utilization of transgenic plants, transient gene expression assays, and applications of plant genetic engineering. Prerequisite: instructor approval.

PLB 553 Plant Genetic Engineering Laboratory. (2)

spring

Plant transformation, utilization of transgenic plants, transient gene expression assays, and applications of plant genetic engineering. 6 hours lab. Prerequisite: instructor approval.

PLB 554 Plant Biotechnology. (3)

selected semesters

Aseptic, clonal propagation of plants and in vitro culture of cells, organs, and tissues. 2 hours lecture, 3 hours lab. Prerequisite: PLB 308 or 370.

PLB 558 Molecular Mechanisms of Photosynthesis. (3)

spring

Structure and function of photosynthetic complexes; mechanism of energy conversion in plants, bacteria, and model systems. Cross-listed as BCH 568. Credit is allowed for only BCH 568 or PLB 558. Prerequisite: instructor approval.

PLB 576 Functional Genomics. (2)

spring

Functional relevance of genomic sequences; DNA arrays, proteomics, analysis of genomic information for metabolic physiology of organisms. Cross-listed as MCB 576. Credit is allowed for only MCB 576 or PLB 576. Prerequisite: MAT 351.

Urban Horticulture

PLB 260 Plants in Cities: Introduction to Urban Horticulture. (4)

spring

Principles and practices of horticulture, emphasizing development, growth, and propagation of horticultural plants and environmental factors that affect these processes. 3 hours lecture, 3 hours lab. Fee. Prerequisites: preferably both PLB 200 and 201 (or 108) or only BIO 187. *General Studies:* SG

PLB 360 Southwest Home Horticulture. (2)

fall and spring

Multimedia course for nonmajors surveying contemporary topics in Southwest home horticulture, including landscaping, flower and vegetable gardening, citriculture, interiorscaping, and others.

PLB 362 Landscape Plants. (3)

fall

Identification, culture, and use of amenity plants in urban landscapes. Fee. Prerequisite: PLB 260 (or its equivalent).

PLB 363 Golf Course Landscape Plants and Design. (3)

fall and spring

Identification, culture, and use of plants in a golf course setting. Cross-listed as AGB 367. Credit is allowed for only AGB 367 or PLB 363. Fee.

PLB 364 Urban Forestry. (3)

fall

Establishment, care, and maintenance of ornamental trees, shrubs, and vines. Prerequisite: PLB 260 (or its equivalent).

PLB 366 Interiorscape. (3)

fall in even years

Identification, culture, and use of container-grown plants for interior environments. Prerequisite: PLB 260 or instructor approval.

PLB 370 Environmental Landscape Management. (3)

fall

Installation, irrigation, and maintenance of amenity plants in urban landscapes with an emphasis on integrated environmental landscape technologies. 2 hours lecture, 3 hours lab. Fee. Prerequisite: PLB 260 (or its equivalent).

PLB 372 Turf Management. (3)

selected semesters

Selection, establishment, and maintenance of turf grasses for lawn and sports areas. 2 hours lecture, 3 hours lab. Prerequisite: PLB 260 (or its equivalent).

PLB 472 Greenhouse/Nursery Management. (3)

spring in even years

Greenhouse structures, environment, and nursery operation. Includes irrigation, nutrition, and other principles relative to container-grown species. Fee. Prerequisites: ERS 130 (or 225 or 226); PLB 260.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

PLB 498 Pro-Seminar. (1-7)

selected semesters

Topics may include the following:

- Urban Horticulture. (1)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

Department of Political Science

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MCENT 205

Robert L. Youngblood, Chair

Professors: Ball, Berman, Chaudhuri, Dagger, Jones, Kahn, Kenney, McDonough, McGowan, Simon, Walker, Youngblood

Associate Professors: Ashley, Crittenden, Dantico, Doty, Herrera, Keating, Mitchell, Simhony, Spruyt, Warner

Assistant Professors: Chin, C. Elman, M. Elman, Goren, Krutz

POLITICAL SCIENCE—B.A.

The B.A. degree in Political Science consists of 42 semester hours, of which 30 must be in political science and 12 in related fields consisting of courses selected from the Departments of Anthropology, Chicana and Chicano Studies, Economics, Geography, History, Psychology, and Sociology, and the African American Studies and the Women’s Studies programs. At least 15 hours in political science must be in upper-division courses.

The following courses are required:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i>	3
or POS 160 Global Politics <i>SB, G</i> (3)	
POS 301 Empirical Political Inquiry <i>SB</i>	3
Total	12

Students who major in Political Science must have a minimum GPA of 2.00 for all courses that count toward the major. Upper-division courses that count toward the major must have a grade of “C” or higher; no more than one “D” grade in a lower-division course may be counted in the major. See [“College Degree Requirements,” page 330.](#) No more than six hours of POS 484 Internship may be applied to the major.

POLITICAL SCIENCE—B.S.

The B.S. degree in Political Science consists of 48 semester hours, of which 36 must be in political science and 12 in related fields consisting of courses selected from the Departments of Anthropology, Chicana and Chicano Studies, Economics, Geography, History, Psychology, and Soci-

ology, and the African American Studies and the Women’s Studies programs. At least 21 hours in political science must be in upper-division courses.

The following courses are required:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i>	3
or POS 160 Global Politics <i>SB, G</i> (3)	
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 401 Political Statistics <i>CS</i>	3
Total	15

Students who major in Political Science must have a minimum GPA of 2.00 for all courses that count toward the major. Upper-division courses that count toward the major must have a grade of “C” or higher; no more than one “D” grade in a lower-division course may be counted in the major. See [“College Degree Requirements,” page 330.](#) No more than six hours of POS 484 Internship may be applied to the major.

B.S. in Political Science with a Concentration in Public Policy Analysis

This degree and concentration combination is intended for students with a strong interest in public policy. It is designed to help students develop perspectives and skills applicable to public policy analysis and program evaluation. This concentration consists of a minimum of 36 semester hours in political science and 12 hours in related fields.

Required Courses

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i>	3
or POS 160 Global Politics <i>SB, G</i> (3)	
POS 220 Political Issues and Public Policy <i>SB</i>	3
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 325 Public Policy Development <i>SB</i>	3
POS 401 Political Statistics <i>CS</i>	3
POS 426 Elements of Public Policy <i>SB</i>	3
POS 484 Internship ¹	1-6
POS electives ²	6-9
Electives ³	12

¹ As approved by the political science internship coordinator.

² Additional POS elective courses are required.

³ In closely related fields, approved by a departmental academic advisor.

B.S. in Political Science with a Concentration in Public Policy Advocacy and Lobbying

This degree and concentration combination is intended for students interested in affecting public policy. It is designed to help students develop perspectives and skills useful to those engaged as activists in shaping public policy. This concentration consists of a minimum of 36 semester hours in political science and 12 hours in related fields.

Required Courses

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	

POS 150 Comparative Government *SB, G*.....3
 or POS 160 Global Politics *SB, G* (3)
 POS 220 Political Issues and Public Policy *SB*.....3
 or POS 325 Public Policy Development *SB* (3)
 or POS 426 Elements of Public Policy *SB* (3)
 POS 301 Empirical Political Inquiry *SB*3
 POS 313 The Congress *SB*.....3
 POS 333 Interest Groups *SB*3
 POS 401 Political Statistics *CS*3
 POS 484 Internship¹1–6
 POS electives²6–9
 Electives³12

¹ As approved by the political science internship coordinator.
² Additional POS elective courses are required.
³ In closely related fields, approved by a departmental academic advisor.

CERTIFICATES

Certificate in American Public Policy. The American Public Policy Certificate is designed for undergraduate students who are anticipating careers in government, public service, or public administration and/or who are interested in understanding the dynamics of policy making and administration in American government.

Students majoring in any subject at the university may pursue the American Public Policy Certificate. To be awarded the certificate, the student must complete at least 15 semester hours of political science courses as follows:

Choose one from the courses below3
 POS 110 Government and Politics *SB* (3)
 POS 310 American National Government *SB* (3)
 Choose two or three from the courses below 6 or 9
 POS 220 Political Issues and Public Policy *SB* (3)
 POS 325 Public Policy Development *SB* (3)
 POS 426 Elements of Public Policy *SB* (3)
 Choose one or two from the courses below 3 or 6
 POS 316 State and Local Government *SB* (3)
 POS 320 Public Administration *SB* (3)
 POS 410 Urban Government and Politics *SB* (3)
 POS 422 Politics of Bureaucracy *SB* (3)
 Choose up to one from the courses below up to 3
 POS 313 The Congress *SB* (3)
 POS 314 The American Presidency *SB* (3)
 POS 484 Internship (up to 3 semester hours for a policy/administration-related internship) (3)
 Total15

Certificate students must have a minimum GPA of 2.00; only courses in which students have a grade of “C” or higher count toward the certificate.

Asian Studies Certificate or Emphasis. Students majoring in Political Science may elect to pursue an Asian Studies Certificate combining courses from the major with selected outside courses of wholly Asian content. See [“Asian Studies,” page 336](#), for more information.

Certificate in Civic Education. The Civic Education Certificate is designed to contribute to the preparation of undergraduate students for

1. careers in primary and secondary education (where the teaching of government and civics may be involved);
2. careers or voluntary participation in politics, public service, and civic and social movements; and
3. further education in law, journalism, business, history, sociology, political science, and other fields where an understanding of questions of citizenship, leadership, community, democracy, public responsibility, and ethics is crucial.

The certificate does not substitute for degree requirements in any subject, including Political Science; rather, as a complement to the student’s chosen major, the certificate program is intended to guide students to a variety of courses whose successful completion indicates their special accomplishment in the area of civic education.

Students majoring in any subject at the university may be awarded the Civic Education Certificate upon completion of the following 15 semester hours of political science courses:

POS 101 Political Ideologies *SB*3
 POS 346 Problems of Democracy *HU*3
 POS 442 American Political Thought *HU*3
 Choose one from the courses below3
 POS 340 History of Political Philosophy I *HU, H* (3)
 POS 341 History of Political Philosophy II *HU, H* (3)
 POS 443 Topics in Contemporary Political Theory *HU* (3)
 Choose one from the courses below3
 POS 110 Government and Politics *SB* (3)
 POS 150 Comparative Government *SB, G* (3)
 POS 160 Global Politics *SB, G* (3)
 POS 270 American Legal System *SB* (3)
 POS 300 Contemporary Controversies in Global Politics *SB, G* (3)
 POS 313 The Congress *SB* (3)
 POS 314 The American Presidency *SB* (3)
 POS 315 The Supreme Court *SB* (3)
 POS 330 Contemporary Controversies in Domestic Politics *SB* (3)
 POS 332 American Political Parties *SB* (3)
 POS 333 Interest Groups *SB* (3)
 POS 370 Law and Society *SB* (3)
 POS 417 The Arizona Political System *SB* (3)
 POS 435 Women and Politics *SB, C* (3)
 POS 439 Minority Group Politics in America *SB, C* (3)
 Total15

Certificate students must have a minimum GPA of 2.00; only courses in which students have a grade of “C” or higher count toward the certificate.

Certificate in International Studies. The International Studies Certificate is designed to prepare students for careers in government agencies, international governmental and nongovernmental organizations, multinational firms and banks, and for graduate studies in International Relations or Political Science. The certificate is not a substitute for degree requirements in any subject, including political

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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science; rather, the required courses add an international and comparative dimension to the student's chosen major.

Requirements for the certificate are intended to provide an understanding of international relations and comparative government, an awareness of global social and political-economic processes, and sensitivity to foreign political systems and cultures. These objectives are met by a sequence of political science courses in the areas of international relations, comparative politics, and area studies.

Students majoring in any subject at the university may be awarded the International Studies Certificate upon completion of the following 15 semester hours of political science courses:

Choose one from the courses below	3
POS 150 Comparative Government <i>SB, G</i> (3)	
POS 160 Global Politics <i>SB, G</i> (3)	
Choose one from the courses below	3
POS 361 American Foreign Policy <i>SB, G</i> (3)	
POS 364 U.S. National Security Analyses <i>SB</i> (3)	
Choose two from the courses below	6
POS 300 Contemporary Controversies in Global Politics <i>SB, G</i> (3)	
POS 465 International Organization and Law <i>SB, G</i> (3)	
POS 467 International Security <i>SB, G</i> (3)	
POS 486 International Political Economy <i>SB, G</i> (3)	
Choose one from the courses below	3
POS 350 Comparative Politics <i>SB, G</i> (3)	
POS 355 Russia and Successor States <i>SB, G</i> (3)	
POS 356 Western Europe <i>SB, G</i> (3)	
POS 357 South Asia Politics <i>SB, G</i> (3)	
POS 358 Southeast Asia <i>SB, G</i> (3)	
POS 359 African Politics and Society <i>SB, G</i> (3)	
POS 360 World Politics <i>SB, G</i> (3)	
POS 451 China, Japan, and the Koreas <i>SB, G</i> (3)	
POS 452 China <i>SB, G</i> (3)	
POS 453 South America <i>SB, G</i> (3)	
POS 454 Mexico <i>SB, G</i> (3)	
POS 455 Central America and the Caribbean <i>SB, G</i> (3)	
POS 459 South and Southern Africa <i>SB, G</i> (3)	
POS 463 Inter-American Relations <i>SB, G</i> (3)	
POS 468 Comparative Asian Foreign Policies <i>SB, G</i> (3)	
Total	15

Honors students who select an international topic for their theses may apply thesis credit toward the 15 hours of international course work for the certificate.

Depending upon their interests, certificate students are strongly advised to take 12 semester hours or more from appropriate courses in anthropology (ASB), economics (ECN), geography (GCU), history (HST), international business studies (IBS), and sociology (SOC). Knowledge of a modern foreign language equivalent to at least two years of college study is strongly recommended.

Certificate students must have a minimum GPA of 2.00; only courses in which students have a grade of "C" or higher count toward the certificate.

Latin American Studies Certificate or Emphasis. Students majoring in Political Science may elect to pursue a Latin American Studies Certificate combining courses from the major with selected outside courses of wholly Latin American content. See "[Latin American Studies](#)," page 338, for more information.

MINOR IN POLITICAL SCIENCE

The minor in Political Science consists of 18 semester hours in political science courses, 12 hours of which must be upper-division courses. Students who minor in Political Science must have two courses from among the following:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i>	3
POS 160 Global Politics <i>SB, G</i>	3

Students who minor in Political Science must have a minimum GPA of 2.00 for all courses that count toward the minor. Upper-division courses that count toward the minor must have a grade of "C" or higher; no more than one "D" grade in a lower-division course may be counted toward the minor. No more than three hours of POS 484 Internship and three hours of POS 499 Individualized Instruction may be applied to the minor.

SECONDARY EDUCATION—B.A.E.

Political Science. The major teaching field consists of 45 semester hours, 30 of which must be in political science and 15 in closely related fields.

The following courses are required:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i>	3
or POS 160 Global Politics <i>SB, G</i> (3)	
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 417 The Arizona Political System <i>SB</i>	3
POS 480 Methods of Teaching Government	3
Total	18

Courses may be substituted for POS 417 and 480 with departmental approval.

Students who pursue this academic specialization in political science must have a minimum GPA of 2.00 for all courses that count toward the major. Upper-division courses that count toward the major must have a grade of "C" or higher.

The minor teaching field consists of 24 semester hours in political science courses.

The following six courses are required:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i>	3
or POS 160 Global Politics <i>SB, G</i> (3)	
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 417 The Arizona Political System <i>SB</i>	3
POS 480 Methods of Teaching Government	3
Total	18

Courses may be substituted for POS 417 and 480 with departmental approval.

Students who pursue this academic specialization in political science must have a minimum GPA of 2.00 for all courses that count toward the academic specialization. Upper-division courses that count toward the academic spe-

cialization must have a grade of “C” or higher; no more than one “D” grade in a lower-division course may be counted in the minor.

Social Studies. For more information, call the Office of Student Services in the College of Education at 480/965-5555.

GRADUATE PROGRAMS

The faculty in the Department of Political Science offer programs leading to the M.A. and Ph.D. degrees. See the *Graduate Catalog* for requirements.

POLITICAL SCIENCE (POS)

POS 101 Political Ideologies. (3)

fall and spring

Leading political ideas and belief systems, e.g., Marxism, liberalism, conservatism, theories of democracy, and alternative futures.

General Studies: SB

POS 110 Government and Politics. (3)

fall and spring

Major institutions of modern government and processes of individual and group political activity, with emphasis on the American experience. Meets the federal government requirement for teacher certification. Credit is allowed for only POS 110 or 310.

General Studies: SB

POS 150 Comparative Government. (3)

fall and spring

Political institutions and processes in selected foreign countries, including origins, strengths, and weaknesses of contemporary political systems and political development.

General Studies: SB, G

POS 160 Global Politics. (3)

fall and spring

Nature of contemporary world politics through the study of both general theoretical topics and specific geographical areas.

General Studies: SB, G

POS 220 Political Issues and Public Policy. (3)

once a year

Contemporary social problems and political issues, particularly development of public policy.

General Studies: SB

POS 230 Current Issues in National Politics. (3)

fall and spring

Major issues facing national governments in the domestic field. Prerequisite: ENG 101 or 105.

General Studies: L/SB

POS 240 Introduction to Southeast Asia. (3)

fall

Interdisciplinary introduction to the cultures, religions, political systems, geography, and history of Southeast Asia. Cross-listed as ASB 240/GCU 240/HST 240/REL 240. Credit is allowed for only ASB 240 or GCU 240 or HST 240 or POS 240 or REL 240.

General Studies: G

POS 260 Current Issues in International Politics. (3)

fall and spring

Analyzes major current problems in world politics. Prerequisite: ENG 101 or 105.

General Studies: L/SB, G

POS 270 American Legal System. (3)

fall and spring

Concepts, institutions, classifications, and functions of law. Role of the courts and impact of judicial decision making on social change.

General Studies: SB

POS 300 Contemporary Controversies in Global Politics. (3)

fall and spring

Explores key controversies in global politics including security, economic stability, poverty, gender, race, and the environment.

General Studies: SB, G

POS 301 Empirical Political Inquiry. (3)

fall and spring

Logic of political inquiry, including research problems, concepts, hypotheses, theories, measurement, data collection, and analysis.

General Studies: SB

POS 305 Politics and Film. (3)

once a year

Examines portrayal of political events, ethnic groups, and sociopolitical situations in film, a major medium addressing questions of human values. May be repeated for credit when topics vary. Lecture, film, discussion.

POS 310 American National Government. (3)

fall and spring

Powers, functions, and agents of American political institutions. Meets the federal government requirement for teacher certification. Credit is allowed for only POS 310 or 110.

General Studies: SB

POS 311 Arizona Constitution and Government. (2)

fall and spring

Constitution and government of the State of Arizona. Credit is allowed for only POS 311 or 316 or 417. Meets the Arizona constitution requirement for teacher certification. May not be counted for the major or a teaching major or minor in Political Science.

POS 313 The Congress. (3)

once a year

Lawmaking process in the U.S. Congress.

General Studies: SB

POS 314 The American Presidency. (3)

once a year

Office, role, and power of the American presidency in the American political system.

General Studies: SB

POS 315 The Supreme Court. (3)

once a year

Role of the Supreme Court in American society and politics; examines decision-making process and impact of decisions; restraint versus activism.

General Studies: SB

POS 316 State and Local Government. (3)

once a year

Survey of the operations, problems, and policies of state and local governments in the United States. Credit is allowed for only POS 316 or 311.

General Studies: SB

POS 320 Public Administration. (3)

once a year

Role of the administrator in the political process with an examination of the basic concepts of bureaucracy.

General Studies: SB

POS 325 Public Policy Development. (3)

once a year

Examines one or more aspects of public policy development including agenda setting and policy formulation, implementation, and analysis.

General Studies: SB

POS 330 Contemporary Controversies in Domestic Politics. (3)

fall and spring

Explores key controversies in domestic politics including the environment, the economy, poverty, gender, race, and security.

General Studies: SB

POS 331 Public Opinion. (3)

once a year

Formation, expression, and influence of individual and organized opinion on political institutions.

General Studies: SB

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “[General Studies](#),” page 83.

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POS 332 American Political Parties. (3)

once a year

Development of the American party system. Party organization and functions.

General Studies: SB

POS 333 Interest Groups. (3)

once a year

Examines how minority, corporate, labor, farm, consumer, environmental, health, education and public interest groups, and single-issue movements influence government.

General Studies: SB

POS 336 Electoral Behavior. (3)

once a year

Voting behavior and the attitudes, perceptions, and activities of the citizenry in the political process.

General Studies: SB

POS 340 History of Political Philosophy I. (3)

once a year

Western political philosophers and their theories to the 17th century.

General Studies: HU, H

POS 341 History of Political Philosophy II. (3)

once a year

Western political philosophers and their theories from the 17th to the 20th centuries.

General Studies: HU, H

POS 346 Problems of Democracy. (3)

once a year

Issues and problems in democratic theory, e.g., the nature of democracy, majority rule, representation, equality, and the value of political participation.

General Studies: HU

POS 350 Comparative Politics. (3)

once a year

Theoretical approaches and political institutions, such as parties, pressure groups, legislatures, and executives, from a cross-national perspective.

General Studies: SB, G

POS 351 Democratization. (3)

fall

Examines the consolidation of democracies in postauthoritarian and postcommunist settings (e.g., Latin America, Eastern Europe, Asia).

General Studies: SB, G

POS 355 Russia and Successor States. (3)

once a year

Description and analysis of political institutions and practices in Russia and successor states.

General Studies: SB, G

POS 356 Western Europe. (3)

once a year

Structures and behavior of governmental institutions and political processes in selected countries of Western Europe.

General Studies: SB, G

POS 357 South Asia Politics. (3)

once a year

Analyzes the political culture, politics, and political systems of South Asia. Lecture, discussion.

General Studies: SB, G

POS 358 Southeast Asia. (3)

once a year

Political background, governmental institutions, political dynamics, and developmental problems of Southeast Asian nations.

General Studies: SB, G

POS 359 African Politics and Society. (3)

selected semesters

Comparative analysis of socioeconomic forces, political processes, and government institutions in Africa south of the Sahara.

General Studies: SB, G

POS 360 World Politics. (3)

once a year

Theory and practice of statecraft as applied to selected issues, regions, or eras.

General Studies: SB, G

POS 361 American Foreign Policy. (3)

once a year

United States in world affairs; foreign policy since World War I. Techniques in formulating American foreign policies.

General Studies: SB, G

POS 364 U.S. National Security Analyses. (3)

once a year

Theoretical and empirical assessment of U.S. national security policy in the post-cold war era.

General Studies: SB

POS 370 Law and Society. (3)

once a year

Analyzes debates among social scientists and legal theorists concerning the relationship between "law" and "society."

General Studies: SB

POS 401 Political Statistics. (3)

fall and spring

Basic concepts in statistics as they facilitate the description, explanation, and prediction of social and political phenomena.

General Studies: CS

POS 410 Urban Government and Politics. (3)

once a year

Governmental organizations, decision-making structures, and problems of urban political systems.

General Studies: SB

POS 417 The Arizona Political System. (3)

selected semesters

Contemporary political problems within the context of Arizona's constitutional, political, and social frameworks. Meets the Arizona Constitution requirement for teacher certification. Credit is allowed for only POS 417 or 311.

General Studies: SB

POS 422 Politics of Bureaucracy. (3)

selected semesters

Bureaucracy as a political entity; internal dynamics of public agencies; the relationship between public agencies and other political entities.

General Studies: SB

POS 423 Politics of Budgeting. (3)

selected semesters

Policy process in budgeting; strategies used to influence this process; recent reforms in public budgeting.

General Studies: SB

POS 426 Elements of Public Policy. (3)

once a year

Each section may cover one of the following topics: consumer protection, natural resources, criminal justice, environmental protection, science and technology, or theories of public policy. May be repeated for credit when topics vary.

General Studies: SB

POS 431 Campaigns and Elections. (3)

once a year

Examines campaigns from a multitude of perspectives including the politician, reporter, campaign strategist, and voter. Lecture, discussion.

General Studies: SB

POS 433 Money and Politics. (3)

once a year

Role of money and special interests in elections, campaign politics, and public policy-making in American politics. Lecture, discussion.

General Studies: SB

POS 434 Media and Politics. (3)

once a year

Studies mass media and politics in the United States, e.g., media and elections, media and government. Lecture, discussion.

General Studies: SB

POS 435 Women and Politics. (3)

selected semesters

Women's roles in various political contexts. Focus varies with instructor.

General Studies: SB, C

POS 439 Minority Group Politics in America. (3)

selected semesters

Role of minority groups in American politics.

General Studies: SB, C

POS 442 American Political Thought. (3)

once a year

Political theories and movements from the colonial period to the present.

General Studies: HU

POS 443 Topics in Contemporary Political Theory. (3)

once a year

Major problems and theories in contemporary political thought.

General Studies: HU

POS 445 Asian Political Thought. (3)

once a year

Contemporary political ideas and theories in selected Asian countries, including the impact of Marxist and non-Marxist theories on revolutionary processes.

General Studies: SB, G

POS 451 China, Japan, and the Koreans. (3)

once a year

Comparative analysis of the political modernization experiences of China, Japan, and the two Koreas, focusing on their differing reactions to the West.

General Studies: SB, G

POS 452 China. (3)

once a year

Background of the Communist revolution, political processes, and developmental problems in China from a comparative perspective.

General Studies: SB, G

POS 453 South America. (3)

once a year

Governmental institutions, political processes, and developmental problems of the South American states.

General Studies: SB, G

POS 454 Mexico. (3)

once a year

Mexican federal, state, and local governmental institutions.

General Studies: SB, G

POS 455 Central America and the Caribbean. (3)

once a year

Governmental institutions, political processes, and developmental problems of the nation-states and dependent areas of Central America and the Caribbean.

General Studies: SB, G

POS 459 South and Southern Africa. (3)

once a year

Post-apartheid South African government and politics; South Africa and the southern African region; regional security and development.

General Studies: SB, G

POS 463 Inter-American Relations. (3)

once a year

Diplomatic relations among the Latin American states. Development of U.S. foreign policy toward Latin America.

General Studies: SB, G

POS 465 International Organization and Law. (3)

once a year

History, practical political significance, and future of international institutions, transnational regimes, and international law.

General Studies: SB, G

POS 467 International Security. (3)

once a year

Examines issues affecting the international security of states and peoples, e.g., military, economic, technological, environmental, and demographic.

General Studies: SB, G

POS 468 Comparative Asian Foreign Policies. (3)

once a year

Foreign policies of the Asian states, emphasizing their security relations and movements toward regionalism.

General Studies: SB, G

POS 471 Constitutional Law I. (3)

once a year

Development of the U.S. Constitution as reflected in decisions of the Supreme Court; jurisdiction and organization of the federal courts; judicial review; separation of powers; federalism; the commerce clause; national taxing and spending power; state police power.

General Studies: SB

POS 472 Constitutional Law II. (3)

once a year

Development of the U.S. Constitution as reflected in decisions of the Supreme Court; due process; equal protection of laws; individual rights; civil liberties.

General Studies: SB

POS 480 Methods of Teaching Government. (3)

selected semesters

Methods of instruction, organization, and presentation of subject matter in political science. Prerequisite: 15 hours in political science or instructor approval.

POS 484 Internship. (1–12)

selected semesters

POS 485 Political Economy. (3)

once a year

Problems, policies, and possibilities of various political-economic systems and the interrelationship of capitalism, socialism, and democracy.

General Studies: SB

POS 486 International Political Economy. (3)

once a year

Contending approaches to historical and contemporary issues of international political economy, including global welfare, equality, ecology, and peace.

General Studies: SB, G

POS 498 Pro-Seminar. (3)

once a year

Small group study and research for advanced students within their major area. Prerequisite: major in the department or instructor approval.

General Studies: L

POS 499 Individualized Instruction. (3)

selected semesters

POS 501 Methods of Political Science. (3)

selected semesters

Problems of method and knowledge in political science, strategies of political inquiry, and issues in philosophy of social science.

POS 502 Philosophy of Political Inquiry. (3)

once a year

Problems of knowledge and method in political science, with attention to both empirical and evaluative analysis.

POS 503 Empirical Political Inquiry. (3)

once a year

Research methods and techniques of the discipline, emphasizing empirical foundations and analytic methods employed in subfields. Prerequisites: POS 401 (or its equivalent); instructor approval.

POS 530 American Politics. (3)

once a year

Examines major debates in the study of American political processes and institutions. Covers parties, media, elections, public opinion, interest groups, and the three branches of government. Seminar.

POS 545 Themes in Political Thought. (3)

selected semesters

Examines a particular theme or problem in political thought from both a historical and contemporary perspective. May be repeated with approval of the director of graduate studies. Seminar. Prerequisite: instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

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POS 550 Comparative Politics. (3)

once a year

Surveys major approaches across topical areas such as revolutions, authoritarianism, policy processes, interest groups, and electoral politics. Focus varies with instructor. Seminar.

POS 560 International Relations. (3)

once a year

Surveys major theoretical approaches and debates in international relations. Seminar.

POS 563 Comparative Asian Security Policies. (3)

selected semesters

Analyzes domestic and international constraints, belief systems, and economic components in security decisions by major powers and Asian nations. Seminar. Prerequisite: instructor approval.

POS 590 Reading and Conference. (1–12)

selected semesters

POS 591 Seminar. (1–12)

once a year

Topics may include the following:

- American Politics. (3)
- Comparative Politics. (3)
- Global Politics. (3)
- Political Theory. (3)

POS 592 Research. (1–12)

selected semesters

POS 598 Special Topics. (1–4)

once a year

Topics may include the following:

- American Politics. (3)
- Comparative Politics. (3)
- Global Politics. (3)
- Political Theory. (3)

POS 599 Thesis. (1–12)

selected semesters

POS 601 Advanced Experimental Research. (3)

selected semesters

Introduces experimental and quasi-experimental research designs in political research, including laboratory techniques and topics in the analysis of variance. Prerequisite: POS 503 (or its equivalent).

POS 602 Advanced Survey Research. (3)

selected semesters

Presents design and conduct of political surveys, including sampling, instrument design, scaling, and statistical and graphical analysis of survey data. Prerequisite: POS 503 (or its equivalent).

POS 603 Polometrics I. (3)

once a year

Introduces theory and practice of linear regression analysis. Provides skills to read, understand, and evaluate professional literature using regression analysis. Prerequisites: both POS 401 and 503 or only instructor approval.

POS 604 Polometrics II. (3)

once a year

Applies quantitative techniques to research topics producing publishable papers through exposure to time-series, logit and probit, and simultaneous equations. Prerequisites: a combination of POS 401 and 503 and 603 or only instructor approval.

POS 606 Qualitative and Textual Analysis. (3)

spring in odd years

Method and theory for the analysis of qualitative materials, systematic approaches for case studies, content analysis, critical analysis of texts. Discussion, seminar.

POS 635 State Politics and Public Policy. (3)

selected semesters

Introduces comparative state policy emphasizing policy or performance differences among the states and the reasons for these differences. Seminar. Prerequisites: both POS 530 and 603 or only instructor approval.

POS 636 Electoral Behavior. (3)

selected semesters

Introduces fundamental concepts of electoral behavior. Emphasizes presidential elections and examines why people vote and how their votes are determined. Seminar. Prerequisites: both POS 530 and 603 or only instructor approval.

POS 638 Law and Politics. (3)

selected semesters

Emphasizes research into such topics as constitutional law, women and the law, American legal system, judicial process, and judicial selection. Seminar. Prerequisite: instructor approval.

POS 651 Politics of Change and Development. (3)

selected semesters

Examines contending approaches to national, social, and political change. Seminar. Prerequisite: instructor approval.

POS 660 The Modern World System. (3)

selected semesters

Theoretically driven, historical analysis of the organization and operation of the international political economy since the 16th century. Seminar. Prerequisite: instructor approval.

POS 661 The State. (3)

selected semesters

Examines theories of state, state-society relations, and interstate politics emphasizing questions of sovereignty, territoriality, violence, representation, democracy, and change. Seminar. Prerequisite: instructor approval.

POS 662 International Organization. (3)

selected semesters

History, practical political significance, and future of international institutions, transnational regimes, and other approaches to international organization. Seminar. Prerequisite: instructor approval.

POS 664 War, Peace, and Conflict Processes. (3)

selected semesters

Systematic analysis of the causes of war, the preconditions for peace, and approaches to the resolution of conflict. Seminar. Prerequisite: instructor approval.

POS 665 Foreign Policy Theory. (3)

selected semesters

Examines foreign policy theory and methods. Development and critique of research designs analyzing foreign policy processes within and among nations. Seminar. Prerequisite: instructor approval.

POS 691 Seminar. (1–12)

selected semesters

POS 790 Reading and Conference. (1–12)

selected semesters

POS 792 Research. (3)

fall and spring

Projects in various areas of political science. Prerequisite: doctoral student.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Psychology

psych.la.asu.edu
 480/965-3326
 PSY 237

Morris Okun, Acting Chair

Regents' Professors: Cialdini, Eisenberg, Russo

Professors: Aiken, Barrera, Braun, Braver, Castro, Chassin, Homa, Karoly, Kenrick, Killeen, Knight, Lanyon, Linder, MacKinnon, Millsap, Neuberg, Okun, Parkinson, Presson, Reich, Sadalla, Sandler, Somerville, Van Orden, West, Wolchik, Zautra

Associate Professors: Castaneda, Davis, Fabricius, Goldinger, Gonzales, Leshowitz, Nagoshi, Neisewander, Nemeroff, Saenz, Stone

Assistant Professors: E. Amazeen, P. Amazeen, Conrad, Khoo, Lemery, Luecken, McBeath

Senior Lecturers: Barton, Weigand, Wosinski

Lecturer: Palmer

The Department of Psychology maintains an Undergraduate Advisement Office staffed by trained personnel. All Psychology majors are encouraged to meet with an undergraduate advisor once each semester to ask questions regarding the choice of courses. Failure to do so may prevent graduation at the expected time. It is the responsibility of the student to consult with an undergraduate advisor.

PSYCHOLOGY—B.A.

The B.A. degree in Psychology consists of 31 semester hours in psychology, including at least 15 upper-division semester hours. Required courses, which must be passed with a minimum grade of "C," are as follows:

PGS 101 Introduction to Psychology <i>SB</i>	3
PGS 315 Personality Theory and Research <i>SB</i>	3
or PGS 341 Developmental Psychology <i>SB</i> (3)	
or PGS 350 Social Psychology <i>SB</i> (3)	
PSY 230 Introduction to Statistics <i>CS</i>	3
PSY 290 Research Methods <i>L/SG</i>	4
PSY 323 Sensation and Perception	3
or PSY 320 Learning and Motivation (3)	
or PSY 324 Memory and Cognition (3)	
or PSY 325 Physiological Psychology (3)	
Total	16

Also required are one additional upper-division PSY course (excluding PSY 484, 492, 493, 497, and 499); two additional upper-division PGS or PSY courses; and two additional psychology courses (excluding PGS 194, 270, 484, and PSY 484 and 497). A maximum of three semester hours of Supervised Research (PGS or PSY 399, PGS or

PSY 499, or PSY 492) and a maximum of three hours of Honors Thesis (PSY 493) can be used to satisfy major requirements. Students may take a maximum of six hours of PGS or PSY 399 and six hours of PGS 499 and PSY 499 combined. Eighteen hours in courses related to psychology must be passed with a minimum grade of "C." They must be approved by an undergraduate advisor and include MAT 119 (or a higher level mathematics course) in addition to one course from the following:

CSE 180 Computer Literacy <i>CS</i>	3
CSE 185 Internet and the World Wide Web	3

See "[College Degree Requirements](#)," page 330.

PSYCHOLOGY—B.S.

The B.S. degree in Psychology consists of 31 semester hours in psychology, including at least 15 upper-division hours. Required courses, which must be passed with a minimum grade of "C," are as follows:

PGS 101 Introduction to Psychology <i>SB</i>	3
PGS 315 Personality Theory and Research <i>SB</i>	3
or PGS 341 Developmental Psychology <i>SB</i> (3)	
or PGS 350 Social Psychology <i>SB</i> (3)	
PSY 230 Introduction to Statistics <i>CS</i>	3
PSY 290 Research Methods <i>L/SG</i>	4
PSY 323 Sensation and Perception	3
or PSY 320 Learning and Motivation (3)	
or PSY 324 Memory and Cognition (3)	
or PSY 325 Physiological Psychology (3)	
Total	16

Also required are one additional upper-division PSY course (excluding PSY 484, 492, 493, 497, and 499); two additional upper-division PGS or PSY courses; and two additional psychology courses (excluding PGS 194, 270, and 484, and PSY 484 and 497). A maximum of three semester hours of Supervised Research (PGS or PSY 399, PGS or PSY 499, or PSY 492) and a maximum of three hours of Honors Thesis (PSY 493) can be used to satisfy major requirements. Students may take a maximum of six hours of PGS or PSY 399 and six hours of PGS 499 and PSY 499 combined. Eighteen hours in courses related to psychology must be passed with a minimum grade of "C." They must be approved by an undergraduate advisor and include MAT 210 Brief Calculus (or higher); one life science lab course (BIO or MIC); one physical science lab course (AST, CHM, GLG, or PHY); and one course from the following:

CSE 180 Computer Literacy <i>CS</i>	3
CSE 185 Internet and the World Wide Web	3

Further, the science courses taken to satisfy the B.S. degree requirements cannot be used to meet the science (SQ or SG) portion of the university General Studies requirement.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

MINOR IN PSYCHOLOGY

The minor in Psychology consists of 22 hours in psychology, including the following:

PGS 101 Introduction to Psychology <i>SB</i>	3
PGS 315 Personality Theory and Research <i>SB</i>	3
or PGS 341 Developmental Psychology <i>SB</i> (3)	
or PGS 350 Social Psychology <i>SB</i> (3)	
PSY 230 Introduction to Statistics <i>CS</i>	3
PSY 290 Research Methods <i>L/SG</i>	4
PSY 323 Sensation and Perception	3
or PSY 320 Learning and Motivation (3)	
or PSY 324 Memory and Cognition (3)	
or PSY 325 Physiological Psychology (3)	
Total	16

Two additional upper-division PGS or PSY courses are required.

A maximum of three semester hours of Supervised Research (PGS or PSY 399, PGS or PSY 499, or PSY 492) and a maximum of three hours of Honors Thesis (PSY 493) can be used to satisfy minor requirements. Students with an appropriate equivalent course may exclude PSY 230 from the requirements. All courses must be passed with a minimum grade of “C.”

SECONDARY EDUCATION—B.A.E.

Social Studies. For more information, call the Office of Student Services in the College of Education at 480/965-5555.

GRADUATE PROGRAMS

The faculty in the Department of Psychology offer a program leading to the Ph.D. degree. See the *Graduate Catalog* for requirements.

PSYCHOLOGY (SOCIAL AND BEHAVIORAL) (PGS)

PGS 101 Introduction to Psychology. (3)

fall, spring, summer

Major areas of theory and research in psychology. Requires participation in department-sponsored research or an educationally equivalent alternative activity.

General Studies: SB

PGS 194 Special Topics. (1–4)

selected semesters

PGS 222 Human Sexual Behavior. (3)

fall and spring

Patterns of sexual behavior, including variations and deviations; theories of sexual attraction, sex differences, and sexual dysfunction and treatment. Prerequisite: PGS 101.

General Studies: SB

PGS 270 Psychology of Adjustment. (3)

fall, spring, summer

Principles of mental health, adjustment, conflict, stress, and coping processes derived from clinical and experimental research. Intended for nonmajors; cannot be used for major credit. Prerequisite: PGS 101.

General Studies: SB

PGS 304 Effective Thinking. (3)

once a year

Understanding and improving intellectual and behavioral skills; information analysis, inference, logic, problem solving, and decision making. Prerequisite: MAT 119 or PSY 230 (or its equivalent).

General Studies: L

PGS 306 Environmental Psychology. (3)

fall, spring, summer

Concepts and research strategies in the study of behavior in interaction with physical environment. Prerequisite: PGS 101.

General Studies: SB

PGS 315 Personality Theory and Research. (3)

fall, spring, summer

Definition and description of personality in terms of theoretical and methodological approaches. Prerequisites: PGS 101; PSY 290.

General Studies: SB

PGS 341 Developmental Psychology. (3)

fall and spring

Analyzes behavior development in terms of psychological principles. Current research in human development. Prerequisites: PGS 101; PSY 290.

General Studies: SB

PGS 344 Directed Child Study. (3–4)

fall, spring, summer

Theories and methods of intervention with preschool children and supervised practicum in the Child Study Laboratory. 1 hour lecture, 6–8 hours practicum. Prerequisites: CDE 232; ECD 314 (or PSY 290).

PGS 350 Social Psychology. (3)

fall, spring, summer

Human social behavior, including such concepts as aggression, attraction, attribution, conformity, groups, helping, person perception, and persuasion. Prerequisite: PGS 101.

General Studies: SB

PGS 351 Honors Social Psychology. (3)

selected semesters

Critical analysis of human social behavior for honors students; topics include stereotyping, social influence, attraction, aggression, helping, groups, and attitudes. Open only to students without previous credit for PGS 350. Lecture, discussion. Prerequisites: PGS 101; honors standing; instructor approval.

General Studies: L/SB

PGS 365 Community Psychology. (3)

fall and spring

Mental health and psychological well-being in the community, emphasizing current issues and related research. Prerequisite: PGS 315 or 350.

General Studies: SB

PGS 394 Special Topics. (1–4)

selected semesters

PGS 399 Supervised Research. (1–3)

fall, spring, summer

Experience within the context of current faculty research projects. Responsibility is assigned depending on qualifications. “Y” grade only. May be repeated for a total of 6 hours. Prerequisites: approval of faculty member before registration; “B” average in major. Pre- or corequisite: PSY 230 (or its equivalent).

PGS 414 History of Psychology. (3)

fall and spring

Historical development of psychology from its philosophical beginnings to the present. Prerequisites: PGS 101; PSY 230, 290.

General Studies: L/SB

PGS 427 Psychology of Aging. (3)

selected semesters

Analyzes loss, maintenance, and gain associated with cognitive and affective aging. Individual differences in coping with normative life transitions. Prerequisites: PGS 101, 341.

General Studies: L/SB

PGS 430 Industrial Psychology. (3)

fall, spring, summer

Organizations and management systems; motivation and work performance; human factors in systems design and evaluation; personnel selection and testing. Prerequisite: MGT 300 or PGS 101.

PGS 441 Cognitive Development. (3)

fall and spring

Experimental and theoretical literature in child development and behavior. Prerequisite: PGS 341 or instructor approval.

General Studies: L/SB

PGS 443 Abnormal Child Psychology. (3)*fall and spring*

Covers major disorders of childhood and adolescence (e.g., autism, hyperactivity, phobias, and delinquency), including cause, diagnosis, treatment, and prevention. Prerequisites: both PGS 101 and 315 (or 341 or 350) or only instructor approval.

*General Studies: L/SB***PGS 444 Adolescent Psychology and Psychopathology. (3)***selected semesters*

Advanced-level survey of normal adolescent psychological development and psychological disorders of this age period. Lecture, discussion. Prerequisites: PGS 101, 341; PSY 290.

*General Studies: L***PGS 445 Child Language and Drawing. (3)***fall*

Language acquisition and developmental changes in drawing, considered in the context of cognitive developmental stages. Children's representation and communication of knowledge through language and drawing. Prerequisite: PGS 341.

*General Studies: SB***PGS 446 Social Development. (3)***selected semesters*

Discusses theory, research, and issues regarding social development. Example topics: formation of attachments, prosocial development, and gender-role development. Lecture, seminar. Prerequisite: PGS 341.

*General Studies: L***PGS 450 Social Perception and Cognition. (3)***selected semesters*

Critical analysis of human social perception and social cognition. Topics include attribution, inference, memory, attention, impression formation, and stereotype change. Lecture, discussion. Prerequisites: PGS 101, 350.

*General Studies: L***PGS 451 Stereotyping, Prejudice, and Discrimination. (3)***selected semesters*

Critical investigation of the processes underlying, and the factors contributing to, stereotyping, prejudice, and discrimination. Lecture, discussion. Prerequisites: PGS 101, 350.

*General Studies: L***PGS 452 Applied Social Psychology. (3)***fall*

Studies applications of social psychological theory and concepts in natural settings; research design and data analysis. Lecture, lab-type activities. Prerequisites: PGS 101, 350; PSY 230.

*General Studies: L***PGS 453 Organizational Behavior. (3)***selected semesters*

Survey of psychological theory and research as applied to the behavior of individuals in organizational settings. Lecture, discussion. Prerequisites: PGS 101, 350.

PGS 458 Group Dynamics. (3)*fall*

Theories and methods of group leadership, group effectiveness, communication within groups, and relations between groups and individual members. Prerequisite: PGS 350.

PGS 461 Interpersonal Influence. (3)*selected semesters*

Principles and procedures that affect the process of social influence; consideration of attitudinal, compliance-inducing, and perceptual influences. Prerequisite: PGS 350.

*General Studies: SB***PGS 462 Health Psychology. (3)***fall and spring*

Contributions of psychology to health promotion and illness prevention, adaptation to acute and chronic illness, and to the health care system. Prerequisites: PSY 230, 290.

PGS 463 Advanced Psychology of Adjustment. (3)*fall*

Critical analysis and effective expression of psychological theory and research on the topic of adjustment. Lecture, discussion, writing. Prerequisites: PSY 230, 290; completion of First-Year Composition requirement; a General Studies L course.

*General Studies: L***PGS 464 Minority Issues in Psychology. (3)***spring*

Psychological issues relating to the diversity of human cultural experiences among ethnic minorities in the U.S. Prerequisite: PSY 290.

PGS 465 Psychology of Stress and Coping. (3)*fall*

Readings in theory and research in the area of stress and coping. Lecture, discussion, class presentations. Prerequisites: PGS 315 (or 350); PSY 290.

*General Studies: L***PGS 466 Abnormal Psychology. (3)***fall, spring, summer*

Historical and current definitions, theory, and research concerning abnormal behavior. Major categories of psychopathology, including related treatment approaches. Prerequisites: PGS 101; PSY 290.

*General Studies: SB***PGS 467 Psychology of Magical Beliefs. (3)***selected semesters*

Psychological nature and bases of magical beliefs and their impact on health behaviors, eating practices, and interpersonal relations. Lecture, seminar. Prerequisites: a combination of PGS 315 and 466 and PSY 434 or only instructor approval.

*General Studies: L***PGS 468 Psychology and Law. (3)***fall and spring*

Theories, research, and practice in psychology as related to law, including criminal, civil, domestic relations, and professional issues. Lecture, discussion. Prerequisite: PSY 290.

PGS 471 Psychological Testing. (3)*spring*

Methods and theory of psychological testing; various types of psychological tests; consideration of ethical, social, and legal aspects of testing. Prerequisite: PSY 290.

PGS 472 Clinical Psychology. (3)*fall and spring*

Clinical psychology as a science and profession. Historical development, methods of interviewing, assessment, and therapeutic intervention. Prerequisite: PGS 466.

PGS 484 Internship. (1–12)*selected semesters***PGS 494 Special Topics. (1–4)***selected semesters***PGS 499 Individualized Instruction. (1–3)***selected semesters*

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56](#).

PSYCHOLOGY (SCIENCE AND MATHEMATICS) (PSY)

For more PSY courses, see the "Faculty of Applied Psychology" under "East College" at "ASU East."

M PSY 230 Introduction to Statistics. (3)*fall, spring, summer*

Basic concepts in descriptive and inferential statistics, emphasizing applications to psychology. Self-paced (PSI) and lecture sections. Prerequisites: MAT 117; PGS 101.

General Studies: CS

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

COLLEGE OF LIBERAL ARTS AND SCIENCES

M PSY 290 Research Methods. (4)

fall and spring

Planning, execution, analysis, and reporting of experiments. Literature, procedures, and instruments in representative areas of psychological research. 3 hours lecture, 3 hours lab. Prerequisites: ENG 101 (or 105); PSY 230.

General Studies: L/SG

M PSY 320 Learning and Motivation. (3)

fall, spring, summer

Principles of conditioning and motivation; approaches to learning, including acquisition of verbal materials, concepts, and motor skills; memory and transfer. Prerequisite: PSY 290.

M PSY 323 Sensation and Perception. (3)

fall and spring

Underlying processes of vision, audition, and the other senses. Applies current research and theory in a laboratory environment. Prerequisite: PSY 290 or instructor approval.

M PSY 324 Memory and Cognition. (3)

fall, spring, summer

Processes underlying information storage and retrieval, including different kinds of memory, forgetting, depth of processing, and control processes. Prerequisite: PSY 290.

M PSY 325 Physiological Psychology. (3)

fall, spring, summer

Relationships of physiological processes to behavior. Emphasizes nervous system functioning. Prerequisites: PSY 290 (or 2 courses in biological science); instructor approval.

M PSY 330 Statistical Methods. (3)

spring

Advanced application of statistics to psychology. Highly recommended for students interested in attending graduate school. 3 hours lecture, 1 hour lab. Prerequisite: PSY 230.

General Studies: CS

M PSY 390 Experimental Psychology. (3)

spring

Continuation of concepts in PSY 290, with emphasis on multifactor designs and programmatic sequence of experiments. Lecture, lab. Prerequisite: PSY 290.

General Studies: L

M PSY 399 Supervised Research. (1–3)

fall, spring, summer

M PSY 420 Analysis of Behavior. (3)

selected semesters

Research, applications, and philosophy of the analysis and control of human behavior. Prerequisite: PSY 290.

General Studies: L

M PSY 424 Genetic Psychology. (3)

spring

Introduces the concepts, methodologies, and findings of behavioral genetics for Psychology majors. Prerequisites: PGS 101; PSY 230, 290.

General Studies: L

M PSY 425 Biological Bases of Behavior. (3)

selected semesters

Critical study of physiological psychology; brain mechanisms underlying motivation and learning. Prerequisite: PSY 325.

General Studies: L

M PSY 426 Neuroanatomy. (4)

selected semesters

Structure and function of mammalian brain, including sheep brain dissection. 3 hours lecture, 3 hours lab. Prerequisite: PSY 325 (or its equivalent).

General Studies: L

M PSY 434 Cognitive Psychology. (3)

spring

Human organism as a processor of information, from perception to cognition. Abstract concepts, semantic memory, attention, and mental imagery. Prerequisite: PSY 323 or 324 or instructor approval.

General Studies: L

M PSY 437 Human Factors. (3)

fall

Emphasizes human factors in high-technology systems. Specific topics include systems development, systems analysis techniques, displays, and controls. Prerequisites: both PSY 290 and upper-division standing or only instructor approval.

General Studies: L

M PSY 470 Psychopharmacology. (3)

fall and spring

Basis of drug action at physiological and behavioral levels. Psychological and medical applications and limitations of drugs used in the treatment of mental illness. Prerequisites: PSY 325; 1 semester each of biology and chemistry.

M PSY 484 Internship. (1–12)

selected semesters

M PSY 492 Honors Directed Study. (1–6)

selected semesters

M PSY 493 Honors Thesis. (1–6)

selected semesters

M PSY 494 Special Topics. (1–4)

selected semesters

M PSY 497 Honors Colloquium. (1–6)

selected semesters

M PSY 498 Pro-Seminar. (1–7)

fall and spring

Topics may include the following:

- Behavioral Neuroscience Research. (3)

General Studies: L

M PSY 499 Individualized Instruction. (1–3)

selected semesters

M PSY 501 Supervised Teaching. (4)

fall

Experience in and examination of perspectives on teaching undergraduate psychology. Prerequisites: graduate standing in psychology; instructor approval.

M PSY 506 Survey of Research in Environmental Psychology. (3)

fall

Major topics and paradigms in the study of person-environment relationships. Prerequisite: instructor approval.

M PSY 512 Advanced Learning. (3)

selected semesters

Principles and theories of learning, emphasizing research literature. Prerequisite: instructor approval.

M PSY 524 Advanced Physiological Psychology. (3)

selected semesters

Contributions of physiological processes and brain function to fundamental behavioral processes. Prerequisite: instructor approval.

M PSY 528 Sensation and Perception. (3)

selected semesters

Principles of sensory and perceptual processes, emphasizing research literature. Prerequisite: instructor approval.

M PSY 530 Analysis of Variance in Psychological Research. (3)

fall

One-way and factorial designs, contrasts, post-hoc tests, probing of interactions, mixed designs, power, computer applications. Prerequisite: undergraduate statistics or instructor approval.

M PSY 531 Multiple Regression in Psychological Research. (3)

spring

Multiple regression and correlation, hierarchical regression, interactions, curvilinear relationships, categorical predictors, ANOVA in regression, regression diagnostics, regression graphics. Prerequisite: PSY 530 or instructor approval.

M PSY 532 Analysis of Multivariate Data. (3)

fall

Matrix algebra for multivariate procedures, component and factor analysis, canonical and discriminant analysis, classification, MANOVA, logistic regression, hierarchical linear model. Prerequisites: both PSY 530 and 531 or only instructor approval.

M PSY 533 Structural Equation Modeling. (3)*spring*

Path analysis; exploratory and confirmatory factor analysis; recursive and nonrecursive latent variable models; mean and covariance structures; latent growth models. Prerequisite: PSY 532 or instructor approval.

M PSY 534 Psychometric Methods. (3)*fall and spring*

Theory and practice of psychological measurement using classical and modern test theories. Reliability assessment, test validation, test construction, test usage. Prerequisites: both PSY 530 and 531 or only instructor approval.

M PSY 535 Cognitive Processes. (3)*selected semesters*

Theoretical/empirical treatment of the human organism as a processor of information, including abstraction, memory structure, problem solving, and thinking. Prerequisite: instructor approval.

M PSY 536 Statistical Methods in Prevention Research. (3)*fall and spring*

Statistical methods used in prevention research including epidemiological methods, logistic regression, program effect estimation, estimation, and mediation analysis. Prerequisites: both PSY 530 and 531 or only instructor approval.

M PSY 537 Longitudinal Growth Modeling. (3)*selected semesters*

Growth modeling methodology to describe individual variation in development over time. Employs multilevel and structural equation modeling frameworks. Prerequisite: PSY 533 or instructor approval.

M PSY 538 Advanced Structural Equation Modeling. (3)*selected semesters*

Mean and covariance structure analysis. Includes multiple-group modeling, two-level hierarchical modeling, longitudinal growth modeling, analysis with categorical outcomes. Prerequisite: PSY 533 or instructor approval.

M PSY 539 Meta-Analysis I. (1)*fall*

Meta-analysis; searching the literature, coding study characteristics, computing effect sizes. Must be followed by PSY 540. Seminar. Prerequisites: both PSY 530 and 531 or only instructor approval.

M PSY 540 Meta-Analysis II. (2)*spring*

Continuation of PSY 539. Meta-analysis; computing effect sizes, and analyzing the heterogeneity of effect sizes. Seminar. Prerequisite: PSY 539.

M PSY 541 Research in Cognitive Development. (3)*selected semesters*

Theoretical and empirical issues in the study of children's knowledge and cognitive processes. Comparison of research in Piagetian and other traditions. Prerequisite: admission to Psychology Ph.D. program or instructor approval.

M PSY 542 Social Development. (3)*selected semesters*

Reviews and critiques major issues in the area of social development. Covers theory, research, and content. Prerequisite: instructor approval.

M PSY 550 Advanced Social Psychology. (3)*fall and spring*

Theory and research concerning interpersonal perception, decision making, attitude formation and change, group processes, social motivation, and interaction processes. Prerequisite: instructor approval.

M PSY 551 Advanced Social Psychology. (3)*fall and spring*

Continuation of PSY 550. Prerequisite: PSY 550 or instructor approval.

M PSY 553 Social Influence. (3)*selected semesters*

Researches literature relevant to attitude formation and change, conformity, obedience, power, compliance, altruism, and others. Prerequisite: PSY 551 or instructor approval.

M PSY 555 Experimental and Quasi-Experimental Designs for Research. (3)*selected semesters*

Reviews research techniques. Analyzes laboratory and field research; applications to specific topics. Prerequisite: instructor approval.

M PSY 569 Advanced Study of Personality. (3)*selected semesters*

Personality as a theoretical concept in psychology, including definitional problems, behavioral and traditional approaches, the measurement of personality, and current research issues. Prerequisite: instructor approval.

M PSY 572 Psychological Assessment. (3)*fall*

Theory and research on assessment of personality, psychopathology, and intelligence; construction of psychological assessment instruments. Prerequisite: admission to clinical Ph.D. program or instructor approval.

M PSY 573 Psychopathology. (3)*fall*

Theory and research relating to the contribution of psychological, social, physiological, and genetic factors to the development and persistence of abnormal behavior. Prerequisite: admission to Psychology Ph.D. program or instructor approval.

M PSY 574 Psychotherapy. (3)*spring*

Detailed survey of the theoretical and empirical literature relating to verbal psychotherapy. Prerequisite: admission to the clinical Ph.D. program or instructor approval.

M PSY 578 Developmental Psychopathology. (3)*selected semesters*

Covers major theories and research related to the development of psychological disorders of childhood and adolescence.

M PSY 582 Community Psychology. (3)*summer*

Community systems, intervention techniques, consultation models, history and current status of community mental health movement, and conceptualization of the roles of community psychologists in social system intervention. Prerequisite: advanced standing in Psychology Ph.D. program or instructor approval.

M PSY 588 Consultation Methods. (3)*selected semesters*

Several theories and strategies of organizational consultation. Develops consultative skills through simulation and practical experience. Prerequisite: advanced standing in Psychology Ph.D. program or instructor approval.

M PSY 624 Clinical Neuroscience. (3)*spring*

Examines the biological underpinnings of psychological disorders at the molecular, cellular, and system levels (schizophrenia, depression, anxiety, etc.). Lecture, pro-seminar. Prerequisites: graduate standing; instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

Department of Religious Studies

www.asu.edu/clas/religious_studies

480/965-7145

ECA 377

Joel Gereboff, Chair

Professors: Cady, Coudert, Feldhaus, Foard, Samuelson

Associate Professors: Clay, Fessenden, Gereboff, Moore, Morrison, Schober, Swanson, Woodward

Assistant Professors: Benn, Damrel, Leon, Umar

RELIGIOUS STUDIES—B.A.

The B.A. degree in Religious Studies consists of 45 semester hours, 30 of which must be in religious studies (including 21 in upper-division courses) and 15 of which must be in related fields. In order for the student to become acquainted with the character and role of religions across a wide spectrum of social and historical contexts, the 30 semester hours in religious studies must include the following courses:

1. REL 305 Ritual, Symbol, and Myth;
2. at least one course from each of the following distribution areas: Religion in the Americas, Religion and Asian Cultures, and Religion and Western Cultures;
3. REL 400 Approaches to Religion; and
4. two research seminars, including REL 405 Problems in Religious Studies, which may be repeated for credit; or
5. in place of a second seminar, a student may take REL 499 to write an undergraduate thesis.

The Religious Studies major is an appropriate choice for students wishing to explore such areas as African or African American studies; Islamic studies; myth, ritual, and the arts; Native American studies; and religion and politics. All majors must plan their programs in consultation with a departmental advisor. A minimum GPA of 2.50 is required in the 30 semester hours of religious studies courses.

MINOR IN RELIGIOUS STUDIES

The minor in Religious Studies consists of 18 semester hours, at least 12 of which must be in the upper division. Both REL 305 and 405 are required. For minor verification, students must consult a department advisor.

CERTIFICATES AND EMPHASES

The following are certificate programs or emphases offered in the Department of Religious Studies. For more information on each, see "[Certificate Programs and Areas of Emphasis](#)," page 336, or access the department Web site at www.asu.edu/clas/religious_studies.

Asian Studies Certificate. Students majoring in Religious Studies may elect to pursue an Asian Studies emphasis or East Asian Studies Certificate combining courses from the major with selected outside courses of wholly Asian content.

Jewish Studies Certificate. Students majoring in Religious Studies may elect to pursue a Jewish Studies Certificate combining courses from the major with selected outside courses in the area of Jewish Studies.

Latin American Studies Certificate. Students majoring in Religious Studies may elect to pursue a Latin American Studies certificate combining courses from the major with selected outside courses of wholly Latin American content.

Russian and East European Studies. Students majoring in Religious Studies may elect to earn a Russian and East European Studies Certificate by successfully completing one of the options mentioned in "[Russian and East European Studies](#)," page 338.

Southeast Asian Studies Emphasis. Students majoring in Religious Studies may elect to earn a Southeast Asian Studies Certificate by successfully completing the requirements.

Women's Studies. Students majoring in Religious Studies may elect to earn a Women's Studies Certificate by successfully completing the requirements.

GRADUATE PROGRAM

The faculty in the Department of Religious Studies offer a graduate program leading to the M.A. degree for those who wish to enter a doctoral program in the study of religions, for those who wish to teach at the community college level, and for those in nonacademic careers who desire general competence in the academic study of religions. See the *Graduate Catalog* for requirements.

RELIGIOUS STUDIES (REL)

REL 100 Religions of the World. (3)

fall and spring

Introduces the history of religious traditions of the world, including Buddhism, Christianity, Hinduism, Islam, Judaism, and others. Credit is allowed for only REL 100 or 200.

General Studies: HU, G

REL 200 The Study of Religious Traditions. (3)

selected semesters

Writing-intensive course introducing analytical skills necessary for understanding religious traditions. Beliefs, practices, and communities of several religious traditions of the world. Credit is allowed for only REL 200 or 100. Prerequisite: ENG 101 or 105.

General Studies: L/HU, G

REL 201 Religion and the Modern World. (3)

once a year

Introduces the nature and role of religious beliefs and practices in shaping the lives of individuals and societies, with particular attention to the modern world. Prerequisite: ENG 101 or 105.

General Studies: L/HU

REL 202 Religion and Popular Culture. (3)

once a year

Explores various intersectors between religion and the popular media, including music, news, advertising, the visual arts, literature, performance, and film. Lecture, discussion.

General Studies: HU, C

REL 203 Saints and Sinners: Explorations in Sacred Biography. (3)

selected semesters

Comparison of the role of biography across religions to examine the process of categorizing people as saints or sinners. Lecture, discussion.

General Studies: HU, H

REL 205 Living and Dying. (3)

selected semesters

Ways that religions have understood birth, sexuality, death and the passing of generations. Examples from traditions throughout the world. Lecture, discussion.

General Studies: HU

REL 210 Introduction to Judaism. (3)

once a year

Beliefs, ceremonies, festivals, and institutions of Judaism emphasizing the contemporary era. Assumes no previous knowledge about Judaism. Prerequisite: ENG 101 or 105.

General Studies: L/HU, H

REL 225 African American Religion. (3)

selected semesters

Introduces the history and development of the African American religious tradition. Lecture, discussion. Cross-listed as AFH 225. Credit is allowed for only AFH 225 or REL 225.

General Studies: HU, C

REL 240 Introduction to Southeast Asia. (3)

fall

Interdisciplinary introduction to the cultures, religions, political systems, geography, and history of Southeast Asia. Cross-listed as ASB 240/GCU 240/HST 240/POS 240. Credit is allowed for only ASB 240 or GCU 240 or HST 240 or POS 240 or REL 240.

General Studies: G

REL 260 Introduction to Islam. (3)

spring

Examines Islamic beliefs, ceremonies, festivals, and institutions. Assumes no prior knowledge about Islam. Lecture, discussion. Cross-listed as HUM 260. Credit is allowed for only HUM 260 or REL 260.

General Studies: HU, G

REL 270 Introduction to Christianity. (3)

once a year

Beliefs, ceremonies, festivals, and institutions of Christianity, emphasizing the contemporary era. Assumes no previous knowledge about Christianity.

General Studies: HU

REL 301 Comparative Mysticism. (3)

once a year

Comparative examination of Eastern and Western mystical traditions from antiquity to the present. Lecture, discussion. Prerequisite: REL 100.

General Studies: HU

REL 305 Ritual, Symbol, and Myth. (3)

fall and spring

Ritual, symbol, and myth as types of religious expression, with examples selected from the nonliterate religions of the world.

General Studies: L/HU

REL 310 Western Religious Traditions. (3)

fall and spring

Religious traditions of Judaism, Christianity, and Islam, comparing their doctrinal, institutional, and ritual systems and social histories. Lecture, discussion.

General Studies: HU, H

REL 315 Hebrew Bible (Old Testament). (3)

once a year

Nature, content, background, historical situation, and message of the books of the Hebrew Bible in English translation.

General Studies: L/HU, H

REL 317 Introduction to Rabbinic Judaism. (3)

selected semesters

Historical analysis of the thought, literature, and institutions of rabbinic Judaism.

General Studies: HU, H

REL 318 Contemporary American Jewish Identities. (3)

spring

Analyzes the complexity and diversity of the contemporary American Jewish community in religious and secular affairs. Lecture, discussion. Cross-listed as SOC 375. Credit is allowed for only REL 318 or SOC 375.

General Studies: HU/SB, C

REL 320 American Religious Traditions. (3)

fall and spring

Examines the formation, development, and interaction of major American religious traditions (indigenous, African American, Asian American, and Euro-American).

General Studies: HU, C, H

REL 321 Religion in America. (3)

fall and spring

History of religion in America with attention to issues of historiography, pluralism, gender, race, ethnicity, politics, and social reform.

General Studies: HU, C, H

REL 322 Malcolm and Martin. (3)

selected semesters

Examines and contrasts the lives, ministries, contributions, and legacies of Malcolm X and Martin Luther King, Jr. Cross-listed as AFH 322. Credit is allowed for only AFH 322 or REL 322.

General Studies: HU, C

REL 323 Black Religion: A Biographical Approach. (3)

selected semesters

Examines the experiences, motivations, and contributions of a number of figures associated with African American religion. Cross-listed as AFH 323. Credit is allowed for only AFH 323 or REL 323.

General Studies: HU, C

REL 324 Spirituals and the Blues. (3)

spring

Multidisciplinary exploration of the African American religious and musical response to the North American diaspora experience. Lecture, discussion.

REL 326 U.S. Latino Religion and Culture. (3)

fall

Survey of the formative myths, rituals, and symbols of Mexican Americans, Puerto Ricans, and Cuban Americans. Lecture, discussion.

General Studies: HU, C

REL 330 Native American Religious Traditions. (3)

once a year

Presents world views and religious thought through the art, architecture, literature, music, mythology, ritual, and folklore of representative tribes in North America.

General Studies: HU, C

REL 331 History of Native American Religious Traditions. (3)

once a year

Role of religion in Native American history, including missionization; religious adaptation; and prophetic, messianic, and religious revitalization movements.

General Studies: L/HU, C, H

REL 332 South American Indian Religions. (3)

selected semesters

Introduces the sacred stories, ceremonies, and beliefs of Native South American peoples in their historical contexts.

General Studies: HU, G

REL 344 Religion and Values in Japanese Life. (3)

once a year

Japanese values expressed in the life and annual cycles of the family, local and national identities, and popular culture. Lecture, discussion.

General Studies: HU, G

REL 345 Asian Religious Traditions. (3)

once a year

Introduces the major concepts of religious beliefs, rituals, and practices in Hinduism and Buddhism. Lecture, discussion.

General Studies: HU, G

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

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REL 350 Hinduism. (3)

once a year

Studies diverse forms of Hinduism through its institutions, literature, folklore, art, and architecture.

General Studies: L/HU, G

REL 351 Buddhism. (3)

once a year

Doctrines, practices, and institutions of the Buddhist religion, emphasizing its role in the history and culture of Asian societies.

General Studies: L/HU, G

REL 355 Japanese Cities and Cultures to 1800. (3)

once a year

Relations among ideas and literary, visual, and performing arts of the ancient aristocracy, medieval samurai, and early modern townspeople. Cross-listed as HUM 310. Credit is allowed for only HUM 310 or REL 355.

General Studies: L/HU, H

REL 365 Islamic Civilization. (3)

fall

Global historical survey of Islamic cultures and societies up to the modern period. Lecture, discussion.

General Studies: HU, H

REL 366 Islam in the Modern World. (3)

spring

Examines the worldwide transformations of Islamic religion, cultures, and societies in the modern period. Lecture, discussion.

General Studies: HU, G, H

REL 371 New Testament. (3)

once a year

Origins and literature of early Christian communities; historical investigations of the types of oral and written tradition in the New Testament.

General Studies: HU

REL 372 Formation of the Christian Tradition. (3)

once a year

Origins, development, and expansion of Christianity; major themes and tensions from the New Testament world to the beginning of the Middle Ages.

General Studies: HU, H

REL 373 Women in Judaism. (3)

spring

Studies the legal, social, and cultural status of Jewish women in various historical and contemporary societies. Cross-listed as WST 372. Credit is allowed for only REL 373 or WST 372.

REL 374 Witchcraft and Heresy in Europe. (3)

selected semesters

Background, origins, and development of the Inquisition; persecution of women and marginal groups. Cross-listed as HST 361. Credit is allowed for only HST 361 or REL 374. Prerequisite: upper-division standing or instructor approval.

General Studies: L, H

REL 377 Religion in Russia. (3)

selected semesters

Examines the history of the various religious traditions of Russia and the former USSR from an interdisciplinary perspective.

General Studies: HU, H

REL 379 Religion, Nationalism, and Ethnic Conflict. (3)

selected semesters

Examines the role of religion in national and ethnic conflict in the contemporary world.

General Studies: HU, G

REL 381 Religion and Moral Issues. (3)

once a year

Manner in which human religiousness relates to social concerns, e.g., sexuality, the environment, bioethical issues, and violence.

General Studies: L/HU

REL 382 Religion, Magic, and Science. (3)

once a year

Relationship and conflict between religion, magic, and science in the West from antiquity to the present. Lecture, discussion.

General Studies: L/HU

REL 383 Origins, Evolution, and Creation. (3)

selected semesters

Examines scientific, mythic, and religious ideas relating to origins (particularly human). Place of antievolutionism and "scientific creationism" in American culture. Lecture, discussion. Cross-listed as BIO 344/HPS 311/HUM 371. Credit is allowed for only BIO 344 or HPS 311 or HUM 371 or REL 383.

REL 385 Contemporary Western Religious Thought. (3)

selected semesters

Introduces contemporary Jewish and Christian thought. Topics include religion and politics, problem of evil, interpretations of God, and feminist theology.

General Studies: L/HU

REL 386 America and the Holocaust. (3)

fall

Analyzes the historical and sociopolitical factors that shaped U.S. policy decisions regarding Germany's assault on Europe's Jews.

General Studies: HU/SB

REL 390 Women and Religion. (3)

fall and spring

Role of women in several organized religions and/or religious sects, including a study of myth and symbols as they are used to establish, maintain, and enforce sex roles within specific religions.

General Studies: HU, G

REL 400 Approaches to Religion. (3)

fall

Examines the intellectual history of academic study of religion through various theoretical approaches, major themes, and thinkers. Seminar. Prerequisite: REL 305.

REL 405 Problems in Religious Studies. (3)

fall and spring

Selected topics in religious studies; involves students in research interests of instructor. May be repeated for credit when topics vary. Seminar. Prerequisite: at least 9 semester hours of REL courses or instructor approval.

REL 410 Judaism in Modern Times. (3)

selected semesters

Variety of expressions of Judaism and Jewishness in the modern period. Topics may include American Judaism or religious responses to the Holocaust.

General Studies: HU, H

REL 415 The Jewish Mystical Tradition. (3)

selected semesters

Examines some of the esoteric lore of Judaism. Studies movements and literature such as Hasidism and Kabbalah.

General Studies: HU

REL 420 Religion in American Life and Thought. (3)

selected semesters

Influence of religion on American society, culture, and ideas; the distinctive character of religion in America. Prerequisite: REL 320 or 321 (or its equivalent).

General Studies: HU

REL 426 American Preachers and Preaching: The Sermon in America. (3)

selected semesters

Life and work of notable American preachers. Emergence of the preacher as representative of American religion. Prerequisite: REL 320 or 321 (or its equivalent).

General Studies: HU

REL 427 American Religious Thought. (3)

selected semesters

Thought of representative American religious thinkers, i.e., Jonathon Edwards, William Ellery Channing, Horace Bushnell, and Reinhold Niebuhr. Prerequisite: REL 320 or 321 (or its equivalent).

General Studies: HU, H

REL 444 Religion in Japan. (3)

once a year

Religion in Japanese history, especially the development of Japanese Buddhism, and religion in the modern transformation of Japan. Prerequisite: instructor approval.

General Studies: HU, G, H

REL 460 Studies in Islamic Religion. (3)

selected semesters

Issues in the interpretation and understanding of Islamic texts, history, society, culture, and rituals. Prerequisites: both REL 365 and Religious Studies major or only instructor approval.

General Studies: HU, G

REL 470 Religion in the Middle Ages. (3)

selected semesters

Religious aspects of medieval life and thought; variety of forms of dissent, heresy, and reform movements from the 4th to 13th centuries.

General Studies: HU, H

REL 471 Reformation and Modern Christianity. (3)

selected semesters

Protestant Reformation to contemporary Christian movements; includes factors in the dissolution of the Medieval Christian synthesis, variety of reform movements and reformation patterns, Catholic counter-reform measures, formation of liberal theology, ecumenical movement, and the World Council of Churches.

General Studies: HU, H

REL 480 Religion and Global Politics. (3)

once a year

Explores the nature and role of religion in international politics in the modern period. Lecture, discussion.

General Studies: G

REL 483 Religion and Science. (3)

spring

Investigates the correlation between science and religion as an interdisciplinary study from a historical perspective. Readings, film, lecture, discussion. Prerequisite: junior standing or instructor approval.

REL 494 Special Topics in Religious Studies. (3)

fall and spring

Open to all students. Topics may be selected from various areas. Prerequisite for freshmen: instructor approval.

REL 498 PS: Pro-Seminar in Religious Studies. (3)

selected semesters

For students with a major or minor emphasis in Religious Studies.

REL 499 Individualized Instruction. (1–3)

fall and spring

REL 501 Research Methods in Religious Studies. (3)

fall

Explores the major themes and methods in the study of religion, with primary focus on classical texts. Lecture, discussion.

REL 502 Research Methods in Religious Studies. (3)

spring

Explores the major themes and methods in the study of religion, with primary focus on contemporary texts. Lecture, discussion.

REL 591 Seminar. (3)

fall and spring

Topics on methodological issues in the study of religion. Prerequisite: Religious Studies graduate student or instructor approval.

REL 592 Research. (1–12)

fall and spring

REL 598 Special Topics. (1–4)

fall and spring

May be repeated for credit. Topics may include the following:

- Christianity. (3)
- Islam. (3)
- Judaism. (3)
- Native American Religion. (3)
- Problems in Religious Studies. (3)
- Religion in America. (3)
- Religion in East Asia. (3)
- Religion in South and Southeast Asia. (3)
- Study of Religion, Comparative Religion. (3)
- Western Religious Thought, Ethics. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

Department of Sociology

www.asu.edu/clas/sociology

480/965-3546

SS 321

Verna M. Keith, Chair

Professors: Bolin, Cobas, Hackett, Kronenfeld, Kulis, Nagasawa, Thomas, Weitz

Associate Professors: Benin, Blair, Harlan, Jacobson, Keith, Miller-Loessi, Sullivan

Assistant Professors: Agadjanian, Glick, Padilla

Senior Lecturer: Fine

SOCIOLOGY—B.A.

The B.A. degree in Sociology requires a minimum of 30 semester hours of Sociology course work and 15 hours in closely related fields. Of the 30 required hours, a minimum of 18 hours must be upper-division with at least 12 of the 18 upper-division hours taken in residence at ASU Main Campus. All upper-division courses in the major must be completed with a grade of “C” or higher. The following courses are required:

SOC 101 Introductory Sociology <i>SB</i>	3
or SOC 301 Principles of Sociology <i>SB</i> (3)	
SOC 390 Social Statistics I <i>CS</i>	3
SOC 391 Sociological Research <i>SB</i>	3
SOC 483 History of Social Thought <i>SB</i>	3
or SOC 485 Sociology of Knowledge <i>L/SB</i> (3)	
or SOC 486 Contemporary Theory <i>SB</i> (3)	
Total	12

Sociology majors may complete the remaining 18 required hours through selecting one of two options. For a general sociology degree, students must choose six courses that sample at least three of the following seven sociology content areas:

1. family;
2. intergroup relations and social psychology;
3. political/comparative-historical;
4. social problems and processes;
5. stratification/occupations/organization;
6. urban sociology/demography; or
7. race and ethnicity.

If majors desire a more focused preparation in a specialized area, they may complete the remaining 18 hours in one

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

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of five focus areas: family issues, urban issues, diversity issues, work/organizational issues, and health issues. Students choosing this option must complete two required focus area courses and select the remaining four courses from a list of optional courses within that focus area. SOC 484 Internships are available within the focus area option for those who qualify.

Information concerning the two options for fulfilling major requirements is available in the Department of Sociology office in SS 321, and on the Internet at www.asu.edu/clas/sociology/undergraduate/advising.

MINOR IN SOCIOLOGY

The minor in Sociology requires 18 hours, of which 12 hours must be upper-division courses, with at least six upper-division hours completed at ASU Main Campus. The required courses are as follows:

SOC 101 Introductory Sociology <i>SB</i>	3
or SOC 301 Principles of Sociology <i>SB</i> (3)	
SOC 391 Sociological Research <i>SB</i>	3
or SOC 483 History of Social Thought <i>SB</i> (3)	
or SOC 485 Sociology of Knowledge <i>L/SB</i> (3)	
or SOC 486 Contemporary Theory <i>SB</i> (3)	
Total	6

The remaining four courses consist of sociology electives.

SECONDARY EDUCATION—B.A.E.

Social Studies. The major teaching field of social studies education consists of 63 semester hours, of which 30 hours may be in criminal justice, economics, geography, history, political science, psychology, and sociology and are exactly those courses required for the B.A. degree in Sociology. Of the remaining hours, two groups of 12 hours each and one of six hours are generally taken in related social sciences plus SED 480 Special Methods of Teaching Social Studies.

The minor teaching field consists of 24 semester hours, at least six of which must be upper division. SOC 101 Introductory Sociology or SOC 301 Principles of Sociology, and SOC 270 Racial and Ethnic Relations or SOC 474 African Americans in Modern Society are required. The remaining 18 hours must be approved by the sociology advisor in consultation with the student and must include at least one course from at least four of the following six areas:

1. family;
2. intergroup relations and social psychology;
3. political/comparative-historical;
4. social problems and processes;
5. stratification/occupations/organization; or
6. urban sociology/demography.

For more information, call the Office of Student Services in the College of Education at 480/965-5555.

GRADUATE PROGRAMS

The faculty in the Department of Sociology offer programs leading to the M.A. and Ph.D. degrees. See the *Graduate Catalog* for requirements.

SOCIOLOGY (SOC)

SOC 101 Introductory Sociology. (3)

fall, spring, summer

Fundamentals of sociology, organization of human groups and society, processes of interaction, and social change. Credit is allowed for only SOC 101 or 301. 2 hours lecture, 1 hour discussion.

General Studies: SB

SOC 220 Sport and Society. (3)

fall and spring

Examines sports in American society as a source of socialization and an institution where gender, race/ethnicity, and class interact. Prerequisite: SOC 101.

General Studies: SB

SOC 270 Racial and Ethnic Relations. (3)

fall, spring, summer

Problems of minorities in heterogeneous societies. Evaluates theories of prejudice and research dealing with discrimination, desegregation, and assimilation. Lecture, discussion. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB, C

SOC 301 Principles of Sociology. (3)

fall, spring, summer

Intensive and critical analysis of the concepts of sociology. Credit is allowed for only SOC 301 or 101.

General Studies: SB

SOC 312 Sociology of Adolescence. (3)

fall, spring, summer

Cultural values and the social processes that help explain the development of the phenomenon of modern adolescence, including investigation of adolescent subcultures and cross-cultural references. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 315 Courtship and Marriage. (3)

fall, spring, summer

Overview of courtship, marriage, and related processes, focusing on problematic aspects of these institutions from the sociological perspective. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 318 Overview of Aging. (3)

selected semesters

Multidisciplinary introduction to gerontology. Explores the characteristics, experiences, needs, and problems of older persons. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 321 Sociology of Work. (3)

fall and spring

Social and cultural analysis of industry. Occupational roles, status, and social participation of workers. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 331 Environmental Sociology. (3)

fall and spring

Analyzes human organizational responses to population growth, technological change, and environmental stressors on both a national and global scale. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB, G

SOC 332 Urban Sociology. (3)

fall and spring

Growth, characteristics, and problems of the modern city. Prerequisite: SOC 101 or 301.

General Studies: SB, G

SOC 333 Population. (3)

fall and spring

Theories of population change; births, deaths, and migration; population policies. Prerequisite: SOC 101 or 301.

General Studies: SB, G

SOC 334 Technology and Society. (3)

fall

Development of technology in relation to society, work, science, the environment, public health, and cultural values related to social change. Lecture, discussion. Prerequisite: SOC 101 or 301 or instructor approval.

SOC 340 The Sociology of Deviance. (3)

fall, spring, summer

Sociological analysis of stigmatized behaviors and conditions, including the causes, effects, and management of stigma. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 341 Modern Social Problems. (3)

fall, spring, summer

Race relations, poverty, unemployment, and other current issues. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 352 Social Change. (3)

selected semesters

Patterns of social change, resistance to change, and change-producing agencies and processes. Prerequisite: SOC 101 or 301.

General Studies: SB, G, H

SOC 360 Sociological Psychology. (3)

fall and spring

Interaction patterns between the sociocultural order and individuals; socialization process; norms, roles, and statuses; collective behavior. Prerequisite: SOC 101 or 301.

General Studies: SB

SOC 361 Variant Sexuality. (3)

fall

Sociological research and theories dealing with homosexuality, transvestism, transsexualism, and other variations in sexual orientation and gender identity. Prerequisite: SOC 101 or 301.

General Studies: SB

SOC 363 Men and Masculinity. (3)

selected semesters

Sociological analysis of how masculine identity is defined, negotiated, and variously constructed depending upon class, ethnicity, age, and sexual orientation. Prerequisites: SOC 301; WST 100 (or 300).

General Studies: SB

SOC 365 The Sociology of Mass Communication. (3)

fall and spring

Sociological exploration of the major mass media as a communicative process in American society. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 368 Sociology of Everyday Life. (3)

selected semesters

Examines routine everyday behavior as it relates to problems of social order, control, change, identity, and relationships. Prerequisite: SOC 101 or 301 or instructor approval.

SOC 375 Contemporary American Jewish Identities. (3)

spring

Analyzes the complexity and diversity of the contemporary American Jewish community in religious and secular affairs. Lecture, discussion. Cross-listed as REL 318. Credit is allowed for only REL 318 or SOC 375.

General Studies: HU/SB, C

SOC 390 Social Statistics I. (3)

fall, spring, summer

Descriptive and inferential statistical methods for analysis of social data. Computer applications. Prerequisites: SOC 101 (or 301); a General Studies MA course.

General Studies: CS

SOC 391 Sociological Research. (3)

fall, spring, summer

Methods of sociological research, including the fundamental assumptions underlying research and some practical experience in research design, data collection techniques, and data analysis. Prerequisites: both SOC 101 (or 301) and 390 or only instructor approval.

General Studies: SB

SOC 415 The Family. (3)

fall, spring, summer

Family considered from the institutional viewpoint; its historical development and its adaptation to a changing culture; the family system in many cultures. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 416 Marriage Problems in Contemporary Society. (3)

spring

Marital and family problems in today's society from the viewpoint of personal and cultural adjustment. Prerequisites: both SOC 101 (or 301) and an additional 3 hours in sociology or only instructor approval.

General Studies: L/SB

SOC 417 Family Violence. (3)

fall and spring

Current research and theories about domestic violence including child maltreatment, spousal aggression, and courtship violence. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 418 Aging and the Life Course. (3)

fall and spring

Social aspects of aging. Theoretical and methodological perspectives and problems of aging such as life satisfaction, retirement, and adjustment to role loss. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 420 Sociology of Religion. (3)

selected semesters

Interrelationship of culture, society, and religion; religion and social stratification; religious, economic, and political institutions; social change and religion. Emphasizes American society and institutions. Prerequisites: both ASB 102 (or SOC 101 or 301) and an additional 3 hours in sociology or only instructor approval.

General Studies: L/SB

SOC 421 Education and Society. (3)

fall

Uses contemporary sociological perspectives to examine effects of schools and schooling on individuals and society. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 422 Sociology of Complex Organizations. (3)

spring

Sociological studies of government agencies, industrial firms, labor unions, military establishments, and other large-scale organizations. Prerequisite: 6 hours in sociology (including SOC 101 or 301) or instructor approval.

General Studies: L/SB

SOC 423 Social Class and Stratification. (3)

spring

Classical and contemporary theories about who gets what and why. Examines social and economic inequalities by class, gender, and race/ethnicity. Lecture, discussion. Prerequisites: both SOC 101 (or 301) and an additional 3 hours in sociology or only instructor approval.

General Studies: L/SB

SOC 424 Women and Health. (3)

spring in odd years

Women as health care workers and issues of health, illness, and health care for women. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: L/SB

SOC 427 Sociology of Health and Illness. (3)

fall and spring

Social aspects of physical and mental illness and sociological analysis of the health care system and its practitioners. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: L/SB

SOC 429 Sociology of Law. (3)

selected semesters

Examines law as an institution; its origins, operations, and consequences. Emphasizes contemporary legal issues and problems. Prerequisite: SOC 101 or 301.

General Studies: SB

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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SOC 433 Applied Demography. (3)

spring

Science of population analysis. Covers techniques for measuring fertility, mortality, migration, and population composition. Lecture, projects. Prerequisite: SOC 101 or 301 or instructor approval.
General Studies: SB

SOC 446 Sociology of Crime. (3)

selected semesters

Process of criminalization, exploring the behavior of the definers of crime, and the behavior of those defined as criminals. Prerequisites: both SOC 101 (or 301) and 340 or only instructor approval.
General Studies: SB

SOC 448 Epidemics and Society. (3)

fall

Provides a perspective on how epidemics occur, are perceived in society, and affect it. Prerequisite: SOC 101 or 301 or instructor approval.
General Studies: SB, G

SOC 451 Comparative Sociology. (3)

selected semesters

Cross-cultural study of basic social institutions; the methodology of cross-cultural research. Prerequisite: ASB 102 or SOC 101 (or 301) or instructor approval.
General Studies: SB, G

SOC 455 Social Movements. (3)

selected semesters

Surveys theoretical approaches and research on historical and recent social movements. Emphasizes cultural, political, and social change. Prerequisite: SOC 101 or 301 or instructor approval.
General Studies: SB

SOC 456 Political Sociology. (3)

selected semesters

Social factors associated with voting; nature and structure of the electorate and political parties and the nature of national and international power structure. Prerequisite: SOC 101 or 301 or instructor approval.
General Studies: SB, G

SOC 464 Sociology of Women. (3)

spring

Sociological analysis of the development, nature, and consequences of women's position in contemporary society. Lecture, discussion. Prerequisite: SOC 101 or 301 or instructor approval.
General Studies: L/SB, C

SOC 474 African Americans in Modern Society. (3)

spring

Social and cultural heritage of black Americans; achievements and current trends. Lecture, discussion. Prerequisite: SOC 101 or 301 or instructor approval.
General Studies: SB, C

SOC 483 History of Social Thought. (3)

fall, spring, summer

Social thought in human culture. Background of modern sociology. Prerequisite: SOC 101 or 301.
General Studies: SB

SOC 484 Internship. (1–12)

fall and spring

See Department of Sociology advisor.

SOC 485 Sociology of Knowledge. (3)

selected semesters

Relationship between social conditions and the development of knowledge in modern society. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: L/SB

SOC 486 Contemporary Theory. (3)

selected semesters

Contemporary issues and crises in social theory with major focus on particular theorists. Ideological factors in theory, philosophical issues, the nature of theory and its relationship with methodology. Prerequisite: SOC 101 or 301 or instructor approval.

General Studies: SB

SOC 500 Research Methods. (1–12)

spring

SOC 501 Practicum in Survey Research. (3)

fall

Research practicum in survey field work, analysis, and reporting in the Phoenix Area Study. Prerequisite: SOC 391 (or its equivalent).

SOC 502 Practicum in Survey Research. (3)

spring

Continuation of SOC 501. Prerequisite: SOC 501.

SOC 503 Sociology as a Profession I. (1)

fall

Becoming and working as a sociologist, including how to write a vita, choose a thesis topic, or find dissertation data. Prerequisite: graduate Sociology major.

SOC 504 Sociology as a Profession II. (1)

spring

Becoming and working as a sociologist, including how to write a vita, choose a thesis topic, or find dissertation data. Prerequisite: graduate Sociology major.

SOC 505 Applied Regression Analysis. (3)

fall and spring

Multiple linear regression topics relevant to sociological data analysis. Computer applications. Prerequisites: SOC 390 (or its equivalent); proficiency examination.

SOC 507 Social Statistics IIA: Categorical Data Analysis. (3)

fall or spring

Logistic regression and related topics relevant to categorical data analysis in sociology. Computer applications. Prerequisite: SOC 505 or instructor approval.

SOC 508 Social Statistics IIB: Structural Equation Analysis. (3)

fall or spring

Teaches structural equation models using LISREL and other computer packages. Topics include multiple group analyses and ordinal endogenous variable models. Prerequisite: SOC 505 or instructor approval.

SOC 509 Social Statistics IIC: Event History Analysis. (3)

fall or spring

Proportional hazards models and other methods for analyzing longitudinal data and establishing hazard rates of events for exploratory variables. Prerequisite: SOC 505 (or its equivalent).



The ASU marching band participates in the Homecoming Parade.

Tim Trumble photo

SOC 515 Studies of the Family. (3)

spring

Current developments in the study of marriage and the family. Prerequisite: instructor approval.

SOC 585 Development of Sociology. (3)

fall

Major sociological theorists, including Durkheim, Weber, Marx, Parsons, Merton, Dahrendorf, Homans, and Mead. Prerequisite: instructor approval.

SOC 586 Contemporary Sociological Theory. (3)

spring

Analyzes major theories, including structural-functional, conflict, social exchange, symbolic interaction, and role theory. Prerequisite: instructor approval.

SOC 587 Contemporary Issues in Sociology. (3)

selected semesters

Philosophy of social science. Contemporary issues in sociological theory and methods. Prerequisite: instructor approval.

SOC 588 Methodological Issues in Sociology. (3)

fall

Basic methodological issues in the application of scientific methods to the study of human social life. Emphasizes limited number of major works, with contrasting approaches to issues.

SOC 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

Department of Speech and Hearing Science

www.asu.edu/clas/shs

480/965-2374

LL 173A

David Ingram, Chair

Professors: S. Bacon, Dorman, D. Ingram, Sinex, Wilcox

Associate Professor: Liss

Assistant Professors: Azuma, Gray

Clinical Professor: Mathy

Clinical Associate Professors: C. Bacon, Brown, Mintz, Remson

Clinical Assistant Professors: K. Ingram, McBride, Wexler

Lecturers: Amann, Barto, Howard, O'Brien, Quinn, Riggs, Vicencio

SPEECH AND HEARING SCIENCE—B.S.

The B.S. degree in Speech and Hearing Science consists of 43 semester hours of speech and hearing science courses emphasizing the developmental and scientific aspects of language, speech, and hearing. The following courses, or their approved equivalents, are required:

SHS 250 Introduction to Phonetics	3
SHS 310 Anatomical and Physiological Bases of Speech	3

SHS 311 Physical and Physiological Bases of Hearing	3
SHS 367 Language Science <i>SB</i>	3
SHS 375 Speech Science	3
SHS 376 Psychoacoustics	3
SHS 384 Hearing Disorders	3
SHS 401 Introduction to Audiologic Evaluation	3
SHS 402 Modifying Communicative Behavior	3
Choose two from the courses below	6
SHS 431 Developmental Speech Disorders (3)	
SHS 470 Developmental Language Disorders (3)	
SHS 485 Acquired Speech and Language Disorders (3)	
SHS 450 Observation	1
SHS 465 Speech and Language Acquisition <i>SB</i>	3
SHS 496 Aural Rehabilitation	3
Total	40

The remaining speech and hearing science courses to complete the major are determined by the students in consultation with an advisor. A list of approved electives is available through the department. Supporting courses from related fields must include the following or their equivalents:

BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
MAT 170 Precalculus <i>MA</i>	3
PGS 101 Introduction to Psychology <i>SB</i>	3
PHY 101 Introduction to Physics <i>SQ</i>	4
PSY 230 Introduction to Statistics <i>CS</i>	3
Total	17

PSY 290 Research Methods is strongly recommended.

MINOR IN SPEECH AND HEARING SCIENCE

The minor in Speech and Hearing Science consists of 24 semester hours with the following classes required:

SHS 105 Introduction to Human Communication Disorders	3
SHS 250 Introduction to Phonetics	3
SHS 310 Anatomical and Physiological Bases of Speech	3
SHS 311 Physical and Physiological Bases of Hearing	3
Choose one from the courses below	3
SHS 367 Language Science <i>SB</i> (3)	
SHS 375 Speech Science (3)	
SHS 376 Psychoacoustics (3)	

The remainder of the 24 credits must come from the following courses:

SHS 320 Facilitating Speech and Language Development in Early Childhood	3
SHS 384 Hearing Disorders	3
SHS 401 Introduction to Audiologic Evaluation	3
SHS 402 Modifying Communicative Behavior	3
SHS 431 Developmental Speech Disorders	3
SHS 465 Speech and Language Acquisition <i>SB</i>	3
SHS 470 Developmental Language Disorders	3
SHS 485 Acquired Speech and Language Disorders	3
SHS 496 Aural Rehabilitation	3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

COLLEGE OF LIBERAL ARTS AND SCIENCES

GRADUATE PROGRAMS

The faculty in the Department of Speech and Hearing Science offer programs leading to the M.S. degree in Communication Disorders and Ph.D. degree in Speech and Hearing Science. See the *Graduate Catalog* for requirements.

SPEECH AND HEARING SCIENCE (SHS)

SHS 101 American Sign Language I. (4)

fall and spring

Basic receptive/expressive conversational skills; basic grammar and syntax rules. Orientation to deafness and deaf culture. Lecture, drill, practice, lab.

SHS 102 American Sign Language II. (4)

fall and spring

Further development of receptive/expressive conversation skills in ASL; finger spelling. Continued exploration of deaf culture. Lecture, drill, practice, lab. Prerequisite: SHS 101.

SHS 105 Introduction to Human Communication Disorders. (3)

fall and spring

Introduces hearing, language, and speech problems in children and adults. Lecture, demonstration.

SHS 201 American Sign Language III. (4)

fall and spring

Continued development of fluency in ASL with emphasis on more abstract concepts and the ability to narrate events. Lecture, discussion, drill, lab. Prerequisite with a grade of "C" or higher: SHS 102.

SHS 202 American Sign Language IV. (4)

fall and spring

Further development of fluency in ASL with emphasis on literature, folklore, and signing narratives with multiple characters. Lecture, discussion, drill, lab. Prerequisite with a grade of "C" or higher: SHS 201.

SHS 250 Introduction to Phonetics. (3)

fall

Introduces English phonetics with emphasis on phonetic transcription, articulation, phonology, and disorders of speech.

SHS 310 Anatomical and Physiological Bases of Speech. (3)

fall

Noncadaveric study of anatomical systems that underlie human speech and language, including respiration, phonation, articulation, and related nervous system processes. Prerequisite: BIO 201.

SHS 311 Physical and Physiological Bases of Hearing. (3)

fall

Studies the physical characteristics of sound and of the structure and function of the human auditory system. Prerequisites: BIO 201; PHY 101.

SHS 320 Facilitating Speech and Language Development in Early Childhood. (3)

fall and spring

Speech and language development and strategies for facilitating communication skills in early childhood educational settings.

SHS 367 Language Science. (3)

fall

Normative aspects and integration of language structure, comprehension, and production in children and adults.

General Studies: SB

SHS 375 Speech Science. (3)

spring

Normative aspects of speech, hearing, and language. Prerequisites: SHS 310, 311.

SHS 376 Psychoacoustics. (3)

spring

Introduces acoustics, cochlear anatomy and physiology, and the perception of sound. Prerequisite: SHS 311 or instructor approval.

SHS 384 Hearing Disorders. (3)

fall

Pathologies of the ear and associated peripheral and central hearing disorders: characteristics, management, and effects on communication. Prerequisites: SHS 311, 376.

SHS 394 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Brain, Memory, and Language

SHS 401 Introduction to Audiologic Evaluation. (3)

fall

Measurement of the basic audiologic test battery, including audiograms, immittance, masking, and speech recognition. Prerequisites: SHS 311 and 376 and 384 (or their equivalents).

SHS 402 Modifying Communicative Behavior. (3)

fall

Principles and techniques of modifying speech and language behavior. Prerequisite: SHS 250 (or its equivalent).

SHS 431 Developmental Speech Disorders. (3)

fall

Introduces the nature of articulation, fluency, resonance, and voice disorders in childhood. Prerequisites: SHS 250 and 310 (or their equivalents).

SHS 450 Observation. (1)

fall and spring

Opportunity to obtain observation experience at the ASU Speech and Hearing Center or at external sites. Prerequisite: instructor approval.

SHS 465 Speech and Language Acquisition. (3)

spring

Speech and language development in the normal child. Prerequisite: SHS 367 (or its equivalent).

General Studies: SB

SHS 470 Developmental Language Disorders. (3)

fall

Introduces the nature and treatment of language disorders in children. Prerequisite: SHS 465 or instructor approval.

SHS 483 Professional Issues in Communication Disorders. (3)

fall

Topics related to professional certification, accreditation, code of ethics, graduate education, and other issues in speech-language pathology and audiology.

SHS 485 Acquired Speech and Language Disorders. (3)

spring

Introduces acquired speech and language disorders across the lifespan. Prerequisites: SHS 250, 310.

SHS 494 Special Topics. (1–4)

fall and spring

May be repeated for credit. Topics may include the following:

- Hearing Disorders. (3)
- Research. (3)
- Speech and Language Disorders. (3)

Prerequisite: instructor approval.

SHS 496 Aural Rehabilitation. (3)

spring

Approaches to aural rehabilitation of children and adults. Introduces educational audiology and assistive listening devices. Prerequisites: SHS 375 and 376 and 401 (or their equivalents).

SHS 501 Introduction to Audiologic Evaluation. (3)

fall

Measurement of the basic audiologic test battery, including audiograms, immittance, masking, and speech recognition. Prerequisites: SHS 311 and 376 and 384 (or their equivalents).

SHS 502 Differential Diagnosis for Audiology. (4)

fall

Differential diagnosis of cochlear and retrocochlear disorders, and assessment of vestibular system. 3 hours lecture, 2 hours lab. Prerequisite: SHS 401 or 501 (or its equivalent).

SHS 504 Hearing Aids. (4)

fall

Operation, application, and fitting of amplification devices for the hearing impaired. 3 hours lecture, 2 hours lab. Prerequisite: SHS 401 or 501 (or its equivalent).

SHS 508 Pediatric Audiology. (3)

fall

Audiologic assessment, screening, and development considerations for infants and young children. Prerequisite: SHS 401 or 501 (or its equivalent).

SHS 511 Auditory Perception by the Hearing Impaired. (3)

fall

Studies how and why sensorineural hearing loss alters the perception of sound. Prerequisite: SHS 376 or instructor approval.

SHS 512 Medical Aspects of Speech and Hearing. (3)

spring

Correlation of history and physical findings with pathologic physiology and test results in speech and hearing abnormalities.

SHS 515 Audiologic Instrumentation and Calibration. (3)

fall

Electronic instruments used to produce, modify, and measure characteristics of sound. Measurement standards and methods for calibration of audiologic equipment. Lecture, lab. Prerequisite: SHS 401 or 501 (or its equivalent).

SHS 516 Auditory-Evoked Potentials. (4)

spring

Continuation of SHS 502, including electrophysiologic assessment of peripheral and central auditory nervous system. Lecture, lab. Prerequisite: SHS 502.

SHS 545 Speech Perception by the Hearing Impaired. (3)

fall

Speech perceptual problems of the hearing impaired including those who have cochlear implants. Prerequisite: SHS 375 or instructor approval.

SHS 552 Otoacoustic Emissions as a Diagnostic Tool. (3)

spring

Studies the types of otoacoustic emissions, their theoretical implications and application to clinical diagnostics. Lecture, discussion, lab. Prerequisite: SHS 376 or instructor approval.

SHS 555 Cochlear Implants. (3)

spring

Current status of cochlear implant research and development. Prerequisites: both SHS 504 and 545 or only instructor approval.

SHS 565 Speech and Language Acquisition. (3)

spring

Speech and language development in the normal child. Prerequisite: SHS 367 (or its equivalent).

SHS 566 Psychology of Language. (3)

spring

Psycholinguistic study of the production and comprehension of language across the lifespan.

SHS 567 Neural Bases of Communication Disorders. (3)

fall

Neuroscience and its application to matters of normal and disordered communication. Pre- or corequisite: SHS 310 (or its equivalent).

SHS 570 Communication Disorders and Multicultural Populations. (3)

spring

Studies racial and ethnic biases and the communication behaviors and disorders in various cultural groups.

SHS 571 Augmentative Communication and Language Programming. (3)

fall

Focuses on individuals across the age span who are unable or who are at risk for being unable to communicate with spoken language. Lecture, lab.

SHS 572 Language Assessment and Intervention in Early Childhood. (3)

fall

Focuses on the birth to 5-year-old population who are at risk for or who have communication and language disabilities. Prerequisite: SHS 470 (or its equivalent).

SHS 573 Language Assessment and Intervention with School-Age Populations. (3)

spring

Focuses on later language development, linguistic demands of academic settings, assessment and intervention strategies for older children and adolescents. Prerequisite: SHS 565 (or its equivalent).

SHS 574 Fluency Disorders and Treatment. (3)

fall

Presents phenomena, etiology, assessment, and theories of stuttering, followed by various treatment procedures for children and adults who stutter. Prerequisite: SHS 431 (or its equivalent).

SHS 575 Aphasia and Related Neurogenic Language Disorders. (3)

fall

Assessment and treatment of acquired neurolinguistic impairment. Prerequisite: SHS 567.

SHS 576 Neuromotor Speech Disorders. (3)

spring

Evaluation and treatment of the dysarthrias and apraxia of speech. Emphasizes acquired adult disorders.

SHS 577 Craniofacial Disorders of Communication. (3)

spring

Communication disorders related to anomalies of the craniofacial structures, including orofacial clefting of the lip and palate. Prerequisite: SHS 310 (or its equivalent).

SHS 578 Disorders of Voice. (3)

summer

Communication disorders related to dysfunction of the phonatory and resonance systems of voice production, assessment, and treatment. Prerequisite: SHS 310 or instructor approval.

SHS 579 Feeding and Swallowing Disorders Across the Lifespan. (3)

fall

Focuses on individuals across the age span who have feeding and/or swallowing disorders. Presents assessment and treatment strategies. Prerequisite: SHS 567.

SHS 580 Clinical Practicum. (1–6)

fall, spring, summer

Supervised practicum in audiology or speech-language pathology. 1 hour staffing and 3 hours of client contact per week per hour of credit. May be repeated for credit. Prerequisites: instructor approval; student must not have provisional admission status.

SHS 581 Right Hemisphere Syndrome, Traumatic Brain Injury, and Dementia. (3)

spring

Studies the nature, characteristics, and clinical management of cognitive and communicative impairments accompanying right hemisphere damage, TBI, and dementia. Prerequisite: SHS 567.

SHS 582 Differential Diagnosis of Communication Disorders. (3)

spring

Procedures for assessing speech/language disorders in children and adults. 3 hours lecture, 2 hours lab. Prerequisites: SHS 250 and 310 and 465 and 567 (or their equivalents).

SHS 584 Internship. (1–6)

fall, spring, summer

Off-campus directed experiences in audiology or speech-language pathology. May be repeated for credit. Prerequisites: SHS 580; student must consult with coordinator before registration.

SHS 585 Articulation and Phonology: Assessment and Intervention. (3)

spring

Assessment and treatment of developmental articulation and phonological disorders. Prerequisites: SHS 250 and 310 (or their equivalents).

SHS 591 Seminar. (1–12)

fall, spring, summer

Topics may include the following:

- Central Auditory Mechanisms and Learning Impairment. (3)
spring
- Cognitive and Linguistic Interactions in Adult Neurogenic Disorders. (3)
fall
- Fundamentals of Vestibular Evaluations. (3)
fall
- Research Methods in Communication Disorders. (3)
spring

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

SHS 596 Aural Rehabilitation. (3)

spring

Approaches to aural rehabilitation in children and adults. Introduces educational audiology and assistive listening devices. Prerequisite: SHS 401 or 501 (or its equivalent).

SHS 792 Research. (1–12)

selected semesters

SHS 799 Dissertation. (1–15)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Women's Studies Program

www.asu.edu/clas/womens_studies

480/965-2358

ECA 209

Kathleen J. Ferraro, Director

CORE FACULTY

Professors: Koblitz, Rothschild;

Associate Professors: Ferraro, Scheiner;

Assistant Professors: Anderson, Leong, Lind

AFFILIATED FACULTY

Anthropology

Professors: Brandt, Koss-Chiono

Architecture

Assistant Professor: Fish Ewan

Art

Professors: Codell, Fahlman, Magenta;

Associate Professors: Schleif, Wolfthal

Asian Pacific American Studies

Assistant Professor: de Jesús

Chicana and Chicano Studies

Assistant Professor: Gutierrez

Curriculum and Instruction

Professors: Edelsky, Guzzetti

English

Professors: Adams, Crowley, Gutierrez, Lightfoot, Nilsen,

Rhodes, Richard, Sensibar;

Associate Professors: Chancy, DeLamotte, Horan, Pritchard, Tohe;

Assistant Professor: Webb Peterson;

Senior Lecturers: Heenan, Norton

Exercise and Wellness (ASU East)

Associate Professor: Swan

Exercise Science and Physical Education

Professor Emerita: Wells

Family and Human Development

Professor: Martin

Geography

Professor: Burns

History

Professors: Fuchs, Lavrin, Warnicke;

Associate Professors: Gray, Gullett, Stoner

Human Communication

Professors: Carlson, Nakayama, Valentine;

Assistant Professors: Davis, Martinez

Interdisciplinary Studies

Lecturer: Nelson

Justice Studies

Professors: Jurik, Romero, Zatz;

Associate Professor: Menjivar;

Assistant Professor: Adelman

Languages and Literatures

Regents' Professor: Foster;

Professors: Losse, Williams;

Associate Professors: Pritchard, Tompkins;

Assistant Professors: Choi, George, Gruzinska, Rees, Orlich

Management

Associate Professor: Cook

Music

Professor: Williamson

Philosophy

Associate Professor: McGregor

Psychology

Regents' Professors: Eisenberg, Russo;

Professor: Chassin;

Associate Professor: Saenz

Psychology in Education

Professors: Bernstein, Hackett, Kerr;

Professor Emerita: Mclsaac;

Associate Professor: Moore

Recreation Management and Tourism

Professor: Allison

Religious Studies

Professor: Feldhaus;

Associate Professor: Fessenden

Social Work

Professors: Coudroglou, Segal;

Associate Professors: Brzuzy, Gerdes;

Assistant Professor: Hurdle

Sociology

Professors: Kronenfeld, Kulis, Weitz;

Associate Professors: Benin, Miller-Loessi;

Assistant Professor: Agadjanian

Theatre

Professor: Knapp;

Assistant Professor: Woodson

Women's Studies (ASU West)

Professor: Stage

The Women's Studies Program is an interdisciplinary university program housed in the College of Liberal Arts and Sciences. Information on faculty affiliation is provided for reference.

WOMEN'S STUDIES—B.A.

Women's Studies provides our students with an intensive interdisciplinary liberal arts education that enables them to write well, think critically, and analyze problems effectively. Our students take a variety of courses, including a capstone seminar requiring original research and writing, and an internship that helps them prepare for life after college. Original undergraduate research is encouraged, and some courses involve students in studying community problems and formulating policy solutions.

The B.A. degree in Women's Studies consists of 45 semester hours (with a grade of "C" or higher), of which 33 must be taken from WST or WSH prefixes or from other prefixes designated as part of the major. The other 12 must be in closely related fields chosen in consultation with an academic advisor. At least 36 of the 45 semester hours required for the major must be completed in upper-division courses.

All Women's Studies majors are encouraged to compile a portfolio to leave on file in the Women's Studies Program office upon graduation.

Required Courses. Students must complete the following courses:

WST 100 Women and Society <i>SB, C</i>	3
or WST 300 Women in Contemporary Society <i>SB, C</i> (3)	
WST 377 Creation of Feminist Consciousness <i>L, C</i>	3
WST 378 Contemporary Feminist Theory <i>L, C</i>	3
WST 484 Internship	3
WST 498 PS: Theoretical Issues in Women's Studies <i>L</i>	3
Total	15

Students must also complete two other courses: (1) an upper-division course that provides a humanities or fine arts perspective on the lives and contributions of women; and (2) an upper-division course on women in non-Western societies or a course on minority or ethnic women in American society.

A list of approved courses is available each term in the program office.

Related Fields. Students must complete nine semester hours in fields related to WST chosen from cross-listed or interdisciplinary courses or in consultation with the Women's Studies advisor.

Electives in Closely Related Fields. Majors must complete 12 hours of courses in fields closely related to women's studies. These courses may be used to satisfy university General Studies requirements and graduation requirements in the College of Liberal Arts and Sciences. WST and WSH courses may not be used as related fields.

MINOR IN WOMEN'S STUDIES

The Women's Studies minor consists of 18 semester hours, 12 of which must be in the upper division. The following courses are required:

WST 100 Women and Society <i>SB, C</i>	3
or WST 300 Women in Contemporary Society <i>SB, C</i> (3)	
WST 377 Creation of Feminist Consciousness <i>L, C</i>	3
or WST 378 Contemporary Feminist Theory <i>L, C</i> (3)	
Total	6

Twelve additional hours of approved women's studies courses must be taken after consultation with the women's studies advisor.

Students pursuing a minor must register at least one semester before graduation and are encouraged to meet with the women's studies academic advisor early in their course of studies.

CERTIFICATE PROGRAM IN WOMEN'S STUDIES

The certificate program is equivalent to an interdisciplinary minor, consisting of 18 semester hours, and is open to graduate as well as undergraduate students. Students pursuing a certificate must consult with the women's studies advisor. See "[Women's Studies](#)," page 339, for a description of the certificate program.

GRADUATE STUDIES

Although the Women's Studies Program does not offer a graduate degree, it is possible to pursue a graduate degree in some existing programs with a thesis or dissertation topic related to women's studies. For more information, contact a Women's Studies academic advisor.

WOMEN'S STUDIES HUMANITIES (WSH)

WSH 413 Lesbian Culture: Images and Realities. (3)
spring

Explores aspects of lesbian experience from sociological, psychological, historical, political, and literary critical perspectives. Lecture, discussion. Prerequisite: WST 100 or 300 or instructor approval.
General Studies: HU, C

WSH 464 Voices and Visions. (3)
fall and spring

Explores the contributions of visionary women in the humanities; topics vary from semester to semester. May be repeated for credit when topics vary. Lecture, discussion. Prerequisite: WST 100 or 300 or instructor approval.
General Studies: HU, C

WSH 470 Women and Popular Culture. (3)
spring

Interdisciplinary examination of how gender is constructed in popular cultural forms. Lecture, discussion. Prerequisite: WST 100 or 300 or instructor approval.
General Studies: HU, C

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

COLLEGE OF LIBERAL ARTS AND SCIENCES

WOMEN'S STUDIES (WST)

WST 100 Women and Society. (3)

fall, spring, summer

Interdisciplinary introduction examining critical issues in women's studies. Credit is allowed for only WST 100 or 300.

General Studies: SB, C

WST 294 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Women and Social Action Fee.

WST 300 Women in Contemporary Society. (3)

fall, spring, summer

Intensive interdisciplinary examination of such topics as gender roles, work, education, sexuality, politics, health, and law. Credit is allowed for only WST 300 or 100.

General Studies: SB, C

WST 313 Women and Sexuality. (3)

fall and spring

Explores feminist theories about women's sexuality and the relationship of these theories and related research to women's experience. Lecture, discussion. Prerequisite: WST 100 or 300 or instructor approval.

General Studies: SB

WST 360 Women as Healers. (3)

spring

Examines the role of women as caregivers, healers, physicians, midwives, and nurses in different cultures and historical periods. Lecture, discussion.

WST 372 Women in Judaism. (3)

spring

Studies the legal, social, and cultural status of Jewish women in various historical and contemporary societies. Cross-listed as REL 373. Credit is allowed only for REL 373 or WST 372.

WST 373 Latina/Chicana Issues. (3)

fall and spring

Examines the roles Mexican American, Chicana, and/or Latina immigrant women play historically, socially, and politically in the United States. Prerequisite: WST 100 or 300 or instructor approval.

General Studies: SB, C

WST 375 Women and Social Change. (3)

fall and spring

Combines research and theory on a contemporary social problem with a community action experience focusing on women's social change initiatives. Lecture, field placement. Prerequisite: WST 100 or 300 or instructor approval.

General Studies: SB, C

WST 377 Creation of Feminist Consciousness. (3)

fall

Explores the development of feminist theory from its roots to 1960.

Prerequisite: WST 100 or 300 or instructor approval.

General Studies: L, C

WST 378 Contemporary Feminist Theory. (3)

spring

Contemporary feminist theories and exploration of the intersection of gender, race, ethnicity, and class through critical analysis. Prerequisite: WST 100 or 300 or instructor approval.

General Studies: L, C

WST 380 Gender, Race, and Class. (3)

fall and spring

Explores cultural diversity, class, and gender issues in American social life. Lecture, seminar, analysis papers, and writing. Prerequisite: WST 100 or 300 or instructor approval.

General Studies: L/SB, C

WST 457 Gender, Culture, and Development. (3)

fall and spring

Economic, cultural, and sociopolitical contexts for understanding women's roles related to health, family, work, education, and politics in developing countries. Prerequisite: 6 hours in social science or instructor approval.

General Studies: L/SB, G

WST 460 Women and the Body. (3)

fall and spring

Interdisciplinary look at how representations of woman as body permeate culture and affect a woman's sense of self. Lecture, discussion. Prerequisite: WST 100 or 300 or instructor approval.

General Studies: SB, C

WST 477 Women and Violence. (3)

fall

Global examination of forms of violence against women at the individual, institutional, and cultural levels, and efforts to control it. Lecture, discussion. Prerequisite: WST 100 or 300 or instructor approval.

General Studies: SB, C

WST 484 Internship. (1–3)

fall and spring

Practical experience to enhance the academic perspectives that emerge from women's studies instruction. Prerequisite: internship coordinator approval.

WST 498 PS: Theoretical Issues in Women's Studies. (3)

fall and spring

Reading and research on important theoretical issues in women's studies. Prerequisite: WST 100 or 300 or instructor approval.

General Studies: L

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.



Gammage Auditorium, designed by Frank Lloyd Wright, regularly hosts touring Broadway productions.

Tim Trumble photo

College of Nursing

nursing.asu.edu

Barbara Durand, Ed.D., Dean

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PURPOSE

The faculty in the College of Nursing acknowledge their responsibility to health care consumers for the preparation of individuals who provide nursing care of professional quality through teaching, research, practice, and service. The purpose of the College of Nursing is to provide educational programs that prepare professional nurses to meet the health care needs of individuals, groups, and communities. To achieve this purpose, the college offers undergraduate, graduate, post-master's, and continuing and extended education programs. Within the context of a liberal education, the degree programs prepare professional nurses who

1. provide the highest-quality health care to individuals, groups, and communities and who critically examine and effectively respond to the changing health care needs of society;
2. conduct research and creative activity that strengthen the knowledge base of the discipline, improve theory-based nursing practice, and benefit the health of individuals, groups, and communities; and
3. provide service to the community through a range of nursing activities with diverse populations in a variety of settings.

The continuing and extended education program facilitates lifelong learning by providing opportunities for registered nurses (RNs) to enhance and expand their nursing practice to meet the health care needs of various populations and to further their own professional development.

ORGANIZATION

The College of Nursing is organized around two major clinical divisions: adult health/parent-child nursing and community health/psychosocial nursing systems.

The college offers an undergraduate program leading to a Bachelor of Science in Nursing (B.S.N.) degree, a Master of Science degree in Nursing (M.S.) with preparation for advanced practice in nursing, and continuing and extended education opportunities for RNs, which include RN-B.S.N. and RN-B.S.N.-M.S. programs. A Post-Master's certificate program is also available.

The college also participates with the University of Arizona in offering the Master of Public Health (M.P.H.) degree and a combined M.P.H./M.S. degrees program.

ADMISSION

Preprofessional Admission. Students are admitted into the College of Nursing as "premajor Nursing" students. Admission to ASU as a premajor Nursing student does not guarantee admission into the professional program. Admission to the professional program is competitive, with the greatest emphasis placed on grade point average based on selected prerequisite courses.

In addition to meeting the university requirements for admission, it is recommended that students complete one year each of high school chemistry and biology.

Premajor Nursing students are required to seek academic advising each semester through the College of Nursing Student Services Office. This advising includes course planning as well as information regarding application materials and deadlines.

Transfer Credits. While the university accepts transfer credit from other accredited institutions, all transfer credit may not apply toward a B.S.N. degree. Students completing course work at a community college or university other than ASU should consult a College of Nursing academic advisor to plan an appropriate sequence of prerequisite courses and to apply to the professional program. The College of Nursing has a transfer partnership agreement with the Maricopa Community College District. See a College of Nursing academic advisor for details. The college may not accept transfer credit (especially science) completed more than 10 years before the date of application.

Professional Program Admission. Individuals interested in applying to the professional program must receive advising from a College of Nursing academic advisor and are required to attend an application workshop. Contact the Student Services Office in the College of Nursing at 480/965-2987 for details. Students are eligible for consideration

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

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for admission to the professional program if they meet the following criteria:

1. regular admission to the College of Nursing at ASU Main as a premajor Nursing student;
2. good standing with ASU and the College of Nursing;
3. minimum prerequisite GPA of 2.75;
4. completion of designated prerequisite courses with an earned grade of "C" or higher in each course;
5. completion of all application materials;
6. submission of all required health and immunization requirements;
7. a Test of English as a Foreign Language (TOEFL) score of 550 or higher for international students; and
8. submission of other required materials.

Admission is selective and based on available resources. Meeting the minimum prerequisite GPA does not ensure admission. All qualified applicants may not be admitted. Students admitted to the professional program are required to meet the following additional criteria:

1. proof of CPR certification (Level C American Heart Association Health Care Provider);
2. proof of negative drug screen;
3. completion of all required health and immunization information;
4. eligible for class one fingerprint clearance card;
5. removal of all ASU admission deficiencies; and
6. other required material.

Professional program courses are offered at ASU Main and ASU West. Students are asked to specify location preference as part of the application process. Students are expected to complete the professional program on the campus assigned upon admission.

Opportunities for direct and group patient care are available in a variety of settings: community clinics; health focus and screenings; hospice; geriatric facilities; schools; industries; hospitals; home health; and rehabilitation agencies.

Professional Program Transfer. Students requesting to transfer into the professional program with advanced standing may be required to submit letters of recommendation. Any student enrolled in good standing at any accredited/ approved baccalaureate school of nursing within the past two years may apply for admission into the professional program. To be considered for admission to the professional program, transfer students must first be admitted to ASU as premajor Nursing students (see ["Undergraduate Admission," page 58](#)) and must also meet all professional program admission requirements. To be considered for advanced standing in the professional program courses, petitions for each course must be completed by the student with accompanied course descriptions and syllabus materials and be approved by the College Standards Committee.

Admission of Registered Nurses (RNs). All RN students are admitted into the College of Nursing as premajor Nursing students. An RN must submit a photocopy of his or her current license to practice nursing as an RN in Arizona. RN

students are responsible for adhering to Arizona State Board of Nursing Rules and Regulations. Alternatives are available to RNs to facilitate their progress in the program, including credit by examination, substitution of previously completed nursing courses for specified ASU nursing courses, and transfer of general education course work completed at other accredited colleges and universities. All RN students must consult with an advisor in planning their program of study. See ["Professional Program Admission," page 473](#), for admission criteria into the B.S.N. professional program. Registered nurses are admitted into the RN-B.S.N. program twice a year, in January and in August.

Additional admission criteria required for application to the RN-B.S.N.-M.S. program track include submission of

1. GRE scores;
2. current résumé;
3. statement of career goals;
4. letters of reference;
5. interview;
6. minimum prerequisite GPA of 3.0; and
7. other required materials.

RNs are accepted into the RN-B.S.N.-M.S. program track once a year (in January).

Readmission to the Professional Program. Students who have not been in continuous enrollment must file a petition requesting readmission to the professional program and must provide the following documents:

1. proof of current enrollment or readmission to ASU and the College of Nursing;
2. transcripts from all colleges attended; and
3. all other admission requirements as outlined under ["Admission," page 473](#).

Arizona State Board of Nursing Requirement. To be eligible to write the National Council Licensure Examination for Registered Nurses (NCLEX-RN), a student must have a high school diploma or GED certificate as well as proof of graduation from an approved nursing program. Arizona State law prohibits an individual convicted of a felony from applying for nursing licensure or certification until five years after the date of absolute discharge of the sentence. Application for, and passage of, the NCLEX-RN is the sole responsibility of the student.

College Health Requirements. Students admitted/enrolled in the professional program are responsible for fulfilling the requirements of the health policies of the College of Nursing. The student is responsible for providing proof to the College of Nursing Student Services Office of having met these requirements before enrollment in the professional program courses. These health policies include the following requirements:

1. proof of measles (rubeola), mumps, and rubella immunization (two MMRs or appropriate titers);
2. proof of annual tuberculosis screening;
3. completed series of hepatitis B vaccine;

4. current American Heart Association Level C CPR Certification;
5. proof of tetanus, diphtheria immunization (TD);
6. proof of varicella (chicken pox) immunization; and
7. proof of negative drug screen.

An annual flu vaccine is recommended and other health information may also be required.

A student may not participate in any clinical experience without meeting these requirements.

Essential Functions. Students admitted to the professional program are expected to meet the Essential Functional Abilities of the Undergraduate Nursing Student. Essential functions for this program include gathering data through the senses (hearing, seeing, etc.), synthesizing information from a variety of sources, making decisions regarding patient care, and performing necessary physical and mental activities to ensure safe care. For complete details, contact an advisor in the Student Services Office at NUR 108, or call 480/965-2987.

ASU Health Requirements. See [“Undergraduate Admission,” page 58](#), and [“Immunization Requirements,” page 64](#).

Professional Liability Insurance. It is highly recommended that students carry their own professional liability insurance when enrolled in clinical nursing courses.

Health and Accident Insurance. It is strongly recommended that all students carry their own health and accident insurance. Some clinical agencies require students to have current health insurance. See the *Undergraduate Student Handbook*. Each student is personally responsible for costs related to any accident or illness during or outside of school activities.

Automobile Insurance. Students are required by state law to carry automobile insurance. Students are responsible for transportation to and from clinical sites. Extensive travel may be required for selected clinical experiences.

ADVISING

While the College of Nursing provides academic advising, *it is ultimately the responsibility of each student to fulfill academic and program requirements*. Advisors are available by appointment in the College of Nursing Student Services Office. Visit NUR 108, or call 480/965-2987. Advisors assist students with program planning, registration, preparation of needed petitions, verification of graduation requirements, referrals to university and community resources, and career planning.

Student responsibilities include following university guidelines regarding submission of transcripts from all colleges other than ASU, obtaining the necessary signatures or computer verifications required by the university, and following university procedures for matriculation.

Mandatory Advising. All premajor Nursing students are required to meet with an academic advisor before registering for each semester of classes. In general, all students are encouraged to meet with an advisor each semester. All stu-

dents on probation are required to meet with an advisor to plan strategies for improving their academic standing.

Declaration of Graduation. Students following the curriculum requirements of the 1996–1998 or later catalog editions must file a Declaration of Graduation form using the Degree Audit Reporting System during enrollment in the first semester of the professional program.

Student Employment. Each of the four semesters in the professional program is composed of 16 semester hours. Seven to eight of these semester hours reflect two to three days in practicum experience. The remaining eight semester hours reflect classroom hours requiring preparation and study. It is suggested that any additional extracurricular activities or employment be kept at a minimum.

DEGREES

Nursing—B.S.N.

The completion of the curriculum leads to a Bachelor of Science in Nursing (B.S.N.) degree. The purpose of the program is to prepare beginning professional nurses, who possess the theoretical foundation and the clinical competence, to function in various health care settings. The graduate is prepared to deliver nursing care services to individuals, families, population groups, and communities. The undergraduate program provides students with a foundation for graduate studies in nursing at the master’s level.

Program objectives for the undergraduate curriculum are directed toward preparation of graduates with generalist abilities. Based on theoretical and empirical knowledge from nursing, the humanities, and physical, biological, and behavioral sciences, graduates are prepared to

1. combine theoretical knowledge from the sciences, humanities, and nursing as a base for critical thinking in professional nursing practice and develop an understanding of client, healthy environment, and nursing;
2. organize the nursing process to provide safe, competent, and effective nursing care using principle-based communication, technical/psychomotor, teaching, management, and therapeutic skills;
3. design and generate comprehensive therapeutic nursing care in partnership with individuals, families, groups, and communities, including those who are culturally diverse and/or vulnerable;
4. generate their own professional practice that focuses on health promotion, health restoration, health maintenance, and illness care from a holistic perspective;
5. analyze and apply research findings to nursing practice and identify nursing research problems;
6. display values and behavior consistent with the culture of professional nursing;
7. display personal and leadership characteristics appropriate for professional nursing practice;

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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8. display responsibility and accountability for professional nursing practice;
9. collaborate with nurses, other health care providers, and clients in the delivery of holistic care that is responsive to changing needs and societal trends; and
10. analyze current nursing and health care services and trends, and identify future health care needs.

Nursing—RN Programs

Courses have been designed to expand the knowledge base of the RN. Practice experiences in home health, community health, and leadership prepare RNs for roles in the expanding health care arena. Programs of study are developed and implemented that reflect individual capabilities, prior educational learning experiences, and career goals of RNs. Faculty and academic advisors work with RN students to maximize learning experiences and plan a program that meets their unique needs and interests.

Two program tracks are available for RNs. The RN-B.S.N. *only* and the RN-B.S.N.-M.S. program tracks are structured to provide an accessible, accelerated, and predictable pathway through the program.

RN-B.S.N. Only. The RN-B.S.N. *only* program track offers RNs the opportunity to complete upper-division nursing course degree requirements in one calendar year in a program featuring reasonable costs, predictable year-round course scheduling, reduced in-class time, and a variety of instructional delivery methods, including Web-enhanced and Web-based courses. Satisfactory completion of all general education and nursing prerequisite courses with a grade of “C” or higher and an earned minimum prerequisite GPA of 2.75 is required. RNs are accepted into the RN-B.S.N. *only* program track twice a year (January and August). See [“Admission of Registered Nurses \(RNs\),” page 474.](#)

RN-B.S.N.-M.S. The RN-B.S.N.-M.S. program track, designed for highly motivated and experienced RNs, reflects an expansion of the RN-B.S.N. *only* option. It provides for more rapid progression to graduate education that builds on the existing undergraduate curriculum and enables RN students to take selected graduate courses (earning a grade of “B” or higher) that apply toward their baccalaureate degree. Satisfactory completion of all general education and nursing prerequisite courses with a grade of “C” or higher and an earned minimum prerequisite GPA of 3.00 is required. See [“Admission of Registered Nurses \(RNs\),” page 474.](#)

The RN to master’s degree program requires students to complete a minimum of 30 semester hours with a grade of “B” or higher in all courses in the master’s program of study. Graduate courses completed toward the B.S.N. degree are not applicable toward this requirement.

Nursing—M.S.

The faculty in the College of Nursing offer a program leading to an M.S. degree in Nursing with concentrations in adult health nursing with tracks in the primary care of chronically ill adults or acute care; community health nursing with options in the Master of Public Health dual degree program; community mental health/psychiatric nursing; family health nursing; women’s health; and parent-child

nursing with the tracks of the childbearing family, nursing of children, and neonatal program. The program requires a minimum of 40 semester hours with an earned grade of “B” or higher in all courses in the program of study. Students in the nurse practitioner options are required to complete additional semester hours. Requirements for this program are described in the *Graduate Catalog*. Persons interested in applying for admission to the program should write to the Graduate College for a *Graduate Catalog* and application form (see [“Admission to the Graduate College,” page 521](#)) and contact the College of Nursing Student Services Office.

PUBLIC HEALTH—M.P.H.

The School of Health Administration and Policy and the College of Nursing, at ASU, in conjunction with the University of Arizona and Northern Arizona University, offer courses leading to the Master of Public Health (M.P.H.) degree. Two concentrations are offered at ASU:

(1) Community health practice is coordinated by the College of Nursing, and (2) health administration and policy is coordinated by the School of Health Administration and Policy. Students may also select a joint M.P.H./M.S. degrees option. For more information, see the *Graduate Catalog*.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements. For more information, see [“University Graduation Requirements,” page 79.](#)

First-Year Composition Requirement

Completion of both ENG 101 and 102 or ENG 105 or equivalent with a grade of “C” or higher is required for graduation from ASU in any baccalaureate degree program.

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35 semester hours of approved course work in General Studies, as described in [“General Studies,” page 83.](#) Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. Many of the university General Studies requirements may be met through completion of College of Nursing course requirements. See an academic advisor for details. General Studies courses are listed in the [“General Studies” table, page 86,](#) in the course descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*.

COLLEGE DEGREE REQUIREMENTS

College requirements for graduation are consistent with those of the university. The B.S.N. degree requires 120 semester hours.

Prerequisite Course Requirements

The following courses must be completed before enrolling in the professional program. Completion of these courses does not ensure admission to the professional program. RN students should refer to [“RN—B.S.N. Degree Requirements \(RNs\),” page 477.](#)

BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
BIO 202 Human Anatomy and Physiology II.....	4
CDE 232 Human Development <i>SB</i>	3
CHM 101 Introductory Chemistry <i>SQ</i>	4
ENG 101 First-Year Composition.....	3
ENG 102 First-Year Composition.....	3
HCR 210 Clinical Health Care Ethics <i>HU</i>	3
HCR 220 Health Care Organizations <i>L</i>	3
HCR 230 Culture and Health <i>C, G</i>	3
HCR 240 Human Pathophysiology.....	4
MAT 117 College Algebra <i>MA</i>	3
MIC 205 Microbiology <i>SG</i>	3
MIC 206 Microbiology Laboratory <i>SG</i>	1
NTR 241 Human Nutrition.....	3
PGS 101 Introduction to Psychology <i>SB</i>	3
PHI 103 Principles of Sound Reasoning <i>L/HU</i>	3
H elective.....	3
CS statistics elective.....	3
Total prerequisites.....	56

MAJOR REQUIREMENTS

The Nursing major requirements are completed after admission to the professional program. All practice courses are graded pass/fail. RN students should refer to [“RN—B.S.N. Degree Requirements \(RNs\),” on this page.](#)

Nursing Core Courses

Junior Year

First Semester

NUR 341 Theory I: Health Integrity.....	4
NUR 351 Pharmacology in Nursing.....	3
NUR 361 Professional Development I.....	2
NUR 381 Nursing Practice I.....	7
Total.....	16

Second Semester

NUR 342 Theory II: Health Integrity and Alterations.....	5
NUR 362 Professional Development II: Nursing Research <i>L</i>	3
NUR 382 Nursing Practice II.....	8
Total.....	16

Senior Year

First Semester

NUR 441 Theory III: Health Integrity and Alterations.....	6
NUR 461 Professional Development III: The Art of Nursing <i>HU</i>	3
NUR 481 Nursing Practice III.....	7
Total.....	16

Second Semester

NUR 442 Theory IV: Health Integrity and Alterations.....	3
NUR 443 Theory V: Leadership and Management.....	3
NUR 462 Professional Development IV.....	2
NUR 482 Nursing Practice IV.....	8
Total.....	16
Nursing core total.....	64

Each semester of courses is prerequisite to subsequent semesters. See an advisor for current program information.

RN—B.S.N. DEGREE REQUIREMENTS (RNs)

Prerequisite Course Requirements

BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
BIO 202 Human Anatomy and Physiology II.....	4
CDE 232 Human Development <i>SB</i>	3
CHM 101 Introductory Chemistry <i>SQ</i>	4
ENG 101 First-Year Composition.....	3
ENG 102 First-Year Composition.....	3
HCR 240 Human Pathophysiology*.....	4
MAT 117 College Algebra <i>MA</i>	3
MIC 205 Microbiology <i>SG</i>	3
MIC 206 Microbiology Laboratory <i>SG</i>	1
NTR 241 Human Nutrition.....	3
NUR 341 Theory I: Health Integrity*.....	4
NUR 342 Theory II: Health Integrity and Alterations*.....	5
NUR 351 Pharmacology in Nursing*.....	3
NUR 361 Professional Development I*.....	2
NUR 381 Nursing Practice I*.....	7
NUR 382 Nursing Practice II*.....	8
PGS 101 Introduction to Psychology <i>SB</i>	3
C, H elective.....	3
CS statistics elective.....	3
HU elective.....	3
Total prerequisites.....	76

* For alternatives, see an advisor.

General Education Courses

Electives (upper division).....	6
G course (upper division).....	3
Total.....	9

Professional Nursing Courses for RNs. The following nursing courses are listed in order of course progression and are taught one day a week over a period of 12 months. Practice course scheduling may vary (e.g., day of week, time of day) and requires additional time commitment for about five months of the year.

NUR 362 Professional Development II: Nursing Research <i>L</i>	3
NUR 391 Registered Nurse Mobility I: Professional Development <i>L</i>	3
NUR 392 Registered Nurse Mobility II: Health and Wellness.....	3
NUR 441 Theory III: Health Integrity and Alterations.....	6
NUR 442 Theory IV: Health Integrity and Alterations.....	3
NUR 443 Theory V: Leadership and Management.....	3
NUR 461 Professional Development III: The Art of Nursing <i>HU</i>	3
NUR 462 Professional Development IV.....	2
NUR 495 Community Health/Home Health Practice for RNs.....	4
NUR 496 Leadership and Management Practice for RNs.....	5
Total.....	35
General elective total.....	9
Nursing core (RN) total.....	44

RNs interested in pursuing the RN-M.S. track should contact an advisor in the College of Nursing Student Services Office.

L literacy and critical inquiry / *MA* mathematics / *CS* computer/statistics/quantitative applications / *HU* humanities and fine arts / *SB* social and behavioral sciences / *SG* natural science—general core courses / *SQ* natural science—quantitative / *C* cultural diversity in the United States / *G* global / *H* historical / See [“General Studies,” page 83.](#)

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ACADEMIC STANDARDS

Students are admitted into the College of Nursing as pre-major Nursing students and are subject to the general standards of academic good standing at the university. However, students who maintain standards of academic good standing do not necessarily qualify for admission into the professional program.

Consideration for admission into the professional program is contingent on achieving at least a “C” in all prerequisite courses and earning a minimum GPA of 2.75 in prerequisite courses. In addition, a grade of “C” or higher is required in all course work for the degree except in nursing practice courses where a designation of a “pass” grade is required.

Once admitted into the professional program, students are allowed only one nursing course failure within the program. The second failure in a nursing course leads to an automatic disqualification from the College of Nursing.

Probation and/or disqualification is in accordance with university policies. Academic dishonesty is not tolerated in any course and is subject to specific College of Nursing policies and procedures.

GRADING POLICY FOR NURSING COURSES

Within the undergraduate program, grades are assigned to reflect levels of achievement in relation to course objectives. Students who do not complete a required nursing course satisfactorily, receiving a grade of “D” or “E” (failing) or a mark of “W” (withdrawal), are not eligible to progress in the professional program. A student who withdraws from a course with a failing grade reported as an “E3” or “E9” is considered to have failed the course.

Any petition for curriculum adjustment, course substitution, overload, readmission to a nursing course, or readmission to the professional program must be approved by the College Standards Committee.

Withdrawal is in accordance with the withdrawal policy of the university. Students are responsible for completing the university withdrawal procedure. To be considered for reenrollment in a professional program course, a completed petition must be submitted and approved by the College Standards Committee. See an academic advisor for assistance.

An incomplete in a required nursing course must be satisfactorily removed before progression in the professional program is permitted. A grade of “I” is not allowed in clinical courses. See [“Grading System,” page 72](#), for university policy.

Audited courses are not accepted as course credit in the minimum 120-semester-hour requirement for graduation.

STUDENT RESPONSIBILITIES

Health. Students in the College of Nursing who exhibit or demonstrate a lack of physical and/or mental health necessary to function effectively as a professional nurse may be required to complete a health examination and have the results made available to the College Standards Committee. Students whose health, behavior, and/or performance have been questioned are reviewed for continuation in nursing courses by the College Standards Committee. The student

may appear in person before the committee and personally present information relevant to the committee’s review.

Information may also be presented in writing without making a personal appearance.

Professional Standards. Students are held to the professional standards reflected in the American Nurses’ Association Code for Nurses. Professional behavior and appearance are required during all nursing course activities.

Student Transportation. Students are responsible for their own transportation to and from health agencies and other selected experience settings, such as home visits to clients. Extensive travel may be required for selected clinical experiences.

Laboratory Fees. In several nursing laboratory and clinical courses, students are provided an opportunity to practice and perfect nursing skills before contact with clients. These courses require an extensive use of equipment and supplies from the Nursing Learning Resource Center. Accordingly, students are assessed a fee for the following courses: NUR 341, 342, 381, 382, 441, 442, 481, and 482. Consult with an advisor for information on laboratory fees for Nursing courses. Lab fees may be assessed on other courses. See the current *Schedule of Classes*.

SPECIAL PROGRAMS

Honors Program. The Nursing Honors Program provides opportunities for academically talented nursing students to engage in educational enrichment opportunities. The program focuses on students in the professional program; however, opportunities are available in lower-division courses. For students pursuing upper-division honors work, this enriched learning experience begins in the junior year. Honors course work, consisting of at least 18 hours of upper-division honors credit, offers a challenging curriculum. Honors students are guided to complete honors credit in courses that complement their academic and career goals. Students interested in pursuing the Nursing Honors Program are encouraged to seek advising in the College of Nursing Student Services Office. Once admitted to the professional program, students receive advising from the honors coordinator.

For more information, call 480/965-2987 or stop by the Student Services Office at NUR 108. Interested students should also call the Barrett Honors College at 480/965-2359.

ASU West. ASU West hosts the professional program courses. To be eligible to enroll in the professional courses at ASU West, students must be admitted to the College of Nursing at ASU Main, submit all required material for admission to the professional program, and be admitted to the College of Nursing undergraduate professional program.

Continuing and Extended Education Program. The Continuing and Extended Education Program presents a variety of credit and noncredit offerings at ASU campuses and other off-campus locations. Instruction is also available via the Internet, CD-ROM, and other technology-based means. These offerings are designed to assist practicing profes-

sional nurses in maintaining and enhancing their competencies, to broaden their scientific knowledge base, and to enhance their skills in adapting to the changing health care environment. Programs are organized in response to both the health care needs of the population and the learning needs of nurses engaged in a variety of professional roles and clinical specialties. Some offerings are multidisciplinary and are open to non-RNs. The program also delivers on-site education. For descriptions of continuing and extended education offerings, call the Continuing and Extended Education Program, College of Nursing, at 480/965-7431, send e-mail to conceep@asu.edu, or access the program's Web site at nursing.asu.edu/ce.

Community Health Services. The College of Nursing administers a Community Health Services Clinic located in Scottsdale, Arizona. Nurse practitioners provide primary care with an emphasis on promotion of wellness to families and individuals of all ages. Students in the College of Nursing may receive health care through the clinic for a fee. Students may obtain the health examinations and immunizations required for admission to the professional program at the clinic's facility. The facility also serves as a learning laboratory for both master's and baccalaureate nursing students.

GENERAL INFORMATION

Student Services. The Student Services Office in the College of Nursing provides academic advising, general advising, and referral to university resources. The staff of the Student Services Office is available to help students with a variety of concerns related to academic or personal issues. Prospective students wanting more information on College of Nursing programs or wanting to schedule an advising appointment should contact the College of Nursing Student Services Office at 480/965-2987.

Scholarship and Financial Aid. For information regarding scholarships and loans, see "[Financial Aid](#)," page 52. Information about scholarship and loan funds for nursing students may be obtained from the Student Financial Assistance Office or the College of Nursing Student Services Office.

Learning Resources. The Learning Resource Center (LRC) contains a clinical simulation laboratory with a full range of simulated medical equipment and manikins, as well as a complex care unit. The LRC also has audiovisual equipment, videos, other visual aides, and a variety of computers, and computer software related to nursing and health care. Selected resources are available for checkout. The LRC is staffed to assist students during regular semester schedules.

Clinical Facilities. Learning experiences with patients/clients and families are provided under the supervision of qualified faculty in cooperation with a variety of federal, state, county, private health, and other agencies. The College of Nursing has contracts with more than 250 agencies to provide clinical and practice experience for students, operates its own unique nurse-managed clinic in a community setting, and offers experiences in a variety of other

nurse-managed health services facilities. Various clinical laboratory facilities are available to students in this essential component of the program.

Student Activities. All ASU students are members of the Associated Students of ASU (ASASU) and participate in campus activities of interest to them. The student government of the university, ASASU, has a strong presence and offers a variety of services and activities. It is the official representative of the student body in matters of governance and budgeting.

College Council of Nursing Students. The College Council of Nursing Students (CCNS) is a member of ASASU and serves as the governing body of all student activities in the college. The council acts as a liaison between the Graduate Nurse Organization (GNO), the Student Nurses' Association (SNA), and the Nursing Students for Ethnic and Cultural Diversity. The CCNS provides for communication, cooperation, and understanding among undergraduate students, graduate students, and faculty and represents the college in university and nonuniversity affairs.

Graduate Nurse Organization. GNO is the coordinating body for nursing students in the graduate program. It provides programs, information, and orientation services for graduate students and complements their academic experiences.

Student Nurses' Association. SNA is a professional nursing organization. By being a member of SNA, the student belongs to the National Student Nurses' Association (NSNA), which is the student counterpart of the American Nurses Association for RNs. NSNA provides means for financial assistance, career planning, a voice in Washington, an opportunity for involvement, and low-cost comprehensive malpractice insurance.

Nursing Students for Ethnic and Cultural Diversity. This organization was formed in 1989 to provide a network of information and support for students interested in issues of cultural awareness and diversity.

Sigma Theta Tau International. The Beta Upsilon chapter of Sigma Theta Tau International (STTI) was chartered at the College of Nursing in 1976. Membership in STTI is an honor conferred on undergraduate and graduate students who have demonstrated outstanding academic and professional achievement.

ROTC Program. Students pursuing a commission through either the Air Force or Army ROTC programs are required to take from 12 to 20 hours in the Department of Military Science. To preclude excessive course overloads, these students should plan on an additional one to two semesters and/or summer school to complete degree requirements. ROTC students must meet all of the degree requirements of the college.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

College of Nursing

www.asu.edu/nursing

480/965-3244

NUR 322

Barbara A. Durand, Dean

Professors: Durand, Fleury, Gale, Kidd, Mattson, Perry, Thurber

Associate Professors: Adams, Alpers, Brillhart, Cesarotti, Dirksen, Ismeurt, Killeen, Komnenich, McCarthy, Primas, Rodriguez

Assistant Professors: Long, McGrath, Pickens, Sehested, Shearer, Sousa, Tann, Zunkel

Clinical Professor: Bell

Clinical Associate Professors: Beck, Fargotstein, Hagler, Jasper, Kastenbaum, Morris, Stillwell, White

Clinical Assistant Professors: P. Johnson, W. Johnson, Nunez, Sayles, Shearman, Wotring

Instructor: Rosdahl

COMMUNITY HEALTH PRACTICE (CHP)

See the *Graduate Catalog* for the CHP courses.

HEALTH CARE RELATED (HCR)

HCR 210 Clinical Health Care Ethics. (3)

fall, spring, summer

Health care ethics emphasizing analysis and ethical decision making at clinical and health policy levels for health care professionals. Prerequisites: ENG 101, 102.

General Studies: HU

HCR 220 Health Care Organizations. (3)

fall and spring

Overview of United States health care delivery systems; financing, health policy, basic principles of budgeting, cost-benefit analysis, and resource management. Cross-listed as HSA 220. Credit is allowed for only HCR 220 or HSA 220. Prerequisites: both ENG 101 and 102 or only ENG 105.

General Studies: L

HCR 230 Culture and Health. (3)

fall and spring

Cultures of diverse groups and health/illness. Cross-cultural communication, awareness of own cultural influences, indigenous and alternative healing practices.

General Studies: C, G

HCR 240 Human Pathophysiology. (4)

fall and spring

Chemical, biologic, biochemical, and psychological processes used in study of structural and functional alterations in health with selected therapeutics. Prerequisites: BIO 201 and 202 and MIC 205 and 206 (or their equivalents).

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

NURSING (NUR)

NUR 314 Health Assessment for Registered Nurses. (3)

spring

Introductory knowledge and skills for systematic physical, psychosocial, and developmental nursing assessment over the life span. 2 hours lecture, 3 hours lab. Fee. Prerequisite: admission to graduate Nursing program.

NUR 341 Theory I: Health Integrity. (4)

fall and spring

Concepts related to health integrity with focus on individual clients. Fee. Prerequisite: admission to professional Nursing program. Pre- or corequisites: NUR 351, 361, 381.

NUR 342 Theory II: Health Integrity and Alterations. (5)

fall and spring

Concepts related to selected alterations in health integrity with focus on individuals, families, and groups. Fee. Prerequisite: Junior I courses. Pre- or corequisites: NUR 362, 382.

NUR 351 Pharmacology in Nursing. (3)

fall and spring

Foundations of pharmacological interventions. Prerequisite: admission to professional Nursing program.

NUR 361 Professional Development I. (2)

fall and spring

Introduces professional nursing roles and responsibilities. Prerequisite: admission to professional Nursing program.

NUR 362 Professional Development II: Nursing Research. (3)

fall and spring

Introduces concepts and issues in nursing research. Emphasizes quantitative and qualitative research processes, examination of nursing research literature. Prerequisite: Junior I or admission to RN-BSN program.

General Studies: L

NUR 381 Nursing Practice I. (7)

fall and spring

Applies health assessment, nursing process, and basic skills to promote and maintain health integrity of individual clients. Lab, clinical experience. Fee. Prerequisite: admission to professional Nursing program. Pre- or corequisites: NUR 341, 351, 361.

NUR 382 Nursing Practice II. (8)

fall and spring

Applies nursing process with selected individuals, families, and groups experiencing alterations in health integrity. Lab, clinical experience. Fee. Prerequisite: Junior I. Pre- or corequisites: NUR 342, 362.

NUR 391 Registered Nurse Mobility I: Professional Development. (3)

fall and spring

Historical, philosophical, and theoretical bases for professional nursing practice. Enhancement of critical inquiry skills through exploration of selected issues. Prerequisite: admission to RN-BSN program.

General Studies: L

NUR 392 Registered Nurse Mobility II: Health and Wellness. (3)

fall and spring

Concepts of health integrity and community-based practice and professional nursing roles. Corequisite for RNs: NUR 391.

NUR 441 Theory III: Health Integrity and Alterations. (6)

fall and spring

Concepts related to health integrity and alterations with focus on individuals, families, groups, aggregates, and communities. Fee. Prerequisite: Junior II. Prerequisite for RNs: NUR 392. Pre- or corequisites: NUR 461, 481.

NUR 442 Theory IV: Health Integrity and Alterations. (3)

fall and spring

Advanced concepts related to health integrity and alterations in that integrity, with focus on selected client populations. Fee. Prerequisite: Senior I. Prerequisite for RNs: NUR 495. Pre- or corequisites: NUR 443, 462, 482.

NUR 443 Theory V: Leadership and Management. (3)

fall and spring

Selected theories and concepts of organizations, management, leadership with focus on nursing management and leadership in health care organizations. Prerequisite: Senior I. Pre- or corequisites: NUR 442, 462, 482. Pre- or corequisite for RNs: NUR 495.

NUR 450 School Nursing Practice. (3)*summer*

Role of the professional nurse in planning, implementation, and evaluation of the school health program. Prerequisite: RN license.

NUR 451 Health Assessment of the Child. (3)*summer*

Maintenance of good health in the school-aged child using health assessment and promotion techniques. Lecture, discussion, self study, demonstration. Prerequisite: RN license.

NUR 452 Nursing of Children with Developmental Disabilities. (3)*summer*

Congenital and acquired physical and mental developmental disorders, including the evaluation of child and family and community resources. Prerequisite: RN license.

NUR 461 Professional Development III: The Art of Nursing. (3)*fall and spring*

Explores the aesthetics, ethical, and personal patterns of knowing in nursing. Prerequisite: Junior II or admission to RN-BSN program.

*General Studies: HU***NUR 462 Professional Development IV. (2)***fall and spring*

Focuses on role transition to professional nursing. Prerequisite: Senior I. Prerequisite for RNs: NUR 495.

NUR 481 Nursing Practice III. (7)*fall and spring*

Applies concepts and clinical practice related to health integrity and alterations with focus on individuals, families, groups, aggregates, and communities. Lab, clinical experiences. Fee. Prerequisite: Junior II. Pre- or corequisites: NUR 441, 461.

NUR 482 Nursing Practice IV. (8)*fall and spring*

Capstone course with focus on synthesis and application of patterns of knowing and leadership, management concepts in collaborative nursing practice. Lab, clinical experiences. Fee. Prerequisite: Senior I. Pre- or corequisites: NUR 442, 443, 462.

NUR 494 Special Topics. (1–4)*fall, spring, summer*

Advanced study and/or supervised practice in an area of nursing. Lecture and lab to be arranged. Prerequisite: 12 hours in Nursing major or instructor approval.

NUR 495 Community Health/Home Health Practice for RNs. (4)*fall and spring*

Theoretical content related to community and home health care. Clinical practice with individual, family aggregates. 1 hour lecture, 3 hours lab. Prerequisite: NUR 392. Corequisite: NUR 362.

NUR 496 Leadership and Management Practice for RNs. (5)*fall and spring*

Capstone leadership and management experience for the RN student that utilizes patterns of knowing in nursing practice. Clinical lab. Corequisite for RNs: NUR 495. Pre- or corequisite: NUR 443.

NUR 500 Research Methods. (3)*fall and spring*

Research methods including research conceptualization and design in nursing. Prerequisites: admission to graduate Nursing program; a graduate-level course in inferential statistics prior to enrolling in specialty concentration clinical courses. Corequisite: NUR 551.

NUR 501 Advanced Adult Health Assessment/Promotion: Advanced Theory. (4)*fall*

Expands adult health assessment/promotion skills through knowledge/strategies essential for developing and interpreting data. Lecture, demonstration. Prerequisites: all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum I: Adult Health Nursing.

NUR 502 Management and Maintenance of Adults with Chronic Health Alterations: Advanced Theory. (4)*spring*

Includes theory/research that guides the management/maintenance of adults with chronic health alterations. Emphasizes psychophysiological interrelationships of illnesses. Lecture, seminar. Prerequisites: NUR 501; all core and flexible core courses except thesis/project. Pre- or corequisite: NUR 580 Advanced Nursing Practicum II: Adult Health Nursing.

NUR 503 Management and Maintenance of Adults with Acute Health Alterations: Advanced Theory. (3)*spring*

Emphasizes theoretical research foundations essential for advanced practice involving care of adults with acute episodic alterations in health. Lecture, seminar. Prerequisite: NUR 501. Pre- or corequisite: NUR 580 Advanced Nursing Practicum II: Adult Health Nursing.

NUR 510 Community/Public Health Nursing Theory and Role. (3)*spring*

Analyzes and synthesizes the theoretical and conceptual basis of community/public health nursing applicable to current and future nursing roles. Lecture, discussion, learner-centered strategies. Prerequisites: CHP 500; NUR 551, 552.

NUR 521 Community Mental Health/Psychiatric Nursing: Advanced Mental Health Assessment. (3)*fall*

Theories related to holistic health assessment for the promotion of physical/psychological health; develops skill in mental health assessments. Lecture, seminar, lab. Prerequisites: all core and flexible core courses except thesis/project.

NUR 522 Community Mental Health/Psychiatric Nursing: Advanced Theory I. (3)*fall*

Analyzes issues, theories, and research in restoration and promotion of mental health. Emphasizes developing conceptual framework for psychiatric nursing. Prerequisites: NUR 521; all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum I: Community Mental Health/Psychiatric Nursing.

NUR 523 Community Mental Health/Psychiatric Nursing: Advanced Theory II. (3)*spring*

Focuses on development of theoretical basis for intervention and a knowledge base for collaboration and consultation in the mental health area. Prerequisites: NUR 522; all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum II: Community Mental Health/Psychiatric Nursing.

NUR 524 Psychoneuroimmunology Approaches to Practice. (3)*summer*

Overview of theories, concepts, and research in psychoneuroimmunology including physiological aspects and application to a holistic nursing model. Seminar. Prerequisite: admission to graduate Nursing program.

NUR 525 Neonatal/Pediatric Physiology and Embryology. (3)*fall*

Prepares advanced practice nurses to use embryology, genetics, and physiology concepts within the nursing process in the care of pediatric and neonatal patients. Lecture, discussion, participative dialogues, case studies. Prerequisites: a course in undergraduate anatomy and a course in undergraduate physiology.

NUR 526 Advanced Neonatal Physical Assessment. (4)*fall*

Develops assessment skills related to neonate/infant, including history-taking, physical, developmental, behavioral, cultural, and genetics assessment to provide comprehensive advanced practice neonatal nursing care. Lecture, seminar, discussion, case studies. Fee. Prerequisite: instructor approval. Corequisite: NUR 525.

NUR 527 Neonatal and Pediatric Pharmacology in Nursing Practice. (3)*spring*

Examines and discusses the rationale, action, and therapeutic effect for using each class of medications employed in neonatal and pediatric health care. Lecture, seminar, discussion, case studies, clinical. Pre- or corequisites: both NUR 525 and 526 (or 558) or only instructor approval.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF NURSING

NUR 528 Advanced Developmental and Family-Centered Nursing Care. (4)

spring

Provides the foundation for providing advanced nursing care of children that is developmentally supportive, family centered, and culturally competent. Lecture, seminar, discussion, skills laboratory, clinical. Fee. Pre- or corequisites: both NUR 525 and 526 (or 558) or only instructor approval.

NUR 531 Nursing of Children: Advanced Theory I. (3)

fall

Focuses on current practices, research, and issues related to health promotion and disease prevention for children and adolescents. Lecture, seminar. Prerequisites: all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum I: Parent-Child Nursing with Options in Childbearing Family, Nursing of Children, and Neonatal Nursing.

NUR 532 Nursing of Children: Advanced Theory II. (3)

spring

Focuses on concepts, theories, and research as a basis for strategies related to management of illness and health maintenance for children. Lecture, seminar. Prerequisites: NUR 531; all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum II: Parent-Child Nursing with Options in Childbearing Family, Nursing of Children, and Neonatal Nursing.

NUR 533 Nursing of Children with Special Needs: Advanced Theory. (3)

spring

Focuses on concepts, theories, and research related to acute and chronic health deviations of children. Lecture, seminar. Prerequisites: NUR 531 (or instructor approval); all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum II: Parent-Child Nursing with Options in Childbearing Family, Nursing of Children, and Neonatal Nursing.

NUR 534 Women's Health: Advanced Theory I. (4)

fall

Focuses on theories, principles, and research related to managing the health of normal perinatal women and families. Cooperative learning strategies. Prerequisites: all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum I: Women's Health Nursing.

NUR 535 Women's Health: Advanced Theory II. (4)

spring

Focuses on management of nursing care for high-risk perinatal women and women with common health problems. Cooperative learning strategies. Prerequisites: NUR 534; all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum II: Women's Health Nursing.

NUR 551 Theoretical Foundations of Advanced Practice Nursing. (3)

fall and spring

Facilitates exploration and examination of the foundations of advanced nursing practice. Lecture, seminar. Prerequisite: admission to graduate Nursing program.

NUR 552 Health Care Issues and Systems. (3)

fall and spring

Analyzes organization, financing, service delivery, and outcomes of the health system. Emphasizes policy issues, roles, and challenges for nurses. Lecture, seminar. Prerequisite: admission to graduate Nursing program.

NUR 553 Life Span Development. (3)

spring

Critical examination of concepts, theories, issues, and research related to developmental periods throughout the life span. Analyzes biological and health, cognitive, psychological, and sociocultural influences. Lecture, discussion. Prerequisite: admission to graduate Nursing program.

NUR 554 Population-Based Health Care. (3)

fall and spring

Identification and assessment of specific community health needs and health care patterns of target populations. Addresses promotion, protection, and improvement of health when planning health care services. Lecture, seminar. Prerequisite: admission to graduate Nursing program.

NUR 558 Advanced Pediatric Health Assessment. (3)

spring

Expansion of basic health assessment skills and development of clinical problem-solving skills for advanced practice nurses. Includes assessments of infants, children, and adolescents. Lecture, lab. Prerequisites: admission to graduate Nursing program; undergraduate health assessment within the last five years.

NUR 559 Advanced Health Assessment. (3)

spring

Expansion of basic health assessment skills and development of clinical problem-solving skills for advanced practice nurses. Includes assessments of infants, children, adolescents, and adults. Lecture, lab. Fee. Prerequisites: admission to graduate Nursing program; undergraduate health assessment within the last five years.

NUR 561 Advanced Practice Nursing Role. (2)

summer

Focuses on the examination and implementation of the role of the advanced practice nurse, emphasizing major components and sub-components of the role. Lecture, seminar. Prerequisite: admission to graduate Nursing program or instructor approval.

NUR 562 Family Nurse Practitioner Advanced Theory I: Health Promotion, Management, and Maintenance. (4)

fall

First didactic role specialty course. Focuses on concepts and strategies to promote, manage, and maintain health of child, adult, and family. Prerequisites: all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum I: Family Health Nursing.

NUR 563 Family Nurse Practitioner Advanced Theory II: Health Promotion, Management, and Maintenance. (4)

spring

Second didactic role specialty course utilizing knowledge from previous courses to formulate therapeutic promotion, management, and maintenance for individuals across the life span. Prerequisites: NUR 562; all core and flexible core courses except thesis/project. Corequisite: NUR 580 Advanced Nursing Practicum II: Family Health Nursing.

NUR 564 Applied Pharmacotherapeutics for Advanced Practice. (3)

spring

Life span course for advanced nurse practitioners to expand knowledge of pharmacotherapeutic concepts and principles. Lecture, discussion, case studies. Prerequisite: admission to graduate Nursing program.

NUR 565 Applied Physiology/Pathophysiology in Advanced Practice. (3)

spring

Advanced nurse practitioner course designed to expand previously acquired anatomy and physiology knowledge and discern pathological alterations across the life span. Lecture, seminar, case studies. Prerequisites: admission to graduate Nursing program; undergraduate anatomy and physiology.

NUR 566 Pediatric Physiology/Pathophysiology. (3)

spring

Analyzes the patterns of heredity, cellular differentiation, and the development of systems in the infant to adolescent. Prerequisite: admission to graduate Nursing program.

NUR 571 Teaching in Nursing Programs. (3)

selected semesters

Analyzes theories, issues, and research related to teaching in nursing. Focuses on the process of teaching/learning. Seminar, cooperative learning. Prerequisite: graduate standing.

NUR 578 Gestalt Therapy I. (3)

fall

Introduces theory and methodology of Gestalt therapy and its uses for mental health promotion and restoration.

NUR 579 Gestalt Therapy II. (3)

spring

Focuses on further development of Gestalt therapy and its application in working with various client populations. Prerequisite: NUR 578.

NUR 580 Practicum. (1–12)*selected semesters*

Topics may include the following:

- **Advanced Nursing Practicum I: Adult Health Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Fee. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 501 or 502 or 503.
- **Advanced Nursing Practicum II: Adult Health Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Fee. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 501 or 502 or 503.
- **Advanced Nursing Practicum: Community Health Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 510.
- **Advanced Nursing Practicum I: Community Mental Health/Psychiatric Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 522 or 523.
- **Advanced Nursing Practicum II: Community Mental Health/Psychiatric Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 522 or 523.
- **Advanced Nursing Practicum I: Family Health Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Fee. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 562 or 563.
- **Advanced Nursing Practicum II: Family Health Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Fee. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 562 or 563.
- **Advanced Nursing Practicum I: Parent-Child Nursing with Options in Childbearing Family, Nursing of Children, and Neonatal Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Fee. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 531 or 532.
- **Advanced Nursing Practicum II: Parent-Child Nursing with Options in Childbearing Family, Nursing of Children, and Neonatal Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Fee. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 531 or 532.
- **Advanced Nursing Practicum II: Women's Health Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 534 or 535.
- **Advanced Nursing Practicum II: Women's Health Nursing. (2–6)**
fall and spring
Clinical application of theories, concepts, and principles in areas of concentration. Conferences. Prerequisite: admission to graduate Nursing program. Corequisite: NUR 534 or 535.
- **Practicum (Electives). (1–4)**
selected semesters
Clinical application of theories, concepts, and principles such as health promotion, health management, health maintenance, teaching, management, and special clinical studies. Fee.
- **Practicum for Teaching. (2–6)**
selected semesters
Prerequisites: NUR 571, 591.

NUR 582 Advanced Human Physiology. (3)*fall*

Analyzes major theories and concepts of human physiology. Explores interrelationship of physiology and health. Prerequisite: admission to graduate Nursing program.

NUR 584 Community Health Nursing Internship. (3)*spring*

Students operationalize community health nursing/public health content in leadership roles in a variety of community agencies. Clinical internship. Prerequisite: NUR 580 Advanced Nursing Practicum: Community Health Nursing.

NUR 585 Stress Reduction. (3)*selected semesters*

Theory, application, and evaluation of mind/body relaxation methods, including physiological effects. Emphasizes research findings. Daily student practice. Prerequisite: graduate standing or instructor approval.

NUR 586 Advanced Pathophysiology. (3)*spring*

Manifestation of altered human physiology and disease. Uses systems theory to analyze the relationships of disease and physiology. Prerequisites: NUR 582; admission to graduate Nursing program.

NUR 589 Research Utilization. (3)*fall and spring*

Emphasizes the synthesis and application of research to an identified clinical nursing problem. Prerequisites: all core and flexible core courses except thesis/project. Corequisite: NUR 593.

NUR 590 Reading and Conference. (1–12)*selected semesters*

Independent study in which a student meets regularly with a faculty member to discuss assignments such as intensive reading in a specialized area, writing synthesis of literature on a specific topic, or writing literature review of a topic. Prerequisite: instructor approval.

NUR 591 Seminar. (2–4)*selected semesters*

Advanced topics, including curriculum development and health promotion. Prerequisite: instructor approval in selected courses.

NUR 593 Applied Project. (1)*fall and spring*

Preparation of a supervised applied project that is a graduation requirement in some professional majors. Prerequisites: all core and flexible core courses. Corequisite: NUR 589.

NUR 598 Special Topics. (1–4)*selected semesters*

Special study, including issues in health care and organizations, management in nursing, ethical issues, and clinical nurse specialist role.

Topics may include the following:

- **Advanced Neonatal Theory I. (4)**
fall
- **Advanced Neonatal Theory II. (3)**
spring
- **Nursing of Children with Development Disabilities. (3)**
- **School Nursing Practice. (3)**

NUR 599 Thesis. (1–6)*fall, spring, summer*

Research proposal development, data collection and analysis, thesis writing, and thesis oral defense. Requires six hours. Prerequisites: all core and flexible core courses.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

College of Public Programs

www.asu.edu/copp

[Anne L. Schneider, Ph.D., Dean](#)

American Indian Studies Program	488
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Hugh Downs School of Human Communication	491
Walter Cronkite School of Journalism and Mass Communication	495
School of Justice Studies	499
School of Public Affairs	504
Department of Recreation Management and Tourism	506
School of Social Work	509

PURPOSE

The faculty in the College of Public Programs offer a wide range of undergraduate and graduate course work, both on and off campus, to full- and part-time students. Each academic unit of the college not only assumes responsibility in preparing its own majors, but provides a variety of service courses for the rest of the university. The college is committed to providing excellence in teaching, research, and public service. Consequently, the units work closely with numerous public, quasi-public, and private agencies at the national, regional, state, and local levels.

ORGANIZATION

The College of Public Programs is composed of eight academic units, each administered by a chair or director:

- American Indian Studies Program
- Asian Pacific American Studies Program
- Department of Recreation Management and Tourism
- Hugh Downs School of Human Communication
- School of Justice Studies
- School of Public Affairs
- School of Social Work
- Walter Cronkite School of Journalism and Mass Communication

The general administration of the college is the responsibility of the dean, who is responsible to the university president through the senior vice president and provost. For more information, visit the college's Web site at www.asu.edu/copp.

ADMISSION

Freshmen and Transfers. Individuals interested in admission to an undergraduate program in the College of Public Programs should refer to "Undergraduate Admission," page 58. Those who meet the minimum university admission requirements will be admitted to the undergraduate academic unit of the college as a preprofessional in that respective academic unit.

Professional Status Admission Requirements. Entry to any undergraduate academic unit of the college with professional status requires

1. the completion of at least 56 semester hours with a minimum cumulative GPA of 2.50;
2. the university First-Year Composition requirement and the university mathematical studies requirement (see "University Graduation Requirements," page 79); and
3. the College of Public Programs writing competence, communication, and computer requirements (see "[College Degree Requirements](#)," page 486).

The academic units may also have additional requirements. The ASU GPA is computed on ASU courses only and must be based on a *minimum* of nine semester hours of courses with grade options of "A," "B," "C," "D," or "E."

Most upper-division courses in the college are not open to preprofessional students. Preprofessionals should check the catalog information in their major fields to determine any course enrollment restrictions.

Students should refer to the section of the catalog and advising documents with reference to their preferred areas of study for specialized departmental retention requirements and/or continued enrollment in their major courses.

Transfer Credit. In most cases, course work successfully completed at a regionally accredited four-year institution of higher education is accepted into the respective academic unit.

Transferable course work successfully completed at an accredited two-year institution of higher education (community or junior college) transfers as lower-division credit up to a maximum of 64 semester hours.

Successful completion is defined for purpose of transfer as having received a grade comparable to an "A," "B," or "C" at ASU. The acceptance of credits is determined by the director of Undergraduate Admissions, and the utilization of credits toward degree requirements is at the discretion of the academic unit and the college.

ADVISING

The advising mission for the College of Public Programs professional academic advising staff is to assist students in developing meaningful educational plans to meet their academic, career, and personal goals in an ongoing process of evaluation and clarification.

The advisors strive to perform their duties in a professional, ethical, confidential, accurate, and supportive manner, respecting student diversity and needs, and always holding the individual in highest regard. The student and advisor should accomplish this process in a spirit of shared responsibility to develop academic excellence, strong decision-making skills, and self-reliance.

A student who has been admitted to the College of Public Programs is assigned an academic advisor from the academic unit of the student's major area of study. Questions on advising should be directed to the student's academic advisor or to the College Student Services Office, WILSN 203.

Mandatory Advising. The following categories of students are required to receive advising and to be cleared on the Mandatory Advising Computer System before they may register for classes:

1. students with admissions competency deficiencies;
2. all freshmen;
3. transfer students in their first semester at ASU;
4. readmitted students;
5. students on probation;
6. students who have been disqualified;
7. students with special admissions status; and
8. all Social Work undergraduate majors.

Course Load. A normal course load per semester is 15 to 16 semester hours. The maximum number of hours for which a student can register is 18 semester hours unless an overload petition has been filed and approved by the Department/School Standards Committee and the Academic and Student Affairs Committee of the college. Semester course loads may be further limited for students in mandatory advising.

Petitions for overload are not ordinarily approved for students who have a cumulative GPA less than 3.00 and who do not state valid reasons for the need to register for the credits. Students who register for semester hours in excess of 18 and do not have an approved overload petition on file may have courses randomly removed through an "administrative drop" action.

Specific degree requirements are explained in detail under the respective college, school, and department sections.

DEGREES

The faculty in the College of Public Programs offer undergraduate degrees in six academic units. Successful completion of a four-year program of 120 semester hours is specified by the respective academic unit. See "[College of Public Programs Baccalaureate Degrees and Majors](#)" table, [on this page](#).

GRADUATE PROGRAMS

Master's degree programs are offered by six of the academic units of the College of Public Programs, and four of the units offer doctoral degrees. See the "[College of Public Programs Graduate Degrees and Majors](#)" table, [page 487](#).

For more information on courses, faculty, and programs, see the *Graduate Catalog*.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges, including the College of Public Programs, to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning. The Extended Campus also offers a variety of professional continuing education and community outreach programs.

For more information, see "ASU Extended Campus," page 703, or access the Web site at www.asu.edu/xed.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements.

First-Year Composition Requirement

Students must demonstrate reasonable proficiency in written English by achieving a grade of "C" or higher in both ENG 101 and 102 (or ENG 107 and 108 for international students), or in ENG 105 or its equivalent. Should a student receive a grade lower than "C" in any of the courses, it must be repeated until the specified proficiency is demonstrated. Composition courses transferred from out-of-state institutions must be evaluated and approved by the Writing Programs Office.

General Studies Requirement

All undergraduate students in the College of Public Programs are required to complete the university General Studies requirement to be eligible for graduation in any of the undergraduate curricula offered by the college.

General Studies courses are regularly reviewed. To determine whether a course meets one or more parts of the General Studies requirement, see "General Studies," page 83, and the current *Schedule of Classes*.

General Studies courses are also identified following course descriptions according to the "Key to General Studies Credit Abbreviations," page 85.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

College of Public Programs Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
American Indian Studies	B.S.	—	American Indian Studies Program
Communication	B.A., B.S.	—	Hugh Downs School of Human Communication
Journalism and Mass Communication	B.A.	Journalism, media analysis and criticism, media management, media production, strategic media and public relations	Walter Cronkite School of Journalism and Mass Communication
Justice Studies	B.S.	—	School of Justice Studies
Recreation	B.S.	Recreation management, tourism	Department of Recreation Management and Tourism
Social Work	B.S.W.	—	School of Social Work

COLLEGE DEGREE REQUIREMENTS

In addition to the university General Studies requirement, the College of Public Programs has requirements in communication, computer science, and writing competence.

Communication Requirement

Undergraduate students in the College of Public Programs are required to take a course in communication. The course provides an overview of human communication in public and/or cultural contexts and helps students develop oral presentation skills and competence. Students majoring in American Indian Studies, Justice Studies, and Social Work choose from:

COM 100 Introduction to Human Communication <i>SB</i>	3
COM 225 Public Speaking <i>L</i>	3
COM 230 Small Group Communication <i>SB</i>	3
COM 241 Introduction to Oral Interpretation <i>L/HU</i>	3
COM 259 Communication in Business and the Professions	3

Majors in the Department of Recreation Management and Tourism choose from COM 225, 241, or 259; students in the Walter Cronkite School choose between COM 225 or 241.

Computer Requirement

A computer course is required for all undergraduate majors. Any computer (CS) course from the university General Studies list is acceptable. It may be included within the numeracy requirement or department or school degree program, where appropriate.

Non-English Language Requirement

The Walter Cronkite School of Journalism and Mass Communication and the School of Social Work require proficiency in a language other than English. Communication majors have the choice of demonstrating proficiency in a language other than English under the B.A. Proficiency is defined as completing the second semester intermediate level, or higher, of a language other than English.

Writing Competence Requirement

In addition to ENG 101 and 102 First-Year Composition or their equivalent, one of the following courses in advanced written expository composition is required of all undergraduate majors:

BUS 301 Fundamentals of Management Communication <i>L</i>	3
ENG 215 Strategies of Academic Writing <i>L</i>	3
ENG 216 Persuasive Writing on Public Issues <i>L</i>	3
ENG 217 Writing Reflective Essays <i>L</i>	3
ENG 218 Writing About Literature <i>L</i>	3
ENG 301 Writing for the Professions <i>L</i>	3
JMC 201 Journalism Newswriting <i>L</i>	3
JMC 202 Radio-Television Writing <i>L</i>	3

The writing competence course may be counted as fulfilling the university General Studies literacy and critical inquiry (L) requirement if it is on the university-approved list.

Pass/Fail Option

The College of Public Programs does not offer any courses for pass/fail credit. Courses completed for pass/fail credit outside the College of Public Programs may count only as elective credit in meeting degree requirements.

Limit on Physical Education Activity Hours

No more than eight hours of physical education activity courses may be counted within the minimum 120 hours required for graduation.

PREPROFESSIONAL REQUIREMENTS

Students should refer to the respective department or school section of the catalog and to department or school advising documents for more information on requirements.

Undergraduate Credit for Graduate Courses. To enable undergraduate students to enrich their academic development, the Graduate College and the individual academic units of the College of Public Programs allow qualified students to take graduate-level courses for undergraduate credit. To qualify for admission to a graduate-level course, the student must have senior status (87 or more semester hours successfully completed) and a cumulative GPA of 3.00 or higher. In addition, permission to enroll must be given before registration and must be approved by the instructor of the course, the student's advisor, the department chair or school director, and the dean of the college in which the course is offered.

College of Public Programs Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Communication	M.A.	—	Hugh Downs School of Human Communication
	Ph.D.	Communicative development, intercultural communication, organizational communication	Hugh Downs School of Human Communication
Justice Studies	M.S.	—	School of Justice Studies
	Ph.D.*	Criminal and juvenile justice; dispute resolution; law, justice, and minority populations; law, policy, and evaluation; women, law, and justice	Committee on Law and Social Sciences
Mass Communication	M.M.C.	—	Walter Cronkite School of Journalism and Mass Communication
Public Administration	M.P.A.	Public information management, public management, public policy analysis and evaluation, urban management and planning	School of Public Affairs
	Ph.D.	—	School of Public Affairs
Recreation	M.S.	—	Department of Recreation Management and Tourism
Social Work	M.S.W.	Advanced direct practice; planning, administration, and community practice	School of Social Work
	Ph.D.	—	School of Social Work

* This program is administered by the Graduate College.

ACADEMIC STANDARDS AND RETENTION

Good Standing. Students in the College of Public Programs are considered in good standing for the purpose of retention if they maintain a cumulative GPA of 2.00 or higher in all courses taken at ASU. However, to achieve professional status in the undergraduate degree programs in the college, students must have a cumulative GPA of 2.50 or higher at ASU.

Probation. Any student who does not maintain good standing status is placed on academic probation. A student on academic probation is required to observe any limitations or rules the college may impose as a condition for retention.

Disqualification. A student who is on probation becomes disqualified if (1) the student has not returned to good standing or (2) the student has not met the required semester GPA.

Disqualification is exercised at the discretion of the college and becomes effective on the first day of the fall or spring semester following college action. A disqualified student is notified by the Office of the Registrar and/or the dean of the college and is not allowed to register for a fall or spring semester at the university until reinstated. A student who is disqualified may not attend as a nondegree student.

Reinstatement. Students seeking reinstatement after disqualification should contact the College Student Services Office regarding procedures and guidance for returning to good standing. When reinstatement includes readmission, application must be made to the Readmissions Section of the Office of the Registrar.

All academic discipline action is the function of the College Student Services Office, WILSN 203, under the direction of the dean of the college. Students having academic

problems should call this office for advising at 480/965-1034.

SPECIAL PROGRAMS

Barrett Honors College

The College of Public Programs cooperates with the Barrett Honors College, which affords superior undergraduates opportunities for special classes taught by selected faculty. Honors students receive special advising and priority pre-registration and complete a senior honors thesis. Participating students can major in any academic program. A full description of the requirements and the opportunities offered by the Barrett Honors College can be found in the “The Barrett Honors College” section, page 118.

For more information, visit the College of Public Programs Student Services Office at WILSN 203, or call 480/965-1034. For more information about the Barrett Honors College, call 480/965-2359.

College of Public Programs Council

The College of Public Programs Council is a unit of Associated Students of Arizona State University and serves as the coordinating body of student activities in the college. The council fosters communication, cooperation, and understanding among undergraduate students, graduate students, faculty, and staff. As the official representative student organization to the dean and college administration, the council appoints student members to faculty committees, cosponsors events with the college alumni association, and represents students at college and university functions.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF PUBLIC PROGRAMS

Center for Nonprofit Leadership and Management

The mission of the Center for Nonprofit Leadership and Management is “to improve the quality of life in communities by enhancing the performance of nonprofit organizations.” Varied strategies accomplish this mission and include coordination of educational offerings, selected technical assistance to nonprofits, support for research projects for faculty and students, and the convening of nonprofit leaders and managers through a variety of training opportunities. The center supports the activities of three complementary nonprofit management education programs: the Nonprofit/Youth Agency Administration: American Humanics Certificate (undergraduate), the Nonprofit Management Certificate (extended education), and the Nonprofit Leadership and Management Certificate (graduate). For more information, call 480/965-0607.

NONPROFIT LEADERSHIP AND MANAGEMENT (NLM)

See the *Graduate Catalog* for the NLM courses.

Center for Urban Inquiry

The Center for Urban Inquiry focuses on civic involvement. The center’s mission is to examine the unique features of the new urban West in the United States, particularly intersections of growth and development with citizen activism and community building. By harnessing the unique resources of the university, the center engages in partnerships with urban citizens, including youths, to increase awareness, promote inclusion, and address needs. Center programs include seed grants to students working in teams in pursuit of urban research and community service; service learning that involves students in community building; technical assistance to neighborhood organizations, schools, and hospitals; and the production of works that appeal broadly to urban audiences, including performances, exhibits, and videos.

For more information, call 480/965-9216, or access the Web site at www.asu.edu/copp/urban.

College of Public Programs

The academic units within the College of Public Programs may use the CPP prefix for course offerings that cross disciplinary boundaries.

COLLEGE OF PUBLIC PROGRAMS (CPP)

CPP 194 Special Topics. (1–4)
selected semesters

CPP 294 Special Topics. (1–4)
selected semesters

CPP 394 Special Topics. (1–4)
selected semesters

CPP 484 Internship. (1–12)
selected semesters

CPP 494 Special Topics. (1–4)
selected semesters

CPP 498 Pro-Seminar. (1–7)
selected semesters

CPP 499 Individualized Instruction. (1–3)
selected semesters

CPP 580 Practicum. (1–12)
selected semesters

CPP 583 Field Work. (1–12)
selected semesters

CPP 584 Internship. (1–12)
selected semesters

CPP 590 Reading and Conference. (1–12)
selected semesters

CPP 591 Seminar. (1–12)
selected semesters

CPP 593 Applied Project. (1–12)
selected semesters

CPP 594 Conference and Workshop. (1–12)
selected semesters

CPP 598 Special Topics. (1–4)
selected semesters

CPP 690 Reading and Conference. (1–12)
selected semesters

CPP 691 Seminar. (1–12)
selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 56.

American Indian Studies Program

www.asu.edu/copp/americanindian

480/965-3634

AG 372

Carol C. Lujan, Director

Associate Professor: Lujan

Assistant Professors: Carpio, Miller

The American Indian Studies Program emphasizes the political and cultural experience of the various American Indian Nations and peoples of the United States. Course work focuses on the cultures, arts, history, and contemporary experiences of the various American Indian nations. The curriculum also concentrates on the practical application for professional career development, preparation for advanced degree programs, and preparation for service to Indian governments and reservations. It emphasizes scholarly expertise in selected fields of study and its practical application to community service.

AMERICAN INDIAN STUDIES—B.S.

Students pursuing a B.S. degree in American Indian Studies gain a broad knowledge of American Indian nations and peoples, with particular emphasis on Southwest American Indian nations. The degree program offers courses that provide students with intellectual and practical knowledge pertaining to American Indian cultures, history, law, literature, language, art, and government.

Students are required to take 42 semester hours, including 24 hours of required courses and 18 hours in one of two areas of emphasis: (1) legal policy, community, and economic development; or (2) arts, languages, and cultures. Contact the program office for a current listing of elective courses. The following courses are required for all students majoring in American Indian Studies:

AIS 180 Introduction to American Indian Studies C3
 AIS 280 Indigenous Law and Society C3
 AIS 370 American Indian Languages and Cultures3
 AIS 380 Contemporary Issues of American Indian Nations3
 AIS 385 Federal Indian Policy3
 AIS 394 ST: Basic Statistical Analysis*3
 AIS 420 American Indian Studies Research Methods3
 AIS 498 Pro-Seminar3

* Until American Indian Studies is able to offer its own course in statistical research methods, students must take JUS 302 or a comparable course, in consultation with an advisor.

The minor in American Indian Studies is designed for students interested in developing an understanding of American Indian issues and analyzing issues through critical inquiry. Fifteen semester hours are required, including AIS 180, 380, and 385 and six elective semester hours from the two areas of emphasis. No pass/fail or credit/noncredit course work may be applied to the minor. A minimum of nine hours must be in resident credit at ASU Main. Students must receive a minimum grade of "C" for all courses in the minor and meet all course eligibility requirements.

CERTIFICATE IN AMERICAN INDIAN STUDIES

The certificate program recognizes the need for training American Indian and non-Indian students for employment and leadership roles in American Indian government, in state/federal agencies, in education programs, and in urban and Indian community programs.

To this end, the American Indian Studies Certificate program seeks to address the myriad of contemporary social, political, and economic problems and issues impacting American Indian people.

The program provides students with

1. useful knowledge pertaining to American Indian sovereignty, government, law, history, economic development, and culture;
2. practical experience in the form of an internship working in an American Indian government, a community program, an educational entity, an urban program, or a state/federal agency; and
3. educational skills so that graduates can pursue jobs with an American Indian focus.

For more information, call the director of the American Indian Studies Program at 480/965-6977.

AMERICAN INDIAN STUDIES (AIS)

AIS 180 Introduction to American Indian Studies. (3)

once a year

Introduction to the study of American Indian justice issues from an interdisciplinary perspective. Primary topics include sovereignty, law, and culture.

General Studies: C

AIS 194 Special Topics. (1-4)

fall and spring

AIS 280 Indigenous Law and Society. (3)

fall and spring

Examines the sovereign status of American Indians and legal relationships between the tribes and the U.S. government. Lecture, discussion.

General Studies: C



Michael Begaye (left), senior program coordinator with the Native American Achievement Program, assists Darin Deschiney.

Tim Trumble photo

AIS 294 Special Topics. (1-4)

selected semesters

AIS 370 American Indian Languages and Cultures. (3)

fall

Emphasizes understanding of Indian language families and the relationship of oral traditions to culture. Prerequisite: AIS 180.

AIS 380 Contemporary Issues of American Indian Nations. (3)

spring

Survey of legal, socioeconomic, political, and educational state of contemporary reservation and urban Indians. Prerequisite: AIS 180.

AIS 385 Federal Indian Policy. (3)

spring

Historical overview of political and legal frameworks, executive policies, and judicial decisions in the context of Indian affairs. Prerequisite: AIS 180.

AIS 394 Special Topics. (1-4)

fall and spring

Topics may include the following:

- American Indian World Views and Philosophies. (3)
- Basic Statistical Analysis. (3)

AIS 420 American Indian Studies Research Methods. (3)

fall

Survey of diverse research methods, including statistical, historical, interpretative, and narrative approaches. Prerequisite: AIS 180.

AIS 484 Internship. (1-12)

selected semesters

AIS 494 Special Topics. (1-4)

fall and spring

AIS 498 Pro-Seminar. (1-7)

selected semesters

AIS 499 Individualized Instruction. (1-3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

Asian Pacific American Studies Program

www.asu.edu/copp/asianamerican

480/965-9711

AG 352

Thomas K. Nakayama, Director

Professor: Nakayama

Assistant Professors: de Jesús, Li, Rosa

PURPOSE

Asian Pacific American Studies is an interdisciplinary undergraduate program that examines the experiences of Asian Americans and Pacific Islanders within the United States, particularly in the Southwest. The program is designed to help students of all ethnicities to

1. appreciate the diversity of Asian American and Pacific Islander cultures, experiences, and histories;
2. understand the U.S. experience in new ways; and
3. participate more effectively in an increasingly diverse society.

A certificate program offers courses that provide students with opportunities to think critically about interethnic cooperation and conflict. The program integrates teaching, research, and community service.

Certificate in Asian Pacific American Studies

Course Requirements. The certificate program requires 18 semester hours. Twelve core hours must be fulfilled by the following courses:

APA 200 Introduction to Asian Pacific American Studies <i>HU/SB, C</i>	3
APA 360 Asian Pacific American Experience <i>HU/SB, C</i>	3
APA 450 Asian Pacific American Contemporary Issues <i>SB, C</i>	3
APA 484 Internship	3
or APA 494 ST: Asian Pacific American Communities (3)	

The remaining six semester hours must be filled by courses from an approved list, including any additional courses with an APA prefix, as well as ASB 242, COM 263, and MCO 460.

Students must apply for the certificate program through the Asian Pacific American Studies Program office.

For more information, call the program director at 480/965-9711.

ASIAN PACIFIC AMERICAN STUDIES (APA)

APA 194 Special Topics. (1–4)
fall and spring

APA 200 Introduction to Asian Pacific American Studies. (3)

fall and spring

Examines historical and contemporary issues facing Asian Americans and Pacific Islanders in the United States. Lecture, discussion.

General Studies: HU/SB, C

APA 210 Introduction to Ethnic Studies in the U.S. (3)

fall and spring

Covers diversity of experiences and relations among racial and ethnic groups in the United States. Lecture, discussion. Cross-listed as AFS 210/CCS 210. Credit is allowed for only AFS 210 or APA 210 or CCS 210.

General Studies: C

APA 294 Special Topics. (1–4)

fall and spring

Open to all students. May be repeated for credit.

APA 310 Asian Pacific American Arts and Cultures. (3)

fall and spring

Explores Asian Pacific American cultural expression in art, literature, film, theatre, dance, and music. Lecture, discussion.

General Studies: HU, C

APA 315 Asian Pacific American Literature. (3)

fall

Explores the literary history, critical reception, and major theories in Asian Pacific American poetry, fiction, and prose. Lecture, discussion.

General Studies: HU, C

APA 330 Asian Pacific American Genders and Sexualities. (3)

spring

Explores gender and sexuality issues as they relate to Asian Pacific American experiences, including interracial relationships, stereotypes, feminism, queer theory. Lecture, discussion.

General Studies: SB, C

APA 340 Asian Pacific Americans and Media. (3)

fall

Analyzes social construction of Asian Pacific American media images and resistance to those images in various historical contexts. Lecture, discussion.

General Studies: HU, C

APA 360 Asian Pacific American Experience. (3)

fall and spring

Historical and contemporary experiences of Asian Pacific American racial/ethnic groups in the United States. Lecture, discussion. Topics may include the following:

- Chinese American
- Filipino/a American
- Japanese American
- Korean American
- Pacific Islander
- South Asian American
- Southeast Asian American

General Studies: HU/SB, C

APA 394 Special Topics. (1–4)

fall and spring

Open to all students. May be repeated for credit. Topics may include the following:

- Asian Pacific American Immigration Issues
- Asian Pacific American Legal History
- Asian Pacific American Women Issues and Identities

APA 450 Asian Pacific American Contemporary Issues. (3)

fall and spring

Focus on issues shaping Asian Pacific American communities, including immigration, politics, education, health, family, gender, youth, interracial relations, and other contemporary topics. Lecture, discussion.

Prerequisite: APA 200 or instructor approval.

General Studies: SB, C

APA 484 Internship. (1–12)

fall and spring

APA 494 Special Topics. (1–4)

fall and spring

Open to all students. May be repeated for credit. Topics may include the following:

- Asian Pacific American Communities

- Asian Pacific American Leadership
- Voices and Visions: Asian Pacific American Women, Issues, and Identities

APA 498 Pro-Seminar. (1–7)
fall and spring

APA 499 Individualized Instruction. (1–3)
fall and spring

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 56.

Hugh Downs School of Human Communication

com.pp.asu.edu

480/965-5095

STAUF A412

Jess K. Alberts, Director

Professors: Alberts, Arnold, Broome, Canary, Carlson, Jain, Martin, McPhee, Nakayama, Valentine

Associate Professors: Buley, Corey, Corman, Davey, Guerrero, Mayer, Trost

Assistant Professors: Brookey, Brouwer, Davis, Floyd, Martinez, Messman, Park-Fuller, Tracy, Trethewey

Instructional Professional: Olson

Assistant Instructional Professional: McDonald

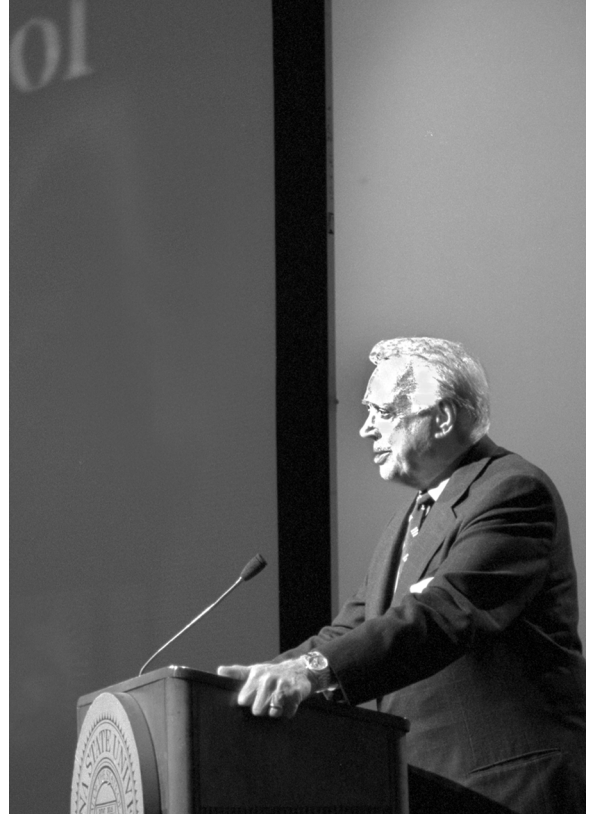
PURPOSE

The Hugh Downs School of Human Communication exists to advance the understanding of message-related human behavior for the purpose of improving communicative interactions. Teaching, research, and service are directed to the continued development of knowledge and application of principles of communication. Employers have ranked interpersonal, analytical, teamwork, computer, and verbal communication skills as the top five skills desired for new hires. The curriculum is designed so that majors are proficient in each of these areas upon graduation. Courses are not offered in broadcasting or journalism.

GENERAL INFORMATION

A minimum GPA of 2.50 is required for enrollment in all upper-division courses and COM 207. A minimum GPA of 2.25 is required for enrollment in COM 110, 241, 250, and 263.

Communication Major Requirements. Undergraduate preprofessional students may be admitted to professional status after meeting all of the following requirements: (1) College of Public Programs major status admission requirements (see “[Admission](#),” page 484); and (2) completion of 12 semester hours of Communication major core course



Hugh Downs addresses an assembly during one of his appearances for the School of Human Communication, which bears his name.

Tim Trumble photo

requirements (COM 100, 207, 225, 308) with a minimum grade of “C” in each.

Students may reach professional status upon successful completion of COM 308; they do not need to apply for major status.

DEGREE REQUIREMENTS

B.A. and B.S. Degrees

Students may choose to complete either a Bachelor of Arts or Bachelor of Science degree in Communication. The B.A. degree requires a minimum of 54 semester hours, including six hours of related area courses and a capstone course (COM 404, 407, or 484). The B.S. degree requires a minimum of 54 semester hours, including a General Studies CS (statistics) course, COM 408, and a capstone course (COM 404 or 407).

Both degree options require that students take four core courses (COM 100, 207, 225, and 308) plus 18 semester hours (six courses) where introductory courses are paired with advanced courses.

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See “General Studies,” page 83.

COLLEGE OF PUBLIC PROGRAMS

Students must choose three of the following courses for a total of nine semester hours:

COM 110 Elements of Interpersonal Communication <i>SB</i>.....3	
or COM 310 Relational Communication (3)	
COM 241 Introduction to Oral Interpretation <i>L/HU</i>.....3	
COM 250 Introduction to Organizational Communication <i>SB</i>.....3	
COM 263 Elements of Intercultural Communication <i>SB, C, G</i>.....3	
COM 321 Rhetorical Theory and Research <i>L/HU, H</i>	
or COM 323 Communication Approaches to Popular Culture <i>C</i>.....3	

Students must then match the three courses selected above with the corresponding 400-level courses—the middle digits of the course numbers match—from the following list for a total of nine hours:

COM 410 Interpersonal Communication Theory and Research <i>SB</i>	3
COM 421 Rhetoric of Social Issues <i>HU</i>	3
COM 441 Performance Studies <i>HU</i>	3
COM 450 Theory and Research in Organizational Communication <i>SB</i>	3
COM 463 Intercultural Communication Theory and Research <i>SB, G</i>	3

Another 15 semester hours (five courses) must be communication electives, only three hours (one course) of which may be 100- or 200-level. A minimum grade of “C” is required in all communication courses except for a maximum of six semester hours of “Y” credit available to qualified students in COM 281, 382, and/or 484.

To assure the breadth and depth of their education, all Communication undergraduates must complete the requirements of the university General Studies, the College of Public Programs, and the Hugh Downs School of Human Communication. For descriptive information on university requirements, refer to “General Studies,” page 83, and “University Graduation Requirements,” page 79. Students in the College of Public Programs are required to take an advanced composition course (which meets the General Studies L requirement). Although many Communication courses meet the university General Studies requirements for literacy and critical inquiry (L), students must take an advanced composition course *from the list provided by the College of Public Programs*.

Students should consult the school for current information concerning College of Public Programs and Hugh Downs School of Human Communication requirements.

Communication Internships

Internships (COM 484) consist of supervised field experiences and are available to upper-level undergraduate students with major status and a GPA higher than 2.50. Students must also have completed or be concurrently enrolled in COM 410, 421, 441, 450, or 463. An application for internship must be completed in the semester before the intended term for an internship. Contact the school for specific deadline dates. Internships must receive prior approval from the internship programs coordinator *before* student registration for the course. Internships may be taken for up to six semester hours.

MINOR IN COMMUNICATION

The minor in Communication consists of 15 semester hours of courses, including COM 100 plus COM 225 or 259, and nine additional semester hours, at least six of which must be in the upper division. Nine of the total 15 semester hours must be ASU Main resident credits including six semester hours of upper-division credit. No pass/fail, “Y” credit, or credit/no-credit courses are allowed. Communication courses required for one’s major may not also count for the minor. All prerequisite and GPA requirements must be met. The “C” minimum requirement must be met for each class.

GRADUATE PROGRAMS

In addition to offering an M.A. degree program, the Hugh Downs School of Human Communication also offers an interdisciplinary Ph.D. degree program in Communication. See the *Graduate Catalog* for the requirements and areas of concentration.

HUGH DOWNS SCHOOL OF HUMAN COMMUNICATION (COM)

COM 100 Introduction to Human Communication. (3)

fall, spring, summer

Topics-oriented introduction to basic theories, dimensions, and concepts of human communicative interaction and behavior.

General Studies: SB

COM 110 Elements of Interpersonal Communication. (3)

fall, spring, summer

Demonstration and practice of communicative techniques in establishing and maintaining interpersonal relationships. Prerequisite: 2.25 GPA.

General Studies: SB

COM 207 Introduction to Communication Inquiry. (3)

fall, spring, summer

Bases of inquiry into human communication, including introduction to notions of theory, philosophy, problems, and approaches to the study of communication. Prerequisites: COM 100; 2.50 GPA.

COM 222 Argumentation. (3)

fall and spring

Philosophical and theoretical foundations of argumentation, including a comparison of models of advocacy and evidence. Prerequisite: ENG 101 or 105.

General Studies: L

COM 225 Public Speaking. (3)

fall, spring, summer

Verbal and nonverbal communication in platform speaking. Discussion and practice in vocal and physical delivery and in purposeful organization and development of public communication. Prerequisite: ENG 101 or 105.

General Studies: L

COM 230 Small Group Communication. (3)

fall, spring, summer

Principles and processes of small group communication, attitudes, and skills for effective participation and leadership in small groups, small group problem solving, and decision making.

General Studies: SB

COM 241 Introduction to Oral Interpretation. (3)

fall, spring, summer

Communication of literary materials through the mode of performance. Verbal and nonverbal behavior, interface of interpreter with literature and audience, and rhetorical and dramatic analysis of literary modes. Prerequisites: ENG 101 (or 105); 2.25 GPA.

General Studies: L/HU

COM 250 Introduction to Organizational Communication. (3)

fall, spring, summer

Introduces the study of communication in organizations, including identification of variables, roles, and patterns influencing communication in organizations. Prerequisite: 2.25 GPA.

General Studies: SB

COM 251 Interviewing. (3)

selected semesters

Principles and techniques of interviewing, including practice through real and simulated interviews in informational, persuasive, and employee-related situations. Not open to freshmen.

COM 259 Communication in Business and the Professions. (3)

fall, spring, summer

Interpersonal, group, and public communication in business and professional organizations. Not open to freshmen and not available for credit toward the major.

COM 263 Elements of Intercultural Communication. (3)

fall, spring, summer

Basic concepts, principles, and skills for improving communication between persons from different minority, racial, ethnic, and cultural backgrounds. Lecture, discussion. Cross-listed as AFR 263. Credit is allowed for only AFR 263 or COM 263. Prerequisite: 2.25 GPA.

General Studies: SB, C, G

COM 271 Voice Improvement. (3)

selected semesters

Intensive personal and group experience to improve normal vocal usage, including articulation and pronunciation.

COM 281 Communication Activities. (1–3)

fall, spring, summer

Nongraded participation in forensics or interpretation cocurricular activities. Maximum 3 semester hours each semester. Prerequisite: instructor approval.

COM 294 Special Topics. (3)

fall, spring, summer

Topics may include the following:

- Beyond Words

COM 300 CIS: Communication in Interdisciplinary Studies. (3)

fall, spring, summer

Examines and analyzes communication in the context of other academic disciplines. May be repeated for credit. Open to B.I.S. majors only. Prerequisites: both COM 100 and 225 or only COM 259; 2.00 GPA.

COM 301 Introductory Theories and Principles of Communication: Communication in Relationships, Organizations, and Public Contexts. (3–9)

once a year

Integrated introduction to the theories and principles of communication in public, interpersonal, and organizational contexts. Lecture, discussion, online component.

COM 308 Advanced Research Methods in Communication. (3)

fall, spring, summer

Advanced communication research methods, including quantitative, qualitative, and critical approaches. Prerequisite: minimum cumulative ASU GPA of 2.50. Prerequisites with a grade of "C" or higher: COM 207; MAT 114 (or higher-level MAT course).

General Studies: L

COM 310 Relational Communication. (3)

fall and spring

Explores communication issues in the development of personal relationships. Current topics concerning communication in friendship, romantic, and work relationships. Prerequisites: COM 100; minimum cumulative ASU GPA of 2.50.

COM 312 Communication, Conflict, and Negotiation. (3)

fall and spring

Theories and strategies of communication relevant to the management of conflicts and the conduct of negotiations. Prerequisites: COM 100; minimum cumulative ASU GPA of 2.50.

COM 316 Gender and Communication. (3)

fall and spring

Introduces gender-related communication. Examines verbal, nonverbal, and paralinguistic differences and similarities within social, psychological, and historic perspectives. Prerequisite: minimum cumulative ASU GPA of 2.50.

General Studies: SB, C

COM 317 Nonverbal Communication. (3)

fall and spring

Study of communication using space, time, movement, facial expression, touch, appearance, smell, environment, objects, voice, and gender/cultural variables. Not open to students with credit in COM 294 ST: Beyond Words. Prerequisite: minimum cumulative ASU GPA of 2.50.

COM 319 Persuasion and Social Influence. (3)

fall, spring, summer

Variables that influence and modify attitudes and behaviors of message senders and receivers, including analysis of theories, research, and current problems. Prerequisites: COM 207 (or its equivalent); minimum cumulative ASU GPA of 2.50. Prerequisite for nonmajors: POS 401 or PSY 230 or QBA 221 or SOC 390 or STP 226.

General Studies: SB

COM 320 Communication and Consumerism. (3)

once a year

Critical evaluation of messages designed for public consumption. Perceiving, evaluating, and responding to political, social, and commercial communication. Prerequisite: minimum cumulative ASU GPA of 2.50.

General Studies: SB

COM 321 Rhetorical Theory and Research. (3)

fall and spring

Historical development of rhetorical theory and research in communication, from classical antiquity to the present. Prerequisites: COM 100; minimum cumulative ASU GPA of 2.50.

General Studies: L/HU, H

COM 323 Communication Approaches to Popular Culture. (3)

fall, spring, summer

Critical analysis of popular culture within social and political contexts; emphasizes multicultural influences and representations in everyday life. Lecture, discussion. Prerequisites: COM 100; minimum cumulative ASU GPA of 2.50.

General Studies: C

COM 325 Advanced Public Speaking. (3)

fall and spring

Social and pragmatic aspects of public speaking as a communicative system; strategies of rhetorical theory and the presentation of forms of public communication. Prerequisites: COM 225; minimum cumulative ASU GPA of 2.50.

General Studies: L

COM 341 Social Contexts for Performance. (3)

selected semesters

Adaptation and performance of literature for the community outside the university. Research into the practical uses of performed literature. Prerequisite: minimum cumulative ASU GPA of 2.50.

COM 344 Performance of Oral Traditions. (3)

selected semesters

Cultural beliefs and values studied through ethnographic research and performance of personal narratives, folklore, myths, legends, and other oral traditions. Lecture, fieldwork, research paper. Prerequisite: minimum cumulative ASU GPA of 2.50.

General Studies: HU, C

COM 357 Communication Technology and Information Diffusion. (3)

fall

Studies effects of new communication technology on society, organizations, and individuals. Hands-on experience plus critical analysis of theory and research. Prerequisites: both COM 250 (or MGT 300 or PGS 430 or SOC 301) and CSE 180 (or its equivalent) or only instructor approval; minimum cumulative ASU GPA of 2.50.

General Studies: SB

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

COM 371 Language, Culture, and Communication. (3)

fall and spring

Cultural influences of language on communication, including social functions of language, bilingualism, biculturalism, and biddialectism. Lecture, discussion. Cross-listed as AFR 371. Credit is allowed for only AFR 371 or COM 371. Prerequisites: COM 263 (or AFR 263); minimum cumulative ASU GPA of 2.50.

General Studies: SB, C, G

COM 382 Classroom Apprenticeship. (1–3)

fall, spring, summer

Nongraded credit for students extending their experience with a content area by assisting with classroom supervision in other COM courses (maximum 3 semester hours each semester). Prerequisites: 2.50 GPA; written instructor approval.

COM 394 Special Topics. (1–4)

fall, spring, summer

Prerequisite: minimum cumulative ASU GPA of 2.50.

COM 400 CIP: Communication in Professions. (3)

fall, spring, summer

Specialized study of communication processes in professional and organizational settings. Open to B.I.S. majors only. May be repeated for credit. Lecture, discussion. Prerequisites: both COM 100 and 225 or only COM 259; 2.00 GPA.

General Studies: HU, C

COM 404 Research Apprenticeship. (3)

fall and spring

Direct research experience on faculty projects. Student/faculty match based on interests. Lecture, apprenticeship. Prerequisites: COM 308 (or instructor approval); minimum cumulative ASU GPA of 2.50; application required.

COM 407 Advanced Critical Methods in Communication. (3)

spring

Examines critical approaches relevant to communication, including textuality, social theory, cultural studies, and ethnography. Lecture, discussion. Prerequisites: COM 308; minimum cumulative ASU GPA of 2.50.

COM 408 Quantitative Research Methods in Communication. (3)

fall and spring

Advanced designs, measurement techniques, and methods of data analysis of communication research. Prerequisites: COM 308 and a course in generic statistics (EDP 454 or POS 401 or PSY 230 or QBA 221 or SOC 390 or STP 226); minimum cumulative ASU GPA of 2.50.

COM 410 Interpersonal Communication Theory and Research. (3)

fall, spring, summer

Survey and analysis of major research topics, paradigms, and theories dealing with message exchanges between and among social peers. Prerequisites: COM 110 (or 310), 308; minimum cumulative ASU GPA of 2.50.

General Studies: SB

COM 411 Communication in the Family. (3)

once a year

Broad overview of communication issues found in marriage and family life, focusing on current topics concerning communication in the family. Prerequisites: COM 110 (or 310), 207; minimum cumulative ASU GPA of 2.50.

General Studies: SB

COM 414 Crisis Communication. (3)

selected semesters

Role of communication in crisis development and intervention. Prerequisite: minimum cumulative ASU GPA of 2.50.

COM 417 Communication and Aging. (3)

selected semesters

Critical study of changes in human communicative patterns through the later adult years, with attention on intergenerational relationships and self-concept functions. Prerequisite: minimum cumulative ASU GPA of 2.50.

COM 421 Rhetoric of Social Issues. (3)

fall and spring

Critical rhetorical study of significant speakers and speeches on social issues of the past and present. Prerequisites: COM 308, 321 (or 323).

General Studies: HU

COM 422 Advanced Argumentation. (3)

selected semesters

Advanced study of argumentation theories and research as applied to public forum, adversary, scholarly, and legal settings. Prerequisites: COM 222; minimum cumulative ASU GPA of 2.50.

COM 426 Political Communication. (3)

fall

Theories and criticism of political communication; including campaigns, mass persuasion, propaganda, and speeches. Emphasis on rhetorical approaches. Prerequisite: minimum cumulative ASU GPA of 2.50.

General Studies: SB

COM 430 Leadership in Group Communication. (3)

selected semesters

Theory and process of leadership in group communication, emphasizing philosophical foundations, contemporary research, and applications to group situations. Prerequisites: COM 230; minimum cumulative ASU GPA of 2.50.

COM 441 Performance Studies. (3)

fall, spring, summer

Theory, practice, and criticism of texts in performance. Emphasis on the interaction between performer, text, audience, and context. Prerequisites: COM 241, 308; minimum cumulative ASU GPA of 2.50.

General Studies: HU

COM 445 Narrative Performance. (3)

selected semesters

Theory and practice of performing narrative texts (e.g., prose fiction, oral histories, diaries, essays, letters). Includes scripting, directing, and the rhetorical analysis of storytelling. Prerequisites: COM 241; minimum cumulative ASU GPA of 2.50.

General Studies: HU

COM 446 Performance of Literature Written by Women. (3)

selected semesters

Explores, through performance and critical writing, literature written by women. Prerequisite: minimum cumulative ASU GPA of 2.50.

General Studies: HU, C

COM 450 Theory and Research in Organizational Communication. (3)

fall, spring, summer

Critical review and analysis of the dominant theories of organizational communication and their corollary research strategies. Prerequisites: COM 250, 308; minimum cumulative ASU GPA of 2.50.

General Studies: SB

COM 453 Communication Training and Development. (3)

once a year

Examines the procedures and types of communication training and development in business, industry, and government. Prerequisites: COM 250; minimum cumulative ASU GPA of 2.50.

COM 463 Intercultural Communication Theory and Research. (3)

fall, spring, summer

Surveys and analyzes major theories and research dealing with communication between people of different cultural backgrounds, primarily in international settings. Lecture, discussion, small group work. Cross-listed as AFR 463. Credit is allowed for only AFR 463 or COM 463. Prerequisites: COM 263 (or AFR 263), 308; minimum cumulative ASU GPA of 2.50.

General Studies: SB, G

COM 465 Intercultural Communication Workshop. (3)

selected semesters

Experientially based study of communication between members of different cultures designed to help improve intercultural communication skills. Prerequisites: minimum cumulative ASU GPA of 2.50; instructor approval.

COM 484 Communication Internship. (1–6)

fall, spring, summer

Fee. Prerequisites: COM 225, 308; minimum cumulative ASU GPA of 2.50; application required. Pre- or corequisite: COM 410 or 421 or 441 or 450 or 463.

COM 494 Special Topics. (1–3)

fall, spring, summer

Prerequisite: minimum cumulative ASU GPA of 2.50.

COM 501 Research Methods in Communication. (3)

fall

Critical analysis of systems of inquiry in communication, focusing on the identification of variables and approaches to conducting research in communication. Prerequisite: instructor approval.

COM 504 Theories and Models in Communication. (3)

fall

Theory construction, metatheoretical concerns, models, construct definition, and comparative analysis of current theories in communication. Prerequisite: instructor approval.

COM 508 Quantitative Research Methods in Communication. (3)

fall

Empirical research designs, measurements, and statistical strategies and techniques in analyzing and evaluating experimental and descriptive research in communication. Prerequisites: both COM 501 and 504 or only instructor approval.

COM 509 Qualitative Research Methods in Communication. (3)

spring

Qualitative research methods, including interviewing, field methods, and other nonquantitative techniques for analyzing communication. Prerequisites: both COM 501 and 504 or only instructor approval.

COM 512 Death, Society, and Human Experience. (3)

selected semesters

Examines dying, death, bereavement, and suicide from both individual and sociocultural perspectives in terms of options for communication and action in death-related situations. Prerequisite: instructor approval.

COM 521 Rhetorical Criticism of Public Discourse. (3)

selected semesters

History and significance of rhetorical theory and criticism in the analysis of public discourse. Prerequisites: both COM 501 and 504 or only instructor approval.

COM 584 Communication Internship. (1–12)

fall, spring, summer

Fee.

COM 596 Pro-Seminar in Communication. (0)

fall

Discussion of research projects with the faculty. Prerequisite: admission to the graduate program.

COM 604 Theory Construction in Communication. (3)

fall

Review and analysis of philosophical problems inherent in communicative research and of metatheories designed to deal with these problems. Prerequisite: COM 504 or instructor approval.

COM 607 Contemporary Rhetorical Methods. (3)

spring

Analysis of issues in the practice of rhetorical communication research, including criticism and scholarship. Seminar.

COM 608 Multivariate Statistical Analysis of Data in Communication. (3)

spring

Statistical analysis of communication research data. Multivariate procedures used in communication research and methods of causal analysis. Prerequisites: COM 501 and 508 (or their equivalents).

COM 609 Advanced Qualitative Research Methods in Communication. (3)

fall

Analysis of issues in the practice of qualitative communication research, including data gathering, fieldwork issues, analysis strategies, and reporting results. Prerequisite: COM 509 or instructor approval.

COM 680 Practicum: Research in Communication. (3)

spring

Guided practice in the conduct of communication research. Topic identification; procedures, formats, and ethics of publishing. Prerequisite: COM 604.

COM 691 Seminar. (1–12)

fall, spring, summer

Lecture, discussion. Topics may include the following:

- Current Organizational Approaches to Communication. (3)
- Examination of Privacy and Disclosure. (3)
- Intercultural Aspects of Communication. (3)
- Interpersonal and Relational Communication. (3)

- Research in Performance Studies. (3)

- Rhetorical Issues. (3)

- Social Influence. (3)

Prerequisite: instructor approval.

COM 792 Research. (1–12)

selected semesters

COM 799 Dissertation. (1–15)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

Walter Cronkite School of Journalism and Mass Communication

www.asu.edu/cronkite

480/965-5011

STAUF A231

Joe S. Foote, Director

Professors: Craft, Cronkite, Doig, Foote, Godfrey, Merrill, Sylvester, Watson, Youm

Associate Professors: Allen, Barrett, Bramlett-Solomon, Galician, Lentz, Matera, Russell, Russomanno

Assistant Professors: Keith, Lutyk, Silcock

Clinical Professors: Itule, Leigh

Lecturers: Casavantes, Nichols

Senior Administrative Professional: Leigh

PURPOSE AND PHILOSOPHY

The primary purpose of the Walter Cronkite School of Journalism and Mass Communication is to prepare students to enter positions in media fields. The school strives to meet its mission through a three-pronged approach:

1. classroom instruction in a blend of conceptual courses, such as media law, media ethics, media history, and media management and skills courses, such as writing, editing, reporting, and production techniques;
2. on-campus media work opportunities, such as the *State Press*, the independent daily newspaper; KASC radio; KAET-TV; KAET-TV/Cactus State Poll; and "Newswatch," a weekly student-produced cable television news magazine program; and
3. off-campus media work opportunities, including internships in print, broadcast, public relations, and visual journalism.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

In addition to preparing students to assume positions in the media and media-related enterprises, the school provides courses that lead to a better understanding of the role and responsibility of the media in society's public and private sectors.

ADMISSION

Preprofessional Admission

Students admitted to ASU also may be admitted to the Walter Cronkite School of Journalism and Mass Communication with preprofessional status. Preprofessional admission to the school does not guarantee admission to the upper-division professional program. All preprofessional students enrolling in courses in the school must complete a minimum of 30 semester hours with a minimum 2.50 GPA before they are permitted to enroll in school courses at the 200-level. All preprofessional students who intend to take courses beyond the 100-level must pass an English proficiency examination administered by the school.

Professional Program Admission

Admission to the Walter Cronkite School of Journalism and Mass Communication professional program, which enrolls students in their junior and senior years, is competitive and based on available resources. Once a student is granted admission, the upper-division professional program may require two years to complete.

A separate application procedure is required for entry to the upper-division professional program. To be eligible to apply for admission to the professional program, students must

1. be admitted to ASU as a classified student;
2. have completed at least 56 semester hours by the close of the semester in which the application is submitted;
3. have completed lower-division courses or their equivalents, as specified below;
4. have completed, with a passing score, the English proficiency examination administered by the school; and
5. have met College of Public Programs preprofessional status admissions requirements.

As described above, students must have completed specified lower-division courses. Preprofessional status students must complete the following courses:

JMC 201 Journalism Newswriting <i>L</i>	3
MCO 110 Introduction to Mass Communication <i>SB</i>	3
or MCO 120 Media and Society <i>SB</i> (3)	—
Total	6

To be considered for admission to the school's upper-division professional program, students must obtain an application form from the school office in STAUF A231. Precise application procedures and submission deadlines are outlined on the form. Completion of the minimum requirements for eligibility does not guarantee admission to the upper-division professional program. The admissions committee considers a variety of criteria, including major

and cumulative GPA, media experience, writing ability, and commitment to the field.

ADVISING

Students should follow the sequence of courses outlined on school curriculum check sheets and the advice of the school's academic advisors. All students who enroll as pre-professionals or who seek and ultimately gain professional status should meet regularly with Walter Cronkite School of Journalism and Mass Communication academic advisors. Conscientious, careful planning and early advising are crucial to students who desire to progress through the program in a timely fashion.

DEGREES

The school offers a program leading to one Bachelor of Arts degree in Journalism and Mass Communication. Students select one of five concentrations: journalism, media analysis and criticism, media management, media production, or strategic media and public relations.

The school offers a program leading to the graduate degree Master of Mass Communication.

TRANSFER STUDENTS

Transfer students must be admitted formally to ASU and must adhere to the admission procedures to be considered for admission to the professional program in the Walter Cronkite School of Journalism and Mass Communication.

Students completing their first two years of course work at a community college or four-year institution other than ASU should consult the school's academic advisors at least one full semester before they hope to be considered for admission to the school's professional program. Transfer student admission to ASU does not guarantee admission to the upper-division professional program.

PROGRAM REQUIREMENTS

Because the Walter Cronkite School of Journalism and Mass Communication is accredited by the Accrediting Council on Education in Journalism and Mass Communication, its students are required to take a minimum of 80 semester hours in courses outside the majors of Broadcasting or Journalism, with no fewer than 65 semester hours in liberal arts and sciences. This requirement ensures that students receive a broad academic background.

At least 18 semester hours of major courses required by the school, including one writing course, must be taken at ASU. A student must receive a grade of "C" or higher in all courses taken in the major and in the required related area.

B.A. REQUIREMENTS

All students are required to demonstrate proficiency in a language other than English (a spoken language or American Sign Language). Proficiency is defined as completing the second semester intermediate level, or higher, of a language other than English with a grade of "C" or higher.

The undergraduate major in Journalism and Mass Communication consists of a minimum of 30 semester hours in Walter Cronkite School of Journalism and Mass Communication courses.

Required core courses (12 of the 30 to 36 hours are required of all students in all five concentrations):

JMC 201 Journalism Newswriting <i>L</i>	3
MCO 110 Introduction to Mass Communication <i>SB</i>	3
MCO 302 Media Research Methods.....	3
MCO 402 Mass Communication Law <i>L</i>	3
Total	12

Students complete the required core courses of the major (12 semester hours) plus the required courses of one concentration area (15 semester hours) and elective courses (from three to nine hours) from other areas.

These courses are in addition to other degree requirements. See “University Graduation Requirements,” page 79.

Related Area. Each student is required to complete a 12-semester-hour related area to complement the courses taken in the major concentration areas.

GENERAL STUDIES REQUIREMENTS

Students must satisfy the university General Studies requirement found in “General Studies,” page 83, and the College of Public Programs course requirements found under “[College Degree Requirements](#),” page 486. Students are advised to review carefully the appropriate school curriculum check sheet to be sure courses taken move the student toward graduation with the least amount of delay and difficulty. Note that all three General Studies awareness areas are required.

General education requirements for the Walter Cronkite School of Journalism and Mass Communication follow.

Students are required to take one course in each of the following areas: communication (applied speech), computer science, economics, English composition (beyond the freshman level), English literature, history, mathematics (numeracy requirement), two natural science lab courses, philosophy, political science (either POS 110 or 310), and psychology.

MINOR IN MASS COMMUNICATION

The Cronkite School of Journalism and Mass Communication offers a minor in Mass Communication consisting of the required course MCO 120 Media and Society and 12 additional semester hours of upper-division ASU Main campus resident credit taken from a list of approved courses. The following courses are included:

MCO 418 History of Mass Communication <i>SB, H</i>	3
MCO 430 International Mass Communication <i>G</i>	3
MCO 450 Visual Communication <i>HU</i>	3
MCO 456 Political Communication <i>SB</i>	3
MCO 460 Race, Gender, and Media <i>C</i>	3
MCO 494 Special Topics	3

To take upper-division courses, the student must be at least a sophomore (25 semester hours). To pursue the minor in Mass Communication, the student must maintain a minimum 2.00 overall GPA, must obtain a minimum “C” grade in each course in the minor, and must have a major other than Journalism and Mass Communication.

GRADUATE PROGRAM

Master of Mass Communication. The curriculum for the M.M.C. degree is designed to help students achieve intellectual and professional growth, to prepare students for positions in the mass media, and to provide a background to enable those currently in the media to advance their careers. Information on the Master of Mass Communication program is detailed in the *Graduate Catalog*.

JOURNALISM AND MASS COMMUNICATION (JMC)

JMC 200 Introduction to Electronic Media. (3)

fall, spring, summer

Surveys electronic media in the United States: history, regulation, organization, programming, and effects. Prerequisites: MCO 110 (or 120); successful completion of English proficiency exam; major.

JMC 201 Journalism Newswriting. (3)

fall and spring

Writing news for the print media. Prerequisites: ENG 101 (or 105); MCO 110 (or 120); successful completion of English proficiency exam; major.

General Studies: L

JMC 202 Radio-Television Writing. (3)

fall, spring, summer

Writing for electronic media, news, and continuity. Prerequisites: MCO 110 (or 120); successful completion of English proficiency exam; major.

General Studies: L

JMC 235 Production Techniques. (3)

fall, spring, summer

Introduces basic concepts of audio and video production. Introduces operation of portable cameras, recorders, microphones, lights, editing, and postproduction equipment. Prerequisites: JMC 200; successful completion of English proficiency exam; major.

JMC 270 Public Relations Techniques. (3)

fall and spring

Theory and practice of publicity, public relations, and related techniques and procedures. Prerequisite: MCO 110 or 120.

JMC 300 Advanced Broadcast Newswriting. (3)

fall and spring

Technique and practice in newswriting for broadcast and cable applications. Prerequisites: JMC 201; professional status.

JMC 301 Reporting. (3)

fall and spring

Fundamentals of news gathering, interviewing, and in-depth reporting. Prerequisites: JMC 201; professional status.

General Studies: L

JMC 313 Introduction to Editing. (3)

fall and spring

Copyediting and headline writing. Electronic editing on personal computer terminals. Prerequisites: JMC 301; professional status.

JMC 315 Broadcast News Reporting. (3)

fall and spring

News and information practices of networks, stations, and industry. Practice in writing, reporting, and editing with emphasis on audio. Prerequisites: JMC 201; professional status.

General Studies: L

JMC 330 Advanced Broadcast Reporting. (3)

fall and spring

News and information practices of networks, stations, and industry. Advanced practice in writing, reporting, and editing with emphasis on video. Prerequisites: JMC 300; professional status.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF PUBLIC PROGRAMS

JMC 332 Broadcast Programming. (3)

fall, spring, summer

Programming theory and evaluation, regulation, ethics, and responsibilities and basics of audience psychographics and effects. Prerequisites: JMC 200; professional status.

JMC 351 Photojournalism I. (3)

fall and spring

Taking, developing, and printing pictures for newspaper and magazine production on a media deadline basis. Students should have their own cameras. Prerequisites: JMC 201; professional status.

JMC 401 Advanced Public Relations. (3)

fall and spring

Advanced theory and practice of publicity, public relations, and related techniques and procedures. Prerequisite: JMC 270.

JMC 412 Editorial Interpretation. (3)

selected semesters

The press as an influence on public opinion. Role of the editorial in analyzing and interpreting current events. Prerequisites: JMC 301; professional status.

JMC 413 Advanced Editing. (3)

fall and spring

Theory and practice of newspaper editing, layout and design, picture and story selection. Prerequisites: JMC 313; professional status.

JMC 414 Electronic Publication Design. (3)

fall and spring

Theory, organization, and practice of layout, typography, and design in traditional and multimedia publishing. Prerequisites: JMC 401; professional status.

JMC 415 Writing for Public Relations. (3)

fall and spring

Development of specific writing techniques for the practitioner in public relations agencies and divisions of major organizations. Prerequisites: JMC 401; professional status.

JMC 417 Public Relations Campaigns. (3)

fall and spring

Theory, principles, and literature of public relations and how they relate to audiences, campaigns, and ethics. Prerequisites: JMC 401; professional status. Corequisite: JMC 415.

JMC 420 Reporting Public Affairs. (3)

fall and spring

Instruction and assignments in reporting the courts, schools, government, city hall, social problems, and other areas involving public issues. Prerequisites: JMC 301; professional status.

JMC 433 Broadcast Sales and Promotion. (3)

fall and spring

Basics of electronic media marketing practices, including commercial time sales techniques and radio/TV promotion fundamentals. Prerequisites: JMC 200; professional status.

JMC 437 Advanced TV Production. (3)

fall and spring

Emphasizes individual production projects of the student's own conception and design utilizing studio, field, and postproduction techniques. Prerequisites: JMC 235; professional status.

JMC 440 Magazine Writing. (3)

fall and spring

Writing and marketing magazine articles for publication. Prerequisites: JMC 301; professional status.

JMC 451 Photojournalism II. (3)

fall and spring

Theory and practice of photojournalism with emphasis on shooting, lighting, and layout for the media. Prerequisites: JMC 351; professional status.

JMC 452 Photojournalism III. (3)

fall and spring

Advanced theory and practice of photojournalism with emphasis on the photo essay and illustrations in black and white and color. 2 hours lecture, 2 hours lab. Prerequisites: JMC 451; professional status.

JMC 465 Precision Journalism. (3)

fall and spring

Advanced writing course with focus on reporting polls and surveys and other numerically-based stories as well as on understanding the concepts that underlie polls and surveys. Lecture, lab. Prerequisites: JMC 301; professional status.

JMC 470 Depth Reporting. (3)

fall and spring

Introduces strategies for writing in-depth newspaper or magazine articles. Lecture, lab. Prerequisites: JMC 301; professional status; instructor approval.

JMC 472 Broadcast Station Management. (3)

fall, spring, summer

Management principles and practices, including organization, procedures, policies, personnel problems, and financial aspects of station management. Prerequisites: JMC 332; professional status.

JMC 475 Television Newscast Production. (3)

fall and spring

Writing, reporting, and production of the television newscast. Capstone course of the broadcast journalism emphasis. Prerequisites: professional status; instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

MASS COMMUNICATION (MCO)

MCO 110 Introduction to Mass Communication. (3)

fall and spring

Organization, function, and responsibilities of the media and adjunct services. Primary emphasis on newspapers, radio, television, and magazines. Credit is allowed for only MCO 110 or 120. Prerequisite: ENG 101 or 105 or 107.

General Studies: SB

MCO 120 Media and Society. (3)

fall, spring, summer

Role of newspapers, magazines, radio, television, and motion pictures in American society. Credit is allowed for only MCO 120 or 110. Designed for nonmajors.

General Studies: SB

MCO 302 Media Research Methods. (3)

fall and spring

Surveys research methods used in the social sciences, with a focus on mass communication. Prerequisite: professional status.

MCO 402 Mass Communication Law. (3)

fall, spring, summer

Legal aspects of the rights, privileges, and obligations of the press, radio, and television. Prerequisites: 87 hours; professional status.

General Studies: L

MCO 418 History of Mass Communication. (3)

fall and spring

American journalism from its English and colonial origins to the present day. Development and influence of newspapers, magazines, radio, television, and news gathering agencies.

General Studies: SB, H

MCO 421 News Problems. (3)

fall and spring

Trends and problems of the news media, emphasizing editorial decisions in the processing of news.

MCO 430 International Mass Communication. (3)

fall and spring

Comparative study of communication and media systems. Information gathering and dissemination under different political and cultural systems.

General Studies: G

MCO 435 Emerging Media Technologies. (3)

fall and spring

Surveys new telecommunication technologies in a convergent environment.

MCO 450 Visual Communication. (3)

fall, spring, summer

Theory and tradition of communication through the visual media with emphasis on the continuity of traditions common to modern visual media.

General Studies: HU

MCO 456 Political Communication. (3)

fall and spring

Theory and research related to political campaign communication. The persuasive process of political campaigning, the role of the media, the candidate, and image creation.

General Studies: SB

MCO 460 Race, Gender, and Media. (3)

spring and summer

Reading seminar designed to give a probing examination of the interface between AHANA Americans and the mass media in the United States. Lecture, discussion. Cross-listed as AFR 460. Credit is allowed for only AFR 460 or MCO 460.

General Studies: C

MCO 470 Issues Management and Media Strategy. (3)

fall

Strategic aspects of media planning and management in public relations, public affairs, crisis communication lobbying, media ethics, and government relations. Seminar. Prerequisite: JMC 401 or instructor approval.

MCO 494 Special Topics. (3)

selected semesters

MCO 501 Newswriting and Reporting. (3)

fall

Designed for graduate students in the M.M.C. program who have undergraduate degrees in nonjournalism areas. Objective is to teach fundamentals of writing and reporting. Lecture, lab. Prerequisite: acceptance into M.M.C. graduate program or instructor approval.

MCO 503 Press Freedom Theory. (3)

spring

Examines philosophical and legal aspects of press freedom. Emphasizes First Amendment theory evolution from 1791 to present.

MCO 510 Research Methodology in Mass Communication. (3)

fall and spring

Identifies research problems in mass communication. Overview of questionnaire construction. Attention to survey, historical, content analysis, experimental, and legal research methods. Prerequisite: acceptance into M.M.C. graduate program or instructor approval.

MCO 520 Mass Communication Theories and Process. (3)

fall

Analyzes various theoretic models of mass communication with emphasis on the applications of these theories to various professional communication needs.

MCO 522 Mass Media and Society. (3)

spring

Mass media as social institutions, particularly interaction with government and public. Emphasizes criticism and normative statements.

MCO 530 Media Ethics. (3)

fall

Ethical conventions and practices of print and electronic media as they relate to the government and private sectors of the society.

MCO 531 Broadcast Journalism. (3)

spring

News and information practices of networks, stations, and industry. Practice in writing, reporting, and editing with emphasis on video. Lecture, lab. Prerequisite: MCO 501.

MCO 540 Historical/Legal Methods. (3)

spring

Introduces legal and historical methods necessary to conduct qualitative mass communication research. Prerequisite: M.M.C. graduate student.

MCO 560 Arizona Media Law. (3)

fall

Case study approach of first amendment issues, media access, libel, confidentiality, and invasion of privacy as applied to media organizations in Arizona. Lecture, seminar.

MCO 593 Applied Project. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

School of Justice Studies

www.asu.edu/copp/justice

480/965-7682

WILSN 331

Doris Marie Provine, Director

Regents' Professor: Altheide

Professors: Cavender, Figueira-McDonough, Haynes, Hepburn, Johnson, Jurik, Lauderdale, Musheno, Provine, Romero, Schneider, Zatz

Associate Professors: Bortner, Lujan, Menjivar, Riding In

Assistant Professors: Adelman, Afflitto, Hanson, Lopez, Milun

MISSION

Students pursuing the B.S. degree in Justice Studies find an interdisciplinary classroom experience emphasizing ideas from the social sciences, philosophy, and legal studies. The degree is designed for students interested in studying issues of justice and those desiring justice-related careers, including law. Students develop an understanding of the meaning of justice and injustice, both descriptive and normative, and analyze often controversial issues through critical inquiry and social science investigation. The faculty focus on theories of justice and injustice in three principal areas:

1. crime and criminology;
2. law and society; and
3. social and economic justice.

Courses are designed to provide students with a comprehensive understanding of the substantive issues within each of these three areas and of the interrelationship and continuity among them. Students accordingly may learn about conflict and its negotiation; crime and violence; adolescents and delinquency; punishment and alternatives to punishment; and differential institutional and socioeconomic treatment of populations based on gender and sexuality, race and ethnicity, and social class.

The heart of any university program is its faculty. The School of Justice Studies boasts a faculty with strong scholarly credentials. Faculty members include national and local award recipients in research, teaching, and public service. Faculty members are committed to challenging students to develop their own understandings of justice, to analyze critically, and to propose possible solutions to a wide variety of

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

contemporary issues concerning crime and criminology, law and society, and social and economic justice.

While completing the Justice Studies curriculum, students encounter opportunities to develop transferable skills, including critical thinking, oral and written discourse, computer literacy, and problem solving. Faculty encourage students to practice justice through various experiential approaches, including volunteer work, service learning, and internships. Students actively engage in their education via discussion, cooperative learning, field trips, and case-based classroom formats.

ADMISSION

Upon admission to the university, Justice Studies students are classified as preprofessional. Justice Studies students must earn professional status before taking 400-level JUS resident credit courses.

Justice Studies students may achieve professional status by (1) meeting the College of Public Programs preprofessional status admission requirements (see [“Admission,” page 484](#)); and (2) completing all of the following classes with a 2.50 minimum average GPA and a minimum grade of “C” in each:

Choose between the course combinations below.....	6 or 3
ENG 101 First-Year Composition (3)	
ENG 102 First-Year Composition (3)	
————— <i>or</i> —————	
ENG 105 Advanced First-Year Composition (3)	
————— <i>or</i> —————	
ENG 107 English for Foreign Students (3)	
ENG 108 English for Foreign Students (3)	
JUS 105 Introduction to Justice Studies.....	3
or JUS 305 Principles of Justice Studies (3)	
JUS 301 Research in Justice Studies.....	3
JUS 302 Basic Statistical Analysis in Justice Studies CS.....	3
JUS 303 Justice Theory.....	3
College writing competence requirement.....	3

ADVISING

Justice Studies students admitted as preprofessional are advised by one of the school’s academic advisors. All students are encouraged to seek advising to formulate an appropriate educational plan.

Upon admission to the university, every Justice Studies undergraduate receives the *Undergraduate Advisement Guide* and an evaluation of transfer work, if any. For more information, call the school at 480/965-7682.

DEGREES

Justice Studies—B.S.

The curriculum for the B.S. degree in Justice Studies provides interdisciplinary social science courses relevant to law and justice for students working in the justice field, students anticipating justice-related careers (including the legal profession), and interested non-Justice Studies students.

JUSTICE STUDIES MINOR

The minor is designed for students interested in developing an understanding of meanings of justice and injustice

and analyzing often controversial issues through critical inquiry and social science investigation.

Fifteen hours of graded classroom JUS course work is required, including JUS 105 or 305 and JUS 303. No pass/fail or credit/noncredit course work may be applied to the minor. A minimum of nine semester hours must be resident credit at ASU Main, six hours of which must be upper-division credit. Students must receive a minimum grade of “C” for all courses in the minor and meet all course eligibility requirements, including prerequisites. Consult the minor verification form available in the school office.

DEGREE REQUIREMENTS

The faculty in the School of Justice Studies award a B.S. degree upon the successful completion of a curriculum consisting of a minimum of 120 semester hours, including the university General Studies requirement, College of Public Programs requirements, justice studies courses, a supplementary focus and electives. Additionally, the student must

1. earn professional status;
2. earn a minimum of 45 semester hours of upper-division credits;
3. complete the school’s minimum residency requirement of 24 semester hours (see the *Undergraduate Advisement Guide*);
4. earn a grade of “C” or higher in all justice studies courses taken at ASU that apply to the justice studies component of the curriculum (i.e., nonelectives); and
5. meet the university’s residency and scholarship requirements.

GENERAL STUDIES REQUIREMENTS

To assure the breadth and depth of their education, all Justice Studies undergraduates must complete the university General Studies requirement and additional fundamental requirements prescribed by the College of Public Programs and the School of Justice Studies. For descriptive information on these requirements, see “General Studies,” page 83. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. The school implements the ASU continuous enrollment policy for First-Year Composition and the university mathematics (MA) requirement.

MAJOR REQUIREMENTS

The required justice studies component consists of 51 semester hours, of which 15 must be taken in a supplementary focus approved by the school. The following courses are required for all degree candidates. Equivalent courses may be substituted when appropriate.

JUS 105 Introduction to Justice Studies.....	3
or JUS 305 Principles of Justice Studies (3)	
JUS 301 Research in Justice Studies.....	3
JUS 302 Basic Statistical Analysis in Justice Studies CS.....	3
JUS 303 Justice Theory.....	3
Total.....	12

Through advising, a group of justice studies courses may be recommended to ensure a comprehensive exposure appropriate to the student's interests. The faculty encourage students interested in criminal justice issues and career areas to take JUS 100 The Justice System.

Electives. The faculty encourage students to utilize the unique opportunities afforded by the university to pursue personal and educational interests, whether in the form of a broad sampling of other disciplines or the deeper probing of a single field. Specifically, the faculty suggest that students take a minimum of one course in American government, behavioral psychology, and sociology.

Transfer of Community College Credits. Credits transferred from accredited community colleges are accepted as lower-division credits up to a maximum of 64 semester hours. The acceptance of credits is determined by the director of Undergraduate Admissions, and the utilization of credits toward degree requirements is determined by the faculty of the School of Justice Studies.

GRADUATE PROGRAMS

The faculty in the School of Justice Studies offer an M.S. degree in Justice Studies, which can be earned with a concurrent M.A. degree in Anthropology. The faculty in the School of Justice Studies are also the primary contributors to the interdisciplinary Ph.D. degree in Justice Studies. For more information, see the *Graduate Catalog*.

JUSTICE STUDIES (JUS)

JUS Note 1. For Justice Studies students to take a nonrequired 300-level JUS course, they must have at least a "C" in each of the required JUS courses—JUS 105 (or 305), 301, 302, and 303—and a minimum average GPA of 2.50 for these four classes. For non-Justice Studies students to take a 300-level JUS course, they must have a minimum of 56 earned semester hours (junior status) and a minimum cumulative GPA of 2.00. Non-Justice Studies students may take JUS 301, 302, and 303 with school approval.

JUS Note 2. For non-Justice Studies students to take a 400-level JUS course, they must have a minimum of 56 earned semester hours (junior status) and a minimum cumulative GPA of 2.50.

JUS 100 The Justice System. (3)

fall, spring, summer

Overview of the justice system. Roles of law enforcement personnel, the courts, and correctional agencies. Philosophical and theoretical views in historical perspective.

General Studies: SB

JUS 105 Introduction to Justice Studies. (3)

fall, spring, summer

Introductory overview to the study of justice from a social science perspective. Primary topics include justice theories and justice research. Credit is allowed for only JUS 105 or 305 (or AFR 305). Appropriate for freshmen and sophomores. Lecture, discussion. Cross-listed as AFR 105. Credit is allowed for only AFR 105 or JUS 105.

JUS 200 Topics in Concepts and Issues of Justice. (3)

once a year

Uses critical thinking skills to analyze and comprehend controversial social issues (e.g., abortion, affirmative action, capital punishment, the flat tax, and immigration). May be repeated for credit when topics vary. Lecture, discussion.

General Studies: SB

JUS 294 Special Topics. (1–3)

fall, spring, summer

Topics chosen from various fields of justice studies.

JUS 301 Research in Justice Studies. (3)

fall, spring, summer

Focuses on developing and evaluating research designs, data collection, and the relationship between validity and reliability. Stresses methods for conducting research. Prerequisite: Justice Studies student.

JUS 302 Basic Statistical Analysis in Justice Studies. (3)

fall, spring, summer

Introduces the fundamentals and application of descriptive and inferential statistics, with emphasis on the justice area. Prerequisite: intermediate algebra or higher.

General Studies: CS

JUS 303 Justice Theory. (3)

fall, spring, summer

Examines classic and contemporary philosophies and theories of justice, including legal, social, and criminal justice. See JUS Note 1.

JUS 305 Principles of Justice Studies. (3)

fall, spring, summer

Introductory overview to the study of justice from a social science perspective. Primary topics include justice theories and justice research. Credit is allowed for only JUS 305 or 105 (or AFR 105). Appropriate for juniors and seniors. Lecture, discussion. Cross-listed as AFR 305. Credit is allowed for only AFR 305 or JUS 305. See JUS Note 1.

JUS 306 Police and Society. (3)

once a year

Focuses on community policing; critical inquiry of administrative decision making; perspectives on police-citizen violence; street practices; urban policing. Lecture, discussion. See JUS Note 1.

JUS 308 Courts and Society. (3)

once a year

History and development of courts. Relationship between dispute resolution mechanisms and cultural/social structure/processes in which they are embedded. Lecture, discussion, cooperative learning, case analysis. See JUS Note 1.

JUS 310 Corrections and Justice. (3)

once a year

Examines the United States prison condition; types of offenders; issues including drugs, gangs, drunk driving, racial discrimination, and "intermediate" punishments. Lecture, discussion. See JUS Note 1.

JUS 311 Crime, Prevention, and Control. (3)

once a year

Examines prevention and control of crime by a review of contemporary theories, justice agency procedures, and social policies. Lecture, discussion. See JUS Note 1.

JUS 320 Community and Social Justice. (3)

once a year

Discusses and analyzes definitions of community; impact of environment on behavior; promises of community organization for local empowerment. Lecture, discussion. See JUS Note 1.

General Studies: SB, C

JUS 321 Wealth Distribution and Poverty. (3)

once a year

Examines wealth and income distribution in the United States and analyzes ideological and political forces producing an increasingly unequal society. Lecture, discussion. Cross-listed as AFR 321. Credit is allowed for only AFR 321 or JUS 321. See JUS Note 1.

General Studies: SB, C

JUS 329 Domestic Violence. (3)

once a year

Legal, historical, theoretical, and treatment aspects of domestic violence, including child abuse, woman battering, incest, and marital rape. Lecture, discussion. See JUS Note 1.

General Studies: SB

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

JUS 335 Organized Crime. (3)

once a year

Nature of organized crime and its illegal activities, theories of containment, and efforts by justice agencies to counter its dominance in society. Lecture, discussion. See JUS Note 1.

JUS 345 White Collar Crime. (3)

once a year

Basic white collar concepts and categories; causes and effects; mechanisms and contexts of operation; social and criminological responses. Lecture, discussion. See JUS Note 1.

JUS 350 Immigration and Justice. (3)

fall, spring, summer

Examines immigration policy, history of immigration, refugee issues, labor force participation, gender, family, children, social networks, and transnationalism. Lecture, discussion. See JUS Note 1.

General Studies: SB, C

JUS 360 Law and Social Control. (3)

once a year

Resolution of social issues through the application of law as an agent of social control. Nature, sanctions, and limits of law. Categories of law and schools of jurisprudence. Lecture, discussion. See JUS Note 1.

General Studies: SB

JUS 365 Substantive Criminal Law. (3)

once a year

Crimes against persons, property, and society; legislative analysis; primary appellate judicial opinions; substantive criminal law issues; trial court determinations. Lecture, discussion. See JUS Note 1.

JUS 368 Procedural Criminal Law. (3)

once a year

Due process with respect to individual liberty; privacy and government power; emphasis on broad ideas of political and social theory. Lecture, discussion. See JUS Note 1.

JUS 375 Crime and the Mass Media. (3)

once a year

Surveys the impact of mass media and popular culture on crime, police actions, and social policy. Lecture, discussion. See JUS Note 1.

General Studies: SB

JUS 385 Justice and Everyday Life. (3)

once a year

Justice and injustice in everyday life and how small things can become legal issues. Role of language and interaction in social order. Lecture, group work. See JUS Note 1. Prerequisites: JUS 105 (or 305), 301, 302, 303.

General Studies: SB

JUS 394 Special Topics. (1–3)

once a year

Topics chosen from various fields of justice studies. Lecture, discussion. See JUS Note 1.

JUS 404 Imperatives of Proof. (3)

once a year

Issues of evidence, rules of proof, establishing fact and identity in the justice system. Lecture, case analysis, cooperative learning, discussion. See JUS Note 2.

General Studies: L

JUS 405 Economic Justice. (3)

fall and spring

Addresses economic issues and justice implications, including the interplay among economic conditions, race-ethnicity, class, and gender worldwide. Lecture, discussion. See JUS Note 2.

General Studies: SB, G

JUS 410 Punishment: Logic and Approach. (3)

once a year

Analyzes forms of punishment, how and why they have changed. Areas include philosophy, history, and social structure of punishment. Lecture, discussion. See JUS Note 2.

JUS 415 Gender and International Development. (3)

once a year

Examines the ways in which international development is gendered as well as women's rights as human rights in both national and international arenas. Lecture, seminar. See JUS Note 2.

General Studies: L, G

JUS 420 Women, Work, and Justice. (3)

once a year

Examines gender inequality in the workplace, including the nature of women's work, theoretical issues, and models for promoting gender justice at work. Lecture, discussion. See JUS Note 2.

General Studies: SB, C

JUS 422 Women, Law, and Social Control. (3)

once a year

Examines social, economic, and legal factors that are relevant to mechanisms of social control of women, including formal legal control and informal control through violence. See JUS Note 2.

JUS 425 Race, Gender, and Crime. (3)

once a year

Critically examines major theories, research findings, policies, and controversies concerning race, ethnicity, gender, and crime. Lecture, discussion, cooperative learning. See JUS Note 2.

General Studies: L/SB, C

JUS 430 Social Protest, Conflict, and Change. (3)

fall, spring, summer

Analyzes historical and contemporary protest movements advocating equality based on race, gender, and sexual orientation. Lecture, discussion. See JUS Note 2.

General Studies: L/SB, C

JUS 440 Administration and Justice. (3)

once a year

Diversity issues; procedural justice and service delivery; relationships between state and economic forces, including processes of regulation; state administrative apparatuses. Lecture, case analysis, cooperative learning, discussion. See JUS Note 2.

General Studies: L

JUS 450 Alternatives to Incarceration. (3)

once a year

Investigates various alternatives to incarceration; advantages/disadvantages; major issues including net widening, cost effectiveness, risk assessment, community crime prevention. Lecture, research. See JUS Note 2.

General Studies: L

JUS 460 Feminism and Justice. (3)

once a year

Explores feminist thought and critiques traditional political theories. Examines issues of racism, sexuality, and the law. Lecture, discussion. See JUS Note 2.

JUS 463 Discretionary Justice. (3)

once a year

Use/abuse, key issues/manifestations of discretion in legal system and other societal institutions. Theoretical/empirical linkages between discretion and discrimination, based on race, ethnicity, and gender. Lecture, discussion. See JUS Note 2.

General Studies: SB

JUS 465 Death Penalty in the United States. (3)

fall, spring, summer

Focuses on capital punishment in the United States; explores negotiation of law, politics, morality, public policy, and culture. Lecture, discussion, case study. See JUS Note 2.

General Studies: L

JUS 469 Political Deviance and the Law. (3)

once a year

Examines the controversies created by political and deviant behavior, including a critical view of law as an agent of social control. Lecture, discussion. See JUS Note 2.

General Studies: L/SB, C

JUS 470 Alternative Dispute Resolution. (3)

once a year

Critical examination of the tenets of alternative dispute resolution movement; exposure to the programs of ADR, including community and court based. Lecture, cooperative learning, field research. See JUS Note 2.

General Studies: L/SB, C

JUS 474 Legislation of Morality. (3)

once a year

Addresses historical and contemporary issues related to social justice movements, law, and morality in a pluralistic society. Issues include AIDS, burial rights, homosexuality, poverty, prostitution, and racial discrimination. See JUS Note 2.

General Studies: L/SB, C

JUS 477 Youth and Justice. (3)

once a year

Critical examination of youth-related justice issues, including economic justice, violence against youth, delinquency, and the juvenile justice system. Lecture, group work, film. See JUS Note 2.

General Studies: L/SB

JUS 479 Law and Disputing. (3)

fall and spring

Critical analysis of the controversies created by disputes, law, and other forms of social control. Lecture, discussion. See JUS Note 2.

General Studies: SB

JUS 484 Internship. (3–6)

fall, spring, summer

Assignments in a justice-related placement designed to further the integration of theory and practice. Internships are arranged through consultation of students with placements. Students must consult with the school for appropriate application and registration procedures. May be repeated for credit for a total of 12 semester hours, of which a maximum of 6 are applied to the major. Fee. See JUS Note 2. Prerequisites: major status; Justice Studies student.

JUS 494 Special Topics. (1–3)

once a year

Topics chosen from various fields of justice studies. Lecture, discussion. See JUS Note 2.

JUS 498 Pro-Seminar. (1–3)

fall, spring, summer

Small group study and research for advanced students. May be repeated for credit for a total of 9 hours, of which a maximum of 3 are applied to the major. See JUS Note 2. Prerequisites: major status; minimum cumulative GPA of 2.75; minimum GPA in JUS courses of 3.00; instructor approval.

JUS 499 Individualized Instruction. (1–3)

fall, spring, summer

Original study or investigation in the advanced student's field of interest under the supervision of a faculty member. May be repeated for credit for a total of 6 hours, all applicable to the major. Readings, conferences, tutorials. Prerequisites: major status; minimum cumulative GPA of 2.75; minimum GPA in JUS courses of 3.00; instructor approval.

JUS 500 Justice Research Methods. (3)

once a year

Theories and methods of research with emphasis on development of designs most relevant to justice data and problems.

JUS 501 Justice Theory. (3)

once a year

Theories and philosophies of social, economic, political, and criminal justice. Applications of theories to contemporary justice issues. Lecture, discussion.

JUS 503 Crime and Social Causation. (3)

once a year

Theories of deviance and crime as they relate to social policies and specific response of the justice complex.

JUS 509 Statistical Problems in Justice Research. (3)

once a year

Methodological problems of research design and statistical methods specific to justice studies.

JUS 515 Comparative Justice. (3)

once a year

Focuses on justice, legality, and human rights cross-culturally, examining both theoretical and methodological issues. Seminar.

JUS 521 Qualitative Data Analysis and Evaluation. (3)

once a year

Analyzes qualitative data, e.g., field notes, depth interview transcripts, document analysis, coding, and retrieval with a microcomputer; qualitative evaluation.

JUS 542 American Indian Justice. (3)

once a year

Provides a broad overview of American Indian and Alaskan Native issues of justice and injustice in contemporary society.

JUS 555 Migration/Immigration and Justice. (3)

selected semesters

Explores the causes and consequences of immigration to the United States and the incorporation of immigrants into the American economy and society. Seminar.

JUS 560 Women, Law, and Social Control. (3)

once a year

Gender issues in the exercise of formal and informal mechanisms of social control, including economic, social, legal factors, both violent and nonviolent.

JUS 570 Juvenile Delinquency. (3)

once a year

Study of delinquency, including causation theories. Alternative definitions of delinquency, official statistics, and the critique and analysis of the interaction between social institutions and youth.

JUS 575 Race, Gender, and Crime. (3)

fall and spring

Current theoretical and methodological debates and controversies regarding race, ethnicity, gender, class, crime, and the criminal justice system; policy implications. Seminar.

JUS 579 Political Deviance. (3)

once a year

Seminar examines the politics of deviance by integrating the study of conflict with aspects of social organization, especially state formation.

JUS 584 Internship. (3 or 6)

fall, spring, summer

Assignments in a justice agency designed to further the integration of theory and practice. Placements are arranged through consultation with students and agencies.

JUS 588 Justice and the Mass Media. (3)

once a year

Analyzes the nature and impact of mass media messages about justice concerns for social order. Lecture, discussion.

JUS 591 Seminar. (1–3)

once a year

Topics chosen from various fields of justice studies. May be repeated for credit.

JUS 593 Applied Project. (1–12)

selected semesters

JUS 610 Law and the Social Sciences. (3)

once a year

Analyzes the theoretical grounds underlying diverse studies of law and society; creation and administration of law; and jurisprudence and politics.

JUS 620 Justice Research and Methods. (3)

once a year

Concept development, research design, data collection strategies, legal research, and building computer databases relevant to the study of justice.

JUS 630 Data Analysis for Justice Research. (3)

once a year

Bivariate and multivariate techniques of data analysis and hypothesis testing for justice-related research and use of information and statistical programs.

JUS 640 Theoretical Perspectives on Justice. (3)

once a year

Analyzes philosophical perspectives of justice; linkages between social science theory and justice constructs; application of justice to social issues.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

JUS 650 Advanced Qualitative Data Analysis. (3)

spring

Advanced qualitative data collection and analysis techniques, including ethnography, in-depth interviews, field notes, coding, transcribing, content analysis, textual analysis. Seminar.

JUS 669 Political Trials and Indigenous Justice. (3)

once a year

Focuses upon research on political trials, deviance, and conceptions of indigenous and contemporary justice. Lecture, discussion.

JUS 691 Seminar. (1-3)

fall, spring, summer

Topics chosen from various fields of justice studies. May be repeated for credit.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

School of Public Affairs

spa.asu.edu

480/965-3926

WILSN 208

Jeffrey Chapman, Director

Professors: Alozie, Cayer, Chapman, Coor, J. Denhardt, R. Denhardt, Hall, Mankin, Musheno, Perry

Associate Professors: Brown, Campbell, DeGraw, Lan

Assistant Professors: DeLorenzo, McCabe, Peck

The faculty in the School of Public Affairs offer an undergraduate public administration concentration of 18 semester hours of course work within the Bachelor of Interdisciplinary Studies program. The school also offers a 15-semester-hour Public Administration and Public Management Certificate program. The certificate prepares students for citizenship, leadership, and careers in governmental agencies and nonprofit associations. To meet certificate requirements, students take four core courses (PAF 300, 340, 420, and 460) and one elective course. The list of approved electives may be obtained by visiting the School of Public Affairs Student Services Office in WILSN 225A, or by calling 480/965-1037.

Public Administration and Public Management Certificate

PAF 300 Public Management and Administration.....	3
PAF 340 Public Management and Policy	3
PAF 420 Public Leadership.....	3
PAF 460 Public Service Ethics	3
Elective.....	3
Total	15

The school also offers a 42-semester-hour professional Master of Public Administration degree and the Doctor of Philosophy degree. The M.P.A. degree is accredited by the National Association of Schools of Public Affairs and Administration. Consult the *Graduate Catalog* for information about the programs.

PUBLIC AFFAIRS (PAF)

PAF 300 Public Management and Administration. (3)

fall and spring

Examines the context and role of the public manager and the development of the field of public administration.

PAF 340 Public Management and Policy. (3)

fall and spring

Develops conceptual, critical, and practical understanding of policy, the policy process, and policy analysis.

PAF 401 Statistics. (3)

fall and spring

Surveys statistical concepts and techniques with application to public administration. Does not count toward program of study. Satisfies statistics prerequisite requirement for PAF 501 and 502.

PAF 420 Public Leadership. (3)

fall and spring

Examines key concepts, models, and strategies for leading public and nonprofit organizations, emphasizing self-knowledge, skills, and abilities for effective leadership.

PAF 460 Public Service Ethics. (3)

fall and spring

Role, values, and issues of public management in democratic governance, citizen participation, power structures, and professional codes of conduct.

PAF 501 Public Service Research I. (3)

fall and spring

Philosophy, scope, and methods; public service research design, values, and ethics. Prerequisite: an approved course in statistics.

PAF 502 Public Service Research II. (3)

fall and spring

Quantitative techniques including multivariate analysis, data analysis, decision making, and computer applications in public affairs. Prerequisite: PAF 501.

PAF 503 Public Affairs. (3)

fall and spring

Development and context of American public administration and policy, role of administration in governance, and values and ethics in administration.

PAF 504 Public Affairs Economics. (3)

fall and spring

Basics of public sector economics, microeconomic and macroeconomic concepts applied to public sector decisions and policies.

PAF 505 Public Policy Analysis. (3)

fall and spring

Institutional and formal analysis of policy processes, decision making, and problem solving; values, ethics, and the uses of policy analysis. Prerequisites: PAF 504; satisfaction of the statistics requirement.

PAF 506 Public Budgeting and Finance. (3)

fall and spring

Legal, social, economic, political, institutional, and ethical foundations of governmental finance, budgets, and budgeting. Prerequisites: PAF 502, 504.

PAF 507 Public Human Resource Management. (3)

fall and spring

Personnel systems, behavior and management of people in public organizations, collective behavior, unionism, conflict management, motivation, productivity, and ethics.

PAF 508 Organization Behavior. (3)

fall and spring

Theory and application in the management of organizational behavior with emphasis on leadership and the public service.

PAF 509 Public Service. (3)

fall and spring

Capstone application of core course knowledge, skills, and abilities required for public service. Prerequisites: PAF 501, 502, 503, 504, 505, 506, 507, 508.

PAF 511 Governmental Finance. (3)

selected semesters

Sources of funding, management of funds and debts, and general pattern of expenditures in states, counties, cities, and districts. Prerequisite: PAF 504.

PAF 520 Public Management. (3)

selected semesters

Management process in government and public agencies, with emphasis on the executive leadership within the public sector.

PAF 521 Organization Theory. (3)

selected semesters

Organization theory and current research emphasis with application to public administrative organizations.

PAF 522 Public Labor Relations. (3)

selected semesters

Rise of public unionism, managerial policy toward unionism, conflict resolution; impact of unionism on budgets, personnel policies, and public policy.

PAF 523 The City and County Manager. (3)

once a year

Manager's role and resources in the differing forms of administrative, legislative, and community sectors.

PAF 526 Public Sector Human Resource Development. (3)

selected semesters

Concepts and techniques of organizational development in the public sector, including staffing, supervisor training, executive development, resource planning, and employee training.

PAF 529 Organization Change and Development. (3)

selected semesters

Explores the nature and management of change and development as a tool to achieve organizational goals; effecting planned change.

PAF 530 Management of Urban Government. (3)

selected semesters

Administrative practices and behavior within the urban political administrative environment. Functional areas such as citizen participation, urban planning, urban transportation, and the conflicts between urban politics and administrative efficiency.

PAF 531 Community Conflict Resolution. (3)

selected semesters

Interdisciplinary approach to understanding the dynamics of community conflict. Strategic considerations in policy design and advocacy; potential reaction to conflict. Relevant models and research findings generated by both case studies and comparative methods.

PAF 532 Urban Planning Administration. (3)

selected semesters

Historical and present-day uses of urban planning and procedures for its implementation. Basic principles and practices.

PAF 533 Urban Growth Administration. (3)

selected semesters

Examines the process of urban growth and change. Emphasizes partnership roles played by public and private sectors in management.

PAF 535 Urban Housing Policy. (3)

selected semesters

Comprehensive consideration of the revitalization of American cities with major emphasis upon the housing process and related institutions and services.

PAF 536 Urban Policy Making. (3)

selected semesters

Analyzes the opportunities and costs of influencing public policy and the roles of officials and bureaucracies in decision making.

PAF 540 Advanced Policy Analysis. (3)

once a year

Emphasizes the structure of policy problems, forecasting policy alternatives, optimizing resources, and reducing uncertainty in policy making. Prerequisite: PAF 505 or instructor approval.

PAF 541 Program Evaluation. (3)

selected semesters

Various methodologies available for the evaluation of public policies and programs. Prerequisite: PAF 501 or instructor approval.

PAF 546 Environmental Policy and Management. (3)

selected semesters

Analyzes environmental policy and planning issues and principles related to the analysis and management of natural and urban/regional resources.

PAF 547 Science, Technology, and Public Affairs. (3)

selected semesters

Influence of science and technology on governmental policy making, scientists as administrators and advisors, governmental policy making for science and technology, government as a sponsor of research and development.

PAF 548 Women, Politics, and Public Policy. (3)

selected semesters

Explores how political philosophy, politics, and public policy affect and are affected by women.

PAF 549 Diversity Issues and Public Policy. (3)

selected semesters

Examines public policy issues concerning or affecting women, black, Latino, Asian, and American Indian communities, as well as those groups' impact on the policy process.

PAF 550 Information Management. (3)

selected semesters

Concepts and theory of information and information technology in public sector organizations.

PAF 551 Computers in Administration. (3)

selected semesters

Experience in use of computer technology for public administration problem solving.

PAF 552 Public Information Systems. (3)

selected semesters

Systems analysis concepts and theory as applied to administration. Alternative modes of information organization and their impact on public decision making.

PAF 556 Database Management Systems. (3)

selected semesters

Concept and use of modern database management systems in an administrative organization. Advantages and disadvantages of this approach.

PAF 561 Comparative Administration. (3)

selected semesters

Literature on comparative public administration theory. Bureaucracies and their impact on the political development process. Studies selected nations.

PAF 562 Intergovernmental Relations. (3)

once a year

Evolution, growth, present status, and characteristics of the U.S. federal system of government. Federal-state relations, state-local relations, regionalism, councils of government, interstate cooperation, grants-in-aid, and revenue sharing.

PAF 563 Report Preparation. (3)

selected semesters

Intensive practice in written and oral presentation of reports to conferences with problems in public administration. Visual aid techniques.

PAF 564 Political Economy. (3)

once a year

Classical and contemporary literature and historical development of governmental and economic arrangements, with special emphasis on the role of the state.

PAF 591 Seminar. (1–12)

fall and spring

Topics may include the following:

- Business and Government
- Emergency Management
- General Public Administration
- Geographic Information Systems
- Information Management
- Law and Public Administration
- Public Finance Administration
- Public Management
- Public Policy Analysis
- Transportation Systems Pro-Seminar
- Urban Affairs and Urban Planning

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

PAF 600 Research Design and Methods. (3)

once a year

Advanced methods of research design and data collection. Prerequisites: formal graduate-level course work in statistics and in research methods.

PAF 601 Seminar: Policy Analysis and Evaluation. (3)

once a year

Normative and conceptual issues of policy formulation, implementation, and evaluation; methods of policy analysis and evaluation.

PAF 602 Seminar: Foundations of Public Administration. (3)

once a year

Ethical, social, legal, and philosophical foundations of public administration.

PAF 603 Seminar: Organization and Behavior in the Public Sector. (3)

once a year

Structure, organization, conduct, and performance of public sector institutions in the administration of public policy. Prerequisite: PAF 602.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

Department of Recreation Management and Tourism

www.asu.edu/copp/recreation

480/965-7291

MOEUR 134

Randy J. Virden, Chair

Professors: Allison, Haley, Yoshioka

Associate Professors: Ashcraft, Sonmez, Teye, Virden

Assistant Professors: Brown, Leclerc, Pritchard, Timothy

RECREATION—B.S.

The B.S. degree program in the Department of Recreation Management and Tourism centers upon the systematic study of leisure-related phenomena, including human behavior and development, resource use, environmental and social issues, and public policy. It is a professional program that features full exposure of students to a multifaceted concept of leisure and the quality preparation of these students for professional-level entry into leisure service occupations.

This multidisciplinary degree program is designed to provide the student with the competencies necessary for employment in management and program delivery positions in diverse leisure agencies such as municipal recreation and park departments, county park departments, YMCAs, YWCAs, Boys and Girls Clubs of America, and other nonprofit agencies, visitor and convention bureaus, senior centers, retirement communities, resorts, clinical rehabilitation centers, hospitals, destination management companies, and other components of the tourism/commercial recreation industry. Graduates have also been employed by state offices of tourism, state parks departments, various federal recreation resource agencies, and professional sports arenas.

Concentrations

Students may select from two concentrations: (1) recreation management and (2) tourism.

Recreation Management. Students pursuing the recreation management concentration can further specialize in therapeutic recreation, community and urban recreation, outdoor recreation, or nonprofit/youth agency administration (American Humanics). In addition to the 33 semester hours of major core classes, these concentrations consist of 15 semester hours of recreation-related courses and 15 semester hours of related-areas courses.

Therapeutic Recreation. Within the recreation management concentration, students may specialize in therapeutic recreation and in doing so, may qualify to sit for the National Council for Therapeutic Recreation Certification exam. This professional development prepares students for careers in clinical and community settings, working with disabled individuals in their pursuit of quality leisure experiences. This program is the only one of its kind in a growing field in Arizona.

Tourism. The tourism concentration consists of 33 semester hours of major core courses, nine semester hours of tourism-related requirements, nine semester hours of tourism options, and 12 semester hours of nonmajor related course work.

Tourism students may choose to follow either the marketing and community development track or the services track for their related course work. Information on these tracks is available from the academic advisor.

DEPARTMENTAL MAJOR REQUIREMENTS

Students may declare Recreation as their major but cannot register for upper-division core classes without *professional status*. To be officially admitted with professional status to the B.S. degree program in Recreation, students must

1. meet the College of Public Programs preprofessional status admission requirements (see "[Admission](#)," page 484);
2. complete REC 120 and 210 with a grade of "C" or higher;
3. complete either COM 225, 241, or 259; and
4. have a "C" or higher in ECN 112, if pursuing the tourism concentration.

Transfer students who have completed 56 semester hours or more at another institution must remove any of the above course or scholastic deficiencies before being admitted *with professional status* to the B.S. degree in Recreation.

To graduate, students must complete the university General Studies requirement and the College of Public Programs course requirements in addition to major requirements.

PROGRAM REQUIREMENTS

The 63-semester-hour B.S. degree in Recreation includes 33 semester hours of major core courses, which must be taken on the ASU Main campus.

DEPARTMENT OF RECREATION MANAGEMENT AND TOURISM

Recreation Major Core Courses

REC 120 Leisure and the Quality of Life <i>SB</i>	3
REC 210 Leisure Delivery Systems	3
REC 330 Programming of Recreation Services <i>L</i>	3
REC 350 Promoting and Marketing Recreation Services	3
REC 364 Foundations of Therapeutic Recreation	3
REC 462 Management of Recreation Services	3
REC 463 Senior Internship.....	12
REC 482 Assessment and Evaluation of Recreation Services	3
Total	33

REC 330, 350, 462, and 482 require *professional status* and must be taken in the proper sequence. REC 463 is the final capstone course taken in the department.

Two hundred hours of recreation leadership experience are required before enrollment in REC 463 Senior Internship. Students are not permitted to take additional course work during their senior internship placement period. Approval of internships for ASU Main students must be received from the Department of Recreation Management and Tourism office at ASU Main.

A student must attain a grade of "C" or higher in all courses within the major, including the related area. Specific courses that may be used to fulfill the related requirements are listed on check sheets available in the department office.

In both the recreation management and tourism concentrations, the related areas and directed electives course work must be selected from a departmental list of approved university courses.

MINORS

The department offers minors in Recreation Management and in Tourism. The minor in Recreation Management consists of REC 120 Leisure and the Quality of Life, REC 160 Leisure and Society, and 12 additional semester hours of approved course work, including 12 semester hours at the upper-division level, from ASU Main. The Tourism minor consists of REC 120 Leisure and the Quality of Life and 12 additional semester hours of upper-division approved courses from ASU Main.

CERTIFICATE PROGRAM

Nonprofit/Youth Agency Administration: American Humanics Certificate Program. The certificate program in American Humanics is education and preparation for leadership and management positions in nonprofit youth and human service organizations. The program features professional affiliation with and certification by American Humanics, Inc., the nation's leader in education for nonprofit careers. American Humanics collaborates with several nonprofit organizations, including American Red Cross, Big Brothers/Big Sisters, Boys and Girls Clubs, Boy Scouts, Camp Fire Boys and Girls, Girl Scouts, Habitat for Humanity, Junior Achievement, the United Way, YMCA, and YWCA.

This program features an academic and experiential approach that highlights the unique issues of nonprofit organization management, with a particular emphasis in youth development agencies. The program includes active participation by nonprofit professionals who offer workshops, seminars, mentoring, and field trips. American Humanics

national certification can be earned in conjunction with any baccalaureate degree.

REC 220 Introduction to Nonprofit Youth and Human Service Agencies.....	3
REC 300 Fund Raising	3
REC 310 Volunteerism	3
REC 320 Youth and Human Service Workshop*	4
REC 420 American Humanics Institute	2
REC 430 Managing Nonprofit Agencies	3
REC 463 Senior Internship.....	12
Minimum total	30

* REC 320 is taken four semesters, for one semester hour each term.

GRADUATE PROGRAM

M.S. Degree in Recreation. The curriculum for the M.S. degree in Recreation is designed to help students achieve both academic and professional goals. Areas of study include outdoor recreation, recreation administration, social/psychological aspects of leisure, and tourism and commercial recreation. Students may complete a thesis or professional option. Information on the M.S. degree in Recreation is detailed in the *Graduate Catalog*.

RECREATION MANAGEMENT AND TOURISM (REC)

REC 120 Leisure and the Quality of Life. (3)

fall, spring, summer

Conceptual foundations for understanding the role of leisure in the quality of life. Social, historical, psychological, cultural, economic, and political foundations of play, recreation, and leisure.

General Studies: SB

REC 150 Outdoor Pursuits. (3)

summer

Theories and practical applications related to outdoor recreation pursuits. Interdisciplinary approach to wilderness issues and philosophies, culminating in an outdoor experience. Field trip.

REC 160 Leisure and Society. (3)

once a year

Analyzes the human relationship to leisure. Historical survey of philosophical, psychological, and socioeconomic bases for development of systems that provide leisure programs. Non-Recreation majors only.

General Studies: SB

REC 210 Leisure Delivery Systems. (3)

fall and spring

Introduces development, management, and organization of the public, not-for-profit, and private sectors of the leisure services profession. Organized into five modular units that study the delivery of services in the recreation and tourism professions. Lecture, team taught. Prerequisite: Recreation major. Pre- or corequisite: REC 120.

REC 220 Introduction to Nonprofit Youth and Human Service Agencies. (3)

fall and spring

Introduces the not-for-profit youth and human service sector and its role in United States society, the economy, and service delivery systems.

REC 230 Camp Administration. (3)

spring

Historical and philosophical foundations of the organized camping movement in America; trends and issues; camp administration and leadership.

L literacy and critical inquiry / **MA** mathematics / **CS** computer/statistics/quantitative applications / **HU** humanities and fine arts / **SB** social and behavioral sciences / **SG** natural science—general core courses / **SQ** natural science—quantitative / **C** cultural diversity in the United States / **G** global / **H** historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

REC 235 Service Learning for Youth Development. (3)

fall and spring

Applies youth development theories and approaches through a community service immersion in collaboration with one or more nonprofit partners. Case studies, small group discussion. Prerequisite: instructor approval.

REC 300 Fund Raising. (3)

once a year

Methods, techniques, and directed experience in fund raising for voluntary youth and human services agencies. Budget control and accountability.

REC 305 Introduction to Travel and Tourism. (3)

fall and spring

Examines the components of the travel and tourism industry at the state, national, and global levels.

General Studies: G

REC 310 Volunteerism. (3)

once a year

Administration of volunteer service programs. Studies and analyzes the volunteer personnel process.

REC 315 Community Recreation Systems. (3)

spring

Explores and assesses community recreation delivery systems in the United States. Prerequisite: REC 210.

REC 320 Youth and Human Service Workshop. (1)

fall and spring

Professional seminar featuring nonprofit executives; variable topics on nonprofit and youth leadership. Forum for exchange between students and professionals. May be repeated for credit. Prerequisite: instructor approval.

REC 325 Tourism Accommodations. (3)

once a year

Local, national, and international overview of the lodging and food service industries. Prerequisites: REC 305; Recreation major or minor.

REC 330 Programming of Recreation Services. (3)

fall and spring

Foundations for effective program planning in varied leisure delivery systems. Prerequisite: Recreation professional status.

General Studies: L

REC 340 Outdoor Survival. (3)

once a year

Interdisciplinary approach to outdoor survival, including attitudes, psychological stress, physiological stress, preparation, hypothermia, navigation, flora, and wildlife. Field trips.

REC 345 Meeting and Convention Planning. (3)

once a year

Basic aspects and skills in planning meetings and conventions. Industry and market overview of certified meeting planners. Prerequisite: REC 305.

REC 350 Promoting and Marketing Recreation Services. (3)

fall and spring

Basic principles of promoting recreation services and strategies focusing on promoting and marketing concepts as they apply to recreation/tourism settings. Prerequisite: Recreation professional status.

REC 364 Foundations of Therapeutic Recreation. (3)

fall and spring

Introduces special recreation and therapeutic recreation services for persons with disabilities. Offers both a community and clinical perspective on specialized services. Prerequisite: Recreation professional status or instructor approval.

REC 370 Outdoor Recreation Systems. (3)

fall

Introduces outdoor recreation resource delivery systems; history of wilderness and outdoor recreation resources; the role of outdoor recreation in society; outdoor recreation agencies; related environmental issues. Prerequisite: junior standing or instructor approval.

REC 372 Tourism Planning. (3)

fall and spring

Applies economic and regional development concepts and theories to destination product development. Prerequisites: REC 305; Recreation major or minor.

REC 380 Wilderness and Parks in America. (3)

fall and spring

Examines the American Conservation Movement and the relationships between the environment and recreation behavior.

General Studies: SB, H

REC 390 Adaptive Aquatics. (3)

selected semesters

Focuses on delivery of aquatic programs for the mentally and physically challenged. Lecture, lab.

REC 400 Processes and Techniques in Therapeutic Recreation. (3)

once a year

In-depth analysis of theoretical and philosophical approaches to therapeutic recreation practice with emphasis on various facilitation techniques used in therapy. Prerequisite: REC 364 or instructor approval.

REC 401 Program Design and Evaluation in Therapeutic Recreation. (3)

fall and spring

In-depth analysis of assessment, treatment planning, program implementation, documentation, and evaluation strategies employed in therapeutic recreation practice. Prerequisites: both REC 364 and 400 or only instructor approval.

REC 415 Tourism Transportation Systems. (3)

once a year

Examines the role of various modes of transportation in domestic and international tourism development. Prerequisites: REC 305; Recreation major or minor.



Lifeguard Jonathan Ortner keeps watch at the Student Recreation Complex pool.

Tim Trumble photo

- REC 420 American Humanics Institute. (1–2)**
fall and spring
National Management Institute for preparation of youth development and nonprofit professionals. Out-of-state conference includes seminars and case studies. May be repeated for credit. Prerequisite: instructor approval.
- REC 430 Managing Nonprofit Agencies. (3)**
spring
Analyzes administrative structure, decision making, and program delivery with not-for-profit youth and human service agencies. Prerequisites: REC 220; senior standing.
- REC 440 Recreation Areas and Facilities Development and Management. (3)**
once a year
Surveys development and management of public, private, and commercial recreation areas and facilities with a focus on meeting program needs.
- REC 458 International Tourism. (3)**
fall and spring
Global examination of international tourism and its significance as a vehicle for social and economic development.
General Studies: G
- REC 460 Clinical Issues in Therapeutic Recreation. (3)**
once a year
Explores contemporary problems/issues confronting the therapeutic recreation field; includes philosophical, historical, practice, management, research, and educational issues. Lecture, off-campus lab. Prerequisites: both REC 364 and 400 or only instructor approval.
- REC 462 Management of Recreation Services. (3)**
fall and spring
Basic principles of administration and their application in successful administrative situations. Analyzes administrative function, structure, and policies. Prerequisites: REC 330; Recreation professional status.
- REC 463 Senior Internship. (6 or 12)**
fall, spring, summer
Supervised guided experience in selected agencies. Fee. Prerequisites: REC 462; Recreation major; senior standing.
- REC 470 Environment Interpretation and Education. (3)**
fall
Introduces park interpretation and environmental education that includes theories, principles, and techniques.
- REC 480 Natural Resource Tourism. (3)**
spring
Examines the interaction of tourism with culture, natural environment, as well as the impacts of tourism on the environment.
- REC 482 Assessment and Evaluation of Recreation Services. (3)**
fall and spring
Introduces applied leisure research with emphasis on program evaluation, research design, data collection techniques, and data analysis. Prerequisites: REC 330, 350; Recreation professional status.
- REC 494 Special Topics. (1–3)**
fall and spring
Special topics selected by department faculty.
- REC 500 Research Methods. (3)**
once a year
Introduces recreation research methods, with emphasis on methodological questions, research issues, and techniques relevant to contemporary social research. Prerequisite: 500-level or higher approved statistics course.
- REC 501 Program Evaluation and Information Management. (3)**
selected semesters
Develops skills in several professional areas, including: evaluation, needs assessment, information and data collection, data management/analysis, computer applications, and report writing.
- REC 530 Recreation and Tourism Service Management. (3)**
spring in even years
Examines and applies organizational behavior, leadership, human resources, and development; planning and risk management to profession.

- REC 552 Foundation of the Recreation and Tourism Professions. (3)**
once a year
Examines the philosophical and conceptual foundations of play, leisure, recreation and tourism; history of the profession; professional and research issues.
- REC 555 Social and Psychological Aspects of Recreation and Tourism Behavior. (3)**
once a year
Theoretical review and empirical analysis of social, cultural, and psychological foundations of leisure behavior with practical implications.
- REC 569 Current Issues in Tourism. (3)**
once a year
General survey of tourism literature with emphasis on relevant theories, concepts, and current research.
- REC 570 Social Aspects of Outdoor Recreation Management. (3)**
once a year
Analyzes the social aspects of natural resource recreation management and planning. Prerequisite: REC 370 (or its equivalent).
- REC 580 Practicum. (1–12)**
selected semesters
- REC 593 Applied Project. (1–12)**
selected semesters
- REC 598 Special Topics. (1–12)**
selected semesters
- REC 599 Thesis. (1–12)**
selected semesters
- Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

School of Social Work

ssw.asu.edu

480/965-3304

WHALL 135

Leslie Leighninger, Director

Professors: Ashford, Coudroglou, Daley, Figueira-McDonough, Kettner, LeCroy, Leighninger, MacEachron, Martinez-Brawley, Moroney, Segal

Associate Professors: Brzuzy, Gerdes, Gustavsson, Marsiglia, Montero, Nichols, Paz, Risley-Curtiss, Steiner, Waller, Yellow Bird

Assistant Professors: Holley, Holschuh, Hurdle, Larson, Napoli, Okamoto, Stromwall

Academic Professionals: Gonzalez-Santin, Knutson-Woods, Rountree-Antar, Yopez

PURPOSE

The purpose of the School of Social Work is to prepare professional social work practitioners who are committed to the enhancement of individual, family, and group problem-

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF PUBLIC PROGRAMS

solving capacities and the creation of a more nurturing, just, and humane social environment.

The mission of the School of Social Work is the training of professional social workers for beginning-level generalist practice (B.S.W.) and for advanced direct practice and planning, administrative, and community practice (M.S.W.). The focus is on populations of the Southwest and those who are most oppressed and most in need of social services.

The school is committed to the university's mission to be competitive with the best public research universities in the country. Faculty members have active research agendas under way that venture into a wide variety of topics, including work with children, issues of specific importance to Latino and indigenous peoples, poverty, human services planning, and many other areas of interest.

ORGANIZATION

The School of Social Work is organized around three program areas:

1. Bachelor of Social Work (B.S.W.);
2. Master of Social Work (M.S.W.); and
3. Doctor of Philosophy (Ph.D.) with a major in Social Work.

The M.S.W. program has two areas of concentration in the second year: (1) advanced direct practice (ADP) and (2) planning, administration, and community practice (PAC). In considering the PAC area of emphasis, students need to be aware that, because of space availability, preference is given to individuals with significant previous experience.

The B.S.W. and M.S.W. degrees are offered at ASU Main and the Tucson component; the M.S.W. is also offered at the Flagstaff component; the Ph.D. degree is offered at ASU Main.

For more information regarding the master's and Ph.D. programs, see the *Graduate Catalog*.

ADMISSION

Bachelor of Social Work

Preprofessional Status. Students who have declared Social Work as their major or have transferred from other universities or community colleges are admitted to ASU and the School of Social Work with preprofessional status. Transfer students should follow the procedure outlined under "Transfer Credit," page 61.

Applying for Professional Program Status. Students who have completed 56 semester hours or more and have taken SWU 271 Introduction to Social Work, 291 Social Service Delivery Systems, 295 Foundations of Social Work Practice, 301 Human Behavior in the Social Environment I, and 310 Social Work Practice I are eligible to apply for professional program status.

Students may obtain an application packet at the School of Social Work, Academic Services, WHALL 135, or request that one be mailed to their home address by calling 480/965-6081.

Applications are reviewed for admission for the fall and spring semesters. Students applying must have a Certificate of Admission to the university in their files by November 1

for spring admission and March 1 for fall admission. All other application materials (i.e., application form, additional statement, and two letters of reference) must be returned to

SCHOOL OF SOCIAL WORK
ACADEMIC SERVICES
ARIZONA STATE UNIVERSITY
PO BOX 871802
TEMPE AZ 85287-1802

Materials must be received by November 1 for spring admission or March 1 for fall admission. Failure to meet these deadlines may result in the applicant having to wait for the next admissions period. Applicants are notified by mail of the committee's decision. Those applicants who have been denied admission may request a conference with the B.S.W. program coordinator to discuss the decision and to obtain guidance in the development of future plans.

Criteria for Professional Program Status. Admission to professional program status is based on the following criteria:

1. A minimum of 56 semester hours with a cumulative GPA of at least 2.50 at ASU is required.
2. A minimum cumulative GPA of 2.75 in core social work courses (SWU 271, 291, 295, 301, and 310) and a grade of "C" or higher in all social work courses are required.
3. The applicant's educational and career goals must be compatible with the educational objectives of the school.
4. Before admission to preprofessional status, it is required that students have had human service experience for a minimum of 240 hours in social work-related settings. Personal life experience may be substituted.
5. References are required for each applicant. One reference should be from a person who knows the applicant in a professional capacity and one from a person who knows the applicant in an academic capacity. Additionally, a third reference is later requested by the school from the applicant's SWU 310 instructor. This reference is used in the field placement process.
6. Fulfilling the College of Public Programs professional program status admissions requirements outlined under "[Professional Status Admission Requirements](#)," page 484.

Admission is selective and based on available resources. Not all students who meet minimum requirements are admitted to the program.

Leave of Absence. Occasionally, for health or personal reasons, Social Work students who have achieved professional program status find it necessary to interrupt their studies. Students considering such requests meet with an academic advisor to look at alternatives and then submit a written request to the B.S.W. program coordinator. A student may request a leave of absence from the Social Work program for a period of one year. Failure to request a leave of absence results in removal from the professional program.

(This leave applies only to the Social Work program and not to the university. No leave of absence is granted from the university.) Except when recommended by the Committee on Academic and Professional Standards, the student must be in good standing in the program at the time the request is made. Students should be aware that nonattendance at the university for one or more semesters requires reapplication to the university. Failure to request a leave of absence by Social Work majors results in removal from the program.

Readmission. Undergraduate students who have previously attended ASU but have not been enrolled at this institution for one or more semesters are required to apply for readmission following university procedures as outlined under “Readmission to the University,” page 70. Students who were previously admitted to the professional program may, in addition, be required to reapply for professional status.

Transfer Students. The university standards for evaluation of transfer credit are listed under “Transfer Credit,” page 61. Community college students planning to transfer at the end of their first or second year should plan their community college courses to meet the requirements of the ASU curriculum selected. Students attending Arizona community colleges are permitted to follow the degree requirements specified in the ASU catalog in effect at the time they begin their community college work, providing their college attendance is continuous. See “Guidelines for Determination of Catalog Year,” page 79.

Arizona students are urged to refer to the *Course Applicability System* for the transferability of specific courses from Arizona community colleges. Students may also access the guide through the Academic Transfer Articulation Office’s Web site at www.asu.edu/provost/articulation.

Courses transferred from community colleges are accepted as lower-division credit only. Students are urged to choose their community college courses carefully, in view of the fact that there is a minimum number of hours of work taken at the university that must be upper-division credit (see “Credit Requirements,” page 79).

Direct transfer of courses from other accredited institutions to the School of Social Work is subject to the existence of parallel and equal courses in the school’s curriculum. Transfer credit is not given for courses in which the lowest passing grade (“D”) or a failing grade (“E” or “F”) was received.

Credit for “life experience” is not given in lieu of course requirements. A minimum of 30 semester hours earned in resident credit courses at ASU is required for graduation.

ADVISING

Students are responsible for meeting the degree requirements and seeking advising regarding their program status and progress. Upon admission to the Social Work major, each student is assigned a faculty advisor who assists with career planning. The academic advisor assists students with program planning, registration, preparation of needed petitions, verification of graduation requirements, and referrals to university and/or community resources. Students must meet with an academic advisor before any registration transaction.

DEGREES

The school’s undergraduate curriculum leads to a Bachelor of Social Work (B.S.W.) degree. The B.S.W. degree program is accredited by the Council of Social Work Education (CSWE). The principal objective of the undergraduate curriculum is to prepare students for beginning-level generalist practice in social work. The program is also designed to prepare students for culturally sensitive practice and to provide preparation for graduate training in social work. During the freshman and sophomore years, students concentrate on obtaining a strong background in liberal arts and sciences and are classified as preprofessional until they are officially admitted to the professional program. Entrance into the Social Work professional program is not automatic (see “Admission,” page 484).

Junior and senior Social Work majors focus on social work courses in research, social policy and services, social work practice, human behavior in the social environment, and field instruction in community agencies. In addition, majors take elective courses in related areas.

The B.S.W.-level practitioner is seen as a generalist. The curriculum focuses on such roles as advocacy, case management, problem-solving, and referral functions with individuals, groups, families, organizations, and the community.

Tucson Component. The Tucson Component serves students living and working in southern Arizona pursuing the B.S.W. degree. The Tucson Component—established in 1995 as a partnership between the Arizona Department of Economic Security, the ASU School of Social Work, and the College of Extended Education—became permanent in 1999. Full- and part-time students can complete all required upper-division social work courses and electives at a centrally located site near downtown Tucson, while completing general studies and other degree requirements through area community colleges, the University of Arizona, and Northern Arizona University. For more information, call the Tucson Component at 520/884-5507, extension 10.

Honors B.S.W. Program

Criteria for Admission. For information about admission to the Barrett Honors College, call 480/965-2359. The Barrett Honors College reviews applications on November 1, December 1, and the 15th of every other month. Minimum GPA eligibility ranges from 3.25 to 3.40, depending on the number of semester hours.

Students must be admitted to the B.S.W. program and have a 3.50 GPA in all social work courses they may have taken before admission to the program. To retain honors status, students must maintain a 3.25 GPA in their honors social work classes. However, to graduate from the Barrett Honors College, students must have an overall ASU GPA of 3.40.

Honors College Requirements. Students must comply with the Barrett Honors College requirements and take one

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF PUBLIC PROGRAMS

of the following options:

1. HON 171 and 172 The Human Event (not available to transfer students);
2. HON 371 Freedom and Authority;
3. HON 374 Black and White Atlantic; or
4. HON 394 Special Topics.

In addition, students must take SWU 493 Honors Thesis for three to six semester hours. The thesis can be a social work research or creative project preferably related to the student's field placement or area of interest. Students must have a faculty mentor/chair to assist with the thesis or creative project.

Typical Honors Program of Study

Junior Year

B.S.W. Requirement

SWG 502 Human Behavior in the Social Environment II.....	3
Total	3

Senior Year

Fall Semester

HON 371 Freedom and Authority <i>L/HU</i>	3
or HON 374 Black and White Atlantic <i>HU, G</i> (3)	
or HON 394 Special Topics (3) ¹	
SWG 510 Foundation Practice I	3
SWG 531 Social Policy and Services I	3
SWU 412 Field Instruction I	5
SWU 413 Field Instruction Seminar I	1
Total	15

Spring Semester

SWG 511 Foundation Practice II	3
SWG 580 Community and Organizational Change	3
SWU 414 Field Instruction II	3
SWU 415 Integrative Field Seminar	3
SWU 493 Honors Thesis ² <i>L</i>	3-6
Total	15-18

¹ If students have already taken HON 171 and 172, HON 394 is not taken.

² Students may want to take three semester hours of thesis in each of the fall and spring semesters.

Note: The preceding graduate (SWG) courses are taken in lieu of the following undergraduate courses: SWU 340 Human Behavior in the Social Environment II, SWU 410 Social Work Practice II, SWU 411 Social Work Practice III, SWU 432 Social Policy and Services, and SWU 442 Introduction to Practice with Children and Families in Child Welfare or SWU 444 Issues in School Social Work.

Optional. Students who have not already taken SWG 320 and 374 when they are admitted may also take the following equivalent graduate courses:

SWG 519 Research Methods in Social Work	3
SWG 533 Diversity and Oppression in a Social Work Context.....	3

Advanced Standing in M.S.W. Program for Honors

B.S.W. Graduates. Students who complete the Honors B.S.W. program are eligible to apply for advanced standing status in the M.S.W. program. If accepted, they could com-

plete the M.S.W. degree in one calendar year (starting in June only). To be eligible for advanced standing status, the student must have graduated from the honors B.S.W. program within the last five years.

GRADUATE PROGRAMS

The faculty in the School of Social Work offer a Master of Social Work degree and a Ph.D. degree in Social Work. For more information, see the *Graduate Catalog*.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements. For more information, see "University Graduation Requirements," page 79.

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement for a minimum of 35 semester hours of approved course work in General Studies. See "General Studies," page 83.

Note that all three General Studies awareness areas are required. Consult your academic advisor for an approved list of courses.

SCHOOL OF SOCIAL WORK DEGREE REQUIREMENTS

All students enrolled in a baccalaureate degree program must satisfy School of Social Work degree requirements with additional course work chosen from among those courses that satisfy the General Studies requirement. General Studies courses are listed in the "General Studies" section, page 83, in the course descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*.

A well-planned program of study may enable students to complete many General Studies and School of Social Work degree requirements concurrently. Students are encouraged to consult with an academic advisor in planning a program to ensure that they comply with all necessary requirements. All students are required to demonstrate proficiency in a language other than English (a spoken language or American Sign Language). Proficiency is defined as completing the second semester, intermediate level or higher, of a language other than English. The School of Social Work faculty strongly encourages students to consider Spanish or a tribal language.

Specific courses from the following areas must be taken to fulfill the college degree requirements.

Numeracy. School of Social Work students must complete a statistical analysis course (CS).

Humanities and Fine Arts. School of Social Work students must complete PHI 101 Introduction to Philosophy, PHI 105 Introduction to Ethics, or PHI 306 Applied Ethics.

Social and Behavioral Sciences. The following courses are required:

ECN 111 Macroeconomic Principles <i>SB</i>	3
PGS 101 Introduction to Psychology <i>SB</i>	3
or SOC 101 Introductory Sociology <i>SB</i> (3)	
or SOC 301 Principles of Sociology <i>SB</i> (3)	
Total	6

Natural Sciences. School of Social Work students must complete a course in either human biology or anatomy and physiology.

MAJOR REQUIREMENTS

The School of Social Work awards a Bachelor of Social Work degree upon the successful completion of a curriculum consisting of a minimum of 120 semester hours. This curriculum includes all university requirements (see “University Graduation Requirements,” page 79), the College of Public Programs requirements including the General Studies requirements (see “General Studies,” page 83), as well as the School of Social Work degree requirements.

Course Load. A normal course load per semester is 15 to 16 semester hours. The maximum number of hours for which a student can register is 18 semester hours, unless an overload petition has been filed with and approved by the B.S.W. program coordinator and the College of Public Programs dean’s office.

Overload petitions are not ordinarily granted to students who have a cumulative GPA of less than 3.00 and who do not state valid reasons for the need to register for the credits. Students who register for semester hours in excess of 18 and do not have an approved overload petition on file may have courses randomly removed through an “administrative drop” action.

Social Work Core Requirement

SWU 271 Introduction to Social Work <i>SB, H</i>	3
SWU 291 Social Service Delivery Systems	3
SWU 295 Foundations of Social Work Practice	3
SWU 301 Human Behavior in the Social Environment I <i>L/SB</i>	3
SWU 310 Social Work Practice I	3
SWU 320 Research Methods in Social Work	3
SWU 340 Human Behavior in the Social Environment II <i>SB</i>	3
SWU 374 Diversity and Oppression in a Social Work Context <i>C</i>	3
SWU 410 Social Work Practice II	3
SWU 411 Social Work Practice III	3
SWU 412 Field Instruction I	5
SWU 413 Field Instruction Seminar I	1
SWU 414 Field Instruction II	3
SWU 415 Integrative Field Seminar	3
SWU 432 Social Policy and Services	3
SWU 442 Introduction to Practice with Children and Families in Child Welfare	3
or SWU 444 Issues in School Social Work (3)	—
Total	48

SWU 412 and 414 each require 16 hours weekly per semester in the field. Students must file an application for field work before registering for the courses. Students must have senior status to participate in the field.

No credit is granted toward fulfilling major core requirements in any course in the student’s major unless the grade in that course is at least a “C.” If a grade of “D” or “E” is earned in a major core course, the student must see the faculty advisor to discuss continuance in the major. Most courses in the program are sequential; successful completion of each course in the sequence is required to enroll in the following course.

Field Instruction. Field instruction for the B.S.W. program is offered concurrently with classroom study. Students are assigned to a social service agency and work under the supervision of a School of Social Work-approved social work professional. Field instruction permits testing theory in practice and provides a base of experience for class discussions. Qualified agencies in several Arizona communities are utilized for field instruction.

B.S.W. students work in one placement for 16 hours a week, for a total of 480 hours over two semesters. In assigning the placement, the school takes into account the student’s educational needs and career goals. Generalist social workers need to be familiar with the methods of working with individuals, families, and groups, as well as in organizations and communities and with all ages and ethnic groups. The faculty are committed to establishing the capabilities necessary for high-quality, social work generalist practice.

B.S.W. field instruction agencies are located primarily in the Phoenix metropolitan area for Tempe students and for Tucson students throughout Southern Arizona. Specially arranged, more distant placements may require up to a two-hour drive. Although car pools are possible, personal transportation is strongly recommended while attending school.

ELECTIVES

Each student is encouraged to consult with an academic advisor in selecting electives. Economics, education, psychology, and sociology are only a few of the academic units offering knowledge of value to the professional social work practitioner.

Undergraduate Student Enrollment in Graduate

Classes. Seniors within 12 semester hours of graduation may enroll in a maximum of nine graduate semester hours in the School of Social Work, providing they have an overall GPA of 3.00 or higher at the time of enrollment and have secured the required signatures for approval. Courses may be eligible for use in a future graduate program on the same basis as work taken by a nondegree graduate student (see the *Graduate Catalog*).

ACADEMIC STANDARDS

Good Standing. To remain in good academic standing, a student must maintain a minimum overall GPA of 2.00 or higher at the end of each semester in all courses taken at ASU.

Probationary Status. Any student who does not maintain good standing status is placed on probation. Students are placed on probation automatically when the GPA is less than the minimum 2.00 at the end of any semester.

Disqualification. Any student who is on probation becomes disqualified if (1) the student has not returned to good standing or (2) the student has not met the required semester

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.



The Agriculture Building is located on ASU Main campus between the Memorial Union and the Student Services Building.

Tim Trumble photo

GPA. See [“Academic Standards and Retention.” page 487](#), for more details on academic standards.

Academic Dishonesty. The faculty of the School of Social Work follow the guidelines as specified in the University Student Academic Integrity Policy. A copy of the policy may be obtained from the School of Social Work Office of Academic Services.

Termination from the Social Work Professional Program. A student is terminated from the professional program under any one of the following circumstances:

1. A B.S.W. student receives an “E” grade (failure) in field practicum.
2. A B.S.W. student does not accept or is not accepted by three or more field agencies if, in the judgment of faculty and field staff, the placements can provide appropriate field experiences without undue inconvenience to the student.
3. The student does not adhere to professional expectations and standards (see the ASU Student Code of Conduct, National Association of Social Workers Code of Ethics, and CSWE Curriculum Policy Statement).

4. At any time that field instructors, faculty, or the faculty advisor identify problems that indicate that a student cannot perform the required functions of a social worker, the program coordinator and faculty advisor may consult and assess the written documentation that has led to such indications.

Continuous Evaluation. While students are subject to the university’s general retention policy, they are evaluated in the school on broader criteria than mere GPA. Students are reviewed for evidence of competency in social work and are continuously evaluated as they progress in the program. Prospective Social Work candidates who do not meet the established criteria are guided toward a program that is compatible with their interests and abilities.

Reinstatement. A disqualified student who desires to be reinstated may submit an application for reinstatement. A disqualified student normally is not reinstated until at least one semester has elapsed from the date of disqualification. The burden of establishing fitness is on the disqualified student, who may be required to take aptitude tests and submit to other examinations before being readmitted.

APPEAL PROCEDURES

Appeals involving the professional standards of the discipline are decided by the School of Social Work. Appeals involving grades for course work may be submitted to the College of Public Programs Academic and Student Affairs Committee only after discussing the matter with the instructor of the course and the director of the School of Social Work.

STUDENT RESPONSIBILITIES

Students are expected to support and maintain the highest professional standards as spelled out in the *ASU Student Code of Conduct* and the *National Association of Social Workers Code of Ethics*.

Regular attendance is expected in all classes and in field education and is a critical factor in evaluation of performance.

Students' rights are protected through appeal to the Committee on Academic and Professional Standards or through consultation with the school's ombudsperson.

SOCIAL WORK (GRADUATE PROGRAM) (SWG)

See the *Graduate Catalog* for the SWG courses.

SOCIAL WORK (UNDERGRADUATE PROGRAM) (SWU)

SWU 271 Introduction to Social Work. (3)

fall and spring

Descriptive and analytical historical perspective of the profession of social work, social problems, and the social welfare system. Designed for freshmen and sophomores considering this major. Prerequisite: PGS 101 or SOC 101.

General Studies: SB, H

SWU 291 Social Service Delivery Systems. (3)

fall and spring

Knowledge and skills necessary to utilize community resources to be a competent case manager. Includes 40 hours of observational experience in local agencies. Pre- or corequisite: SWU 271.

SWU 295 Foundations of Social Work Practice. (3)

fall and spring

Provides theoretical foundation and skill base necessary for social work interventions with individuals, small groups, and larger systems. Pre- or corequisites: SWU 271, 291.

SWU 301 Human Behavior in the Social Environment I. (3)

fall and spring

Analyzes theories of personality and life span development from methodological, ecological, and systems perspectives up to adolescence. Prerequisite: PGS 101 or SOC 101. Pre- or corequisites: SWU 271, 291, 295.

General Studies: L/SB

SWU 302 Human Biology for Social Workers. (3)

fall and spring

Overview of human anatomy and physiology, and the reciprocal relationship between physical and social environments. Lecture, discussion. Pre- or corequisites: SWU 271, 291.

SWU 310 Social Work Practice I. (3)

fall and spring

Introduces social work methods, emphasizing the following skills: cross-cultural interviewing, assessment, referrals, and process and psychological recording. Prerequisite: SWU 295. Pre- or corequisite: SWU 301.

SWU 320 Research Methods in Social Work. (3)

fall and spring

Applies scientific principles to field practice, impact assessment, intervention procedures, and problem formulation in social work. Lecture, cooperative learning. Pre- or corequisite: SWU 310.

SWU 321 Statistics for Social Workers. (3)

fall and spring

Teaches social work students how to use and interpret descriptive and inferential statistics in social work practice. Lecture, small group work. Prerequisites: MAT 114, 117. Pre- or corequisite: SWU 320.

General Studies: CS

SWU 340 Human Behavior in the Social Environment II. (3)

fall and spring

Life span development from middle childhood to maturity. Lecture, discussion. Prerequisite: SWU 301. Pre- or corequisites: SWU 302, 310.

General Studies: SB

SWU 374 Diversity and Oppression in a Social Work Context. (3)

fall and spring

Issues of social inequality related to race, ethnicity, gender, sexual orientation, and disability. Emphasizes populations of the Southwest. Prerequisite: SWU 310.

General Studies: C

SWU 410 Social Work Practice II. (3)

fall and spring

Knowledge and skills in social work practice with individuals and families. Prerequisites: PHI 101 (or 105 or 306); SWU 310; Social Work major. Corequisites: SWU 412, 413.

SWU 411 Social Work Practice III. (3)

fall and spring

Knowledge and skills in social work practice with groups, communities, and organizations. Prerequisites: SWU 410, 412, 413; Social Work major. Corequisites: SWU 414, 415.

SWU 412 Field Instruction I. (5)

fall and spring

16 hours a week of supervised practice in an approved placement. Prerequisite: Social Work major. Corequisites: SWU 410, 413.

SWU 413 Field Instruction Seminar. (1)

fall and spring

Field-focused seminar, including practice evaluation. 1.5 hours per week. Prerequisite: Social Work major. Corequisites: SWU 410, 412.

SWU 414 Field Instruction II. (3)

fall and spring

16 hours a week of supervised practice in an approved placement. Prerequisites: SWU 413; Social Work major. Corequisites: SWU 411, 415.

SWU 415 Integrative Field Seminar. (3)

fall and spring

Field-focused seminar to help integrate practice and theory. Prerequisite: Social Work major. Corequisites: SWU 411, 414.

SWU 432 Social Policy and Services. (3)

fall and spring

Contemporary social, political, and economic issues. Special emphasis on poverty and inequality in the Southwest. Analysis and development of social welfare policies and programs. Prerequisite: ECN 111. Corequisites: SWU 410, 412, 413.

SWU 442 Introduction to Practice with Children and Families in Child Welfare. (3)

fall and spring

Focuses on the characteristics, strengths, and service needs of families and children in the Child Welfare System. Lecture, cooperative learning. Prerequisites: SWU 410, 412, 413; Social Work major.

SWU 444 Issues in School Social Work. (3)

fall and spring

Demonstrates how community, family, and school are interdependent using an ecological metaphor, and introduces school social work. Lecture, cooperative learning. Prerequisites: SWU 410, 412, 413; Social Work major.

SWU 493 Honors Thesis (1–6)

selected semesters

General Studies: L

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

Graduate College

www.asu.edu/graduate

Bianca L. Bernstein, Ph.D., Dean

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Purpose

Through the faculty, Arizona State University's Graduate College offers programs to meet the educational needs of those who already hold baccalaureate and master's degrees. While many students prepare for careers in research, the professions, and the arts, others study for personal enrichment. Both part-time and full-time students are enrolled in 91 master's and 48 doctoral majors encompassing hundreds of concentrations and specialties. Other students explore new areas of interest or prepare for career advancements apart from formal degree programs.

The size, strength, and diversity of the graduate community reflect the university's commitment to high-quality education. As a major center for graduate education, ASU supports cultural and intellectual activity as well as research in a broad range of arts and sciences and professional disciplines; in addition, the university conducts research addressing the social, cultural, and economic growth and development of Arizona and the Southwest.

One distinctive project that magnifies the Graduate College's dedication to graduate students is the Preparing Future Faculty program, funded by the Pew Charitable Trusts and ASU. The program is designed to educate students about faculty roles and prepare doctoral students specifically for faculty positions in colleges and universities across the nation.

This past year, about 2,000 ASU graduate students were awarded prestigious fellowships and scholarships, exceeding \$3.5 million. These awards were funded by the National Science Foundation, NASA, the Ford Foundation, Fulbright, and other public agencies and private foundations.

ASU assisted more than 2,800 outstanding graduate students through academic and tuition scholarship and other financial support programs. The total financial support amounted to \$15.5 million, exemplifying the university's commitment to enabling student success.

Funded programs, together with more than 30 research centers and institutes, provide assistantships and training for

many graduate students; further, the centers coordinate conferences, colloquia, and special seminars to heighten the learning experience. The Office of the Vice Provost for Research provides seed money to enable ASU faculty and students to work at the frontiers of knowledge. Such activities continually encourage the creative embrace of change and experimentation.

ASU provides numerous choices in student life, for personal enrichment as well as cultural interaction. Many internationally known speakers present lectures here, bringing together faculty, graduate students, and the community to engage in stimulating dialogue.

Intellectual Environment. More than 10,000 students from all 50 states and more than 100 nations are enrolled in graduate study at the university. Such size and diversity contribute to a cosmopolitan setting that is ideal for intellectual discourse and stimulation. As a balance to this large grouping of students, individual graduate programs conduct small colloquia and seminars where students and faculty discuss their work in an intimate, intellectual environment supportive of student development. The result is a spirited, lively atmosphere in which students and faculty members get to know each other through collaborative research and intellectual exchange.

GRADUATE PROGRAMS

Degree Programs

Although graduate degree programs differ in many ways, they all share two important characteristics. First, in comparison to baccalaureate programs, they demand a deeper and broader understanding of a body of knowledge in a recognized discipline or profession. Second, in master's and especially in doctoral programs, graduate students prepare to make original contributions to their fields through research and other creative activities of a high order. In contrast, then, to the broad-based baccalaureate degree, graduate degrees are specialized. ASU offers several types and levels of postbaccalaureate degrees.

For admission information and procedures, access the Web site at www.asu.edu/graduate/admissions, or refer to the *Application for Graduate Admission* booklet.

Master's and Doctoral Work. Many students pursue a master's degree to satisfy their own quest for learning. In some disciplines, such as dance or architecture, the master's degree is normally the terminal or final degree. In other fields, students enter master's programs as the first step toward more advanced work, such as doctoral studies, which prepare students for a lifetime of intellectual inquiry and creativity or for the application of knowledge to professional practice.

Interdisciplinary Graduate Degrees and Majors Overseen by the Graduate College

Major	Degree	Concentration	Administered By
Creative Writing	M.F.A.	—	Creative Writing Committee
Curriculum and Instruction	Ph.D. ¹	Art education, ² curriculum studies, early childhood education, elementary education, English education, exercise and wellness education, ³ language and literacy, mathematics education, music education, physical education, science education, special education	Interdisciplinary Committee on Curriculum and Instruction
Exercise Science	Ph.D.	Biomechanics, motor behavior/sport psychology, physiology of exercise	Committee on Exercise Science
Justice Studies	Ph.D.	Criminal and juvenile justice; dispute resolution; law, justice and minority populations; law, policy, and evaluation; women, law, and justice	Committee on Law and Social Sciences
Materials Science	M.S.	—	Committee on the Science and Engineering of Materials
Science and Engineering of Materials	Ph.D.	High-resolution nanostructure analysis, solid-state device materials design	Committee on the Science and Engineering of Materials
Speech and Hearing Science	Ph.D.	Developmental neurolinguistic disorders, neuroauditory processes, neurogerontologic communication disorders	Committee on Speech and Hearing Science
Statistics	M.S.	—	Committee on Statistics

¹ This program is administered in collaboration with the College of Education.

² This concentration is administered in collaboration with the Herberger College of Fine Arts.

³ Doctoral Courses for this interdisciplinary program administered by ASU Main are offered by ASU East.

Research Degrees. Students at ASU may pursue research-oriented or practice-oriented degrees. Research-oriented degree programs—the Master of Arts (M.A.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.)—prepare students for careers of research and scholarship in governmental, business, and industrial organizations, or in university or college teaching. Students in these programs develop abilities to evaluate existing knowledge critically and extend it into fresh areas of inquiry and scholarship.

Professional Degrees. The professional or practice-oriented degree programs have slightly different names and distinct academic missions. The names of the degrees are commonly tied to the academic unit offering the program, for example, Master of Business Administration (M.B.A.), Master of Music (M.M.), Master of Social Work (M.S.W.), and Doctor of Public Administration (D.P.A.). With the objective of preparing students for professional practice, such programs require rigorous preparation in the fundamental literature and scholarship of the field. Some degrees require demonstrated expertise through an internship, an exhibition (art), a performance (dance), or a recital (music). Examples of ASU fields in which academic units offer professional programs include architecture and design, business, education, engineering, health services administration, law, nursing, public administration, and social work.

Nondegree Graduate Study

Many serious students enter graduate studies without intending to obtain a new degree but rather to enhance personal knowledge. They may want to advance in their present career, acquire the background to make a career change, or make up academic deficiencies before entering a degree program. All graduate students, degree or nondegree, enjoy the benefits of cultural and intellectual activities at the university, such as colloquia, seminars, and conferences focusing on the latest scholarship in the field. By consulting with appropriate academic units, students can learn which courses are suitable to their needs.

For admission information and procedures, access the Web site at www.asu.edu/graduate/admissions, or refer to the *Application for Graduate Admission* booklet.

Student Services for Nondegree Students. The Graduate College maintains an advising office open year-round. See “[Graduate Student Support Services.](#)” page 520, for more information.

Graduate Studies and University Environment

The Graduate College spans the university in supervising graduate studies and offering all postbaccalaureate degrees except the Juris Doctor, which is administered by the College of Law. Since more than 1,600 ASU faculty members teach graduate students in more than 115 instructional units, the Graduate College works closely with the other colleges and academic units. In most cases, graduate instruction is

GRADUATE COLLEGE

offered by units that also provide related undergraduate programs.

Interdisciplinary Study. Although most graduate programs are offered by academic units, diverse interdisciplinary programs cross academic disciplines and come under the supervision of the Graduate College. Many majors are in fields that are still emerging as recognized academic disciplines and, therefore, do not customarily form the academic basis for departments. Other fields of study are inherently interdisciplinary and do not fit well with conventional disciplines around which departments are formed. Curricula must reflect intrinsically broad disciplinary affinities, and faculty must be drawn from more than one academic unit.

Currently, the Graduate College oversees nine interdisciplinary programs; several others are planned. Existing programs include the Gerontology Program (Certificate in Gerontology jointly offered by ASU Main and ASU West), Creative Writing (M.F.A.), Curriculum and Instruction (Ph.D.) (jointly administered with the College of Education), Exercise Science (Ph.D.), Justice Studies (Ph.D.), Science and Engineering of Materials (Ph.D.), Speech and Hearing Science (Ph.D.), Statistics (M.S.), and Transportation Systems (Certificate in Transportation Systems).

Other interdisciplinary degree programs include Communication (Ph.D.) (administered by the College of Public Programs), History and Theory of Art (Ph.D.) (jointly offered with the University of Arizona; administered by the School of Art), Humanities (M.A.) (administered by the College of Liberal Arts and Sciences), and Molecular and Cellular Biology (M.S., Ph.D.) (administered by the College of Liberal Arts and Sciences).

Each of these programs utilizes resources and faculty from several disciplines. They promote cooperative research and instruction among faculty who share common interests but are housed in different academic units. They allow students to pursue degrees that are intellectually coherent but that bring together diverse strengths of the university. See the [“Interdisciplinary Graduate Degrees and Majors Overseen by the Graduate College” table, page 517.](#)

Creative Writing—M.F.A.

The interdisciplinary Master of Fine Arts degree in Creative Writing (options include fiction, nonfiction, playwriting, poetry, and screenwriting) is administered by the Creative Writing Committee. This studio/academic program involves the research, creative activity, and teaching interests of faculty within the Departments of English and Theatre. This program provides students with the opportunity to tailor a course of study to fit individual needs, talents, and goals. Students work under the direction of faculty who are practicing, published writers. For more information, see the *Graduate Catalog*.

Curriculum and Instruction—Ph.D.

The interdisciplinary Ph.D. degree in Curriculum and Instruction is administered by the Interdisciplinary Committee on Curriculum and Instruction and overseen jointly by the Graduate College and the College of Education. Areas of concentration are available in art education, curriculum studies, early childhood education, educational media and

computers, elementary education, English education, exercise and wellness education, language and literacy, mathematics education, music education, physical education, science education, and special education. For more information, see the *Graduate Catalog*.

Exercise Science—Ph.D.

The interdisciplinary Ph.D. degree in Exercise Science is administered by the Committee on Exercise Science. This individualized interdisciplinary degree integrates graduate courses from a variety of academic units to provide a sound foundation for research leading to a dissertation with concentrations in biomechanics, motor behavior/sport psychology, or physiology of exercise. For more information, see the *Graduate Catalog*.

Gerontology

An interdisciplinary, 24-semester-hour Certificate in Gerontology, administered by the Committee on Gerontology, may be earned by graduate students who wish to study the biological, psychological, sociological, and policy-related aspects of aging as well as the economic, health, and social concerns of older people. Students enrolled in the certificate program may simultaneously pursue a major in an academic unit offering a graduate degree or may enter the program as nondegree graduate students. The Certificate in Gerontology provides a broad academic foundation for students who wish to apply the knowledge and skills acquired in their major to a variety of aging-related pursuits. For more information, see the *Graduate Catalog*.

For information on the undergraduate minor in Gerontology, see “Gerontology,” page 108.

GERONTOLOGY (GRN)

ASU Main

GRN 430 Multidisciplinary Approaches to Gerontology. (3)

once a year

Examines literature that each discipline brings to the study of gerontology. Covers both theory and practice. Lecture, discussion.

General Studies: SB

GRN 431 Caregiving. (3)

once a year

Examines theory and practice of caregiving for the senior population. Lecture, discussion.

GRN 440 Aging and Wellness. (3)

fall and spring

One-on-one service/experiential learning with seniors from the community. May be repeated for credit. Lecture, lab.

GRN 450 Biology of Aging. (3)

spring

Examines normal biological aging and changes in the functional capabilities in the elderly. Lecture, lab.

GRN 460 Alzheimer’s and Related Dementias. (3)

fall and spring

Familiarization with Alzheimer’s disease and related dementias from a caregiver’s perspective. Lecture, lab.

GRN 484 Undergraduate Internship. (3–6)

fall, spring, summer

GRN 494 ST: Undergraduate Special Topics. (3)

fall and spring

GRN 498 PS: Undergraduate Pro-Seminar. (3)

spring

GRN 499 Undergraduate Individualized Instruction. (3)

fall, spring, summer

GRN 530 Multidisciplinary Approaches to Gerontology. (3)*once a year*

Examines literature that each discipline brings to the study of gerontology. Covers both theory and practice. Lecture, discussion.

GRN 531 Caregiving. (3)*once a year*

Examines theory and practice of caregiving for the senior population. Lecture, discussion.

GRN 540 Aging and Wellness. (3)*fall and spring*

One-on-one service/experiential learning with seniors from the community. Lecture, lab. Cross-listed as SWG 517. Credit is allowed for only GRN 540 or SWG 517.

GRN 550 Biology of Aging. (3)*spring*

Examines normal biological aging and changes in the functional capabilities in the elderly. Lecture, lab.

GRN 560 Alzheimer's and Related Dementias. (3)*fall and spring*

Familiarization with Alzheimer's disease and related dementias from a caregiver's perspective. Lecture, lab.

GRN 584 Graduate Internship. (3–6)*fall, spring, summer***GRN 590 Graduate Reading and Conference. (3)***fall, spring, summer***GRN 591 Graduate Seminar. (1–6)***fall and spring*

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 56.

Geographic Information Science

The interdisciplinary certificate program in Geographic Information Science (GIS) is administered by an Executive Committee. The objective of this program is to enable existing ASU graduate students and GIS professionals with advanced degrees to learn how to apply GIS concepts and technology for the purposes of spatial analysis. For more information, see the *Graduate Catalog*.

Justice Studies—Ph.D.

The interdisciplinary Doctor of Philosophy degree program with a major in Justice Studies is administered by the Committee on Law and Social Sciences. The degree program integrates historical, legal, and philosophical approaches with social science training. Areas of concentration include criminal and juvenile justice; dispute resolution; law, justice, and minority populations; law, policy, and evaluation; and women, law, and justice. For more information, see the *Graduate Catalog*.

Science and Engineering of Materials—Ph.D.

The interdisciplinary Ph.D. degree in Science and Engineering of Materials is administered by the Committee on Science and Engineering of Materials. Areas of concentration are available in solid-state device materials design and high-resolution nanostructure analysis. Emphasis is placed on the applications of chemical thermodynamics, the mechanics of solids, quantum mechanics and transport theory for investigation of the relationships between microstructure and properties of solids, and the dependence of microstructures on processing. For more information, see the *Graduate Catalog*.

SCIENCE AND ENGINEERING OF MATERIALS (SEM)

See the *Graduate Catalog* for the SEM courses.

Speech and Hearing Science—Ph.D.

The interdisciplinary Doctor of Philosophy degree program with a major in Speech and Hearing Science is administered by the Committee on Speech and Hearing Science. Areas of concentration are available in developmental neurolinguistic disorders, neuroauditory processes, and neurogerontologic communication disorders. The purpose of the program is to prepare scholars for careers of basic and applied research in academia or in health care delivery environments. The unifying theme of the program is the influence aging and changes in the neurologic condition have upon human communication and communication disorders. For more information, see the *Graduate Catalog*.

Statistics—M.S.

The interdisciplinary M.S. degree in Statistics is administered by the Committee on Statistics. The program involves faculty and resources from the School of Accountancy and Information Management and the Department of Mathematics and Statistics. Areas of emphasis include applied statistics, mathematical statistics, statistical computing, statistical modeling, and statistical sampling and survey research. For more information, see the *Graduate Catalog*.

Certificate Programs

A number of certificate programs are offered by various academic units or programs on campus (see the "ASU Post-baccalaureate Certificates" table, page 112).

Transportation Systems

The interdisciplinary Certificate in Transportation Systems program is administered by the Committee on Transportation Systems. The objective of this program is to enable existing ASU graduate students and transportation professionals with advanced degrees to examine transportation-related issues from a variety of perspectives and in the context of different travel modes. For more information, see the *Graduate Catalog*.

TRANSPORTATION SYSTEMS CERTIFICATE (TRC)

See the *Graduate Catalog* for the TRC courses.

Research Programs

ASU continues to advance as a major research institution. The Office of the Vice Provost for Research provides leadership in obtaining external funding and in coordinating and administering sponsored projects. Many graduate students receive financial support and gain first-hand experience as they participate with faculty members in carrying out these research projects.

Much of this work is associated with campus research centers that help to develop proposals, coordinate activities, and bring together in colloquia and conferences students and faculty with common intellectual interests. Such centers include the Center for Solid State Science, the Manufacturing Institute, the Institute of Human Origins, the Hispanic Research Center, and the Preventive Intervention Research Center. For further information on centers and institutes, see "Research Centers, Institutes, and Laboratories," page 30.

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Research Facilities

The university lends support to research in diverse ways, including extensive facilities for research and instructional programs. State-of-the-art facilities include an architecture building, a fine arts complex, the Goldwater Center for Science and Engineering, an addition to the Life Sciences Center, and the Computing Commons. The Engineering Research Center, built as part of the Engineering Excellence Program, houses advanced facilities such as the molecular beam epitaxy laboratory and a clean room for microelectronic device fabrication. Other facilities supporting research on campus are the Institute for Studies in the Arts, in the Herberger College of Fine Arts; the Facility for High Resolution Electron Microscopy, in the College of Liberal Arts and Sciences; and the Southwest Archaeological Collection, in the Department of Anthropology.

Graduate Student Support Services

Providing academic and professional development support to graduate students is an important part of the Graduate College mission. Services include advising, individual mentoring for disadvantaged students, financial assistance, orientation sessions, workshops, career seminars, and research conferences.

Graduate College Student Programs/Services maintains a variety of programs specifically for graduate and nondegree students.

Graduate College Financial Assistance Office. The Graduate College Financial Assistance Office meets the needs of graduate and professional students. Students may receive financial services at Wilson Hall, without having to visit other offices on campus. Students may obtain general information about graduate financial assistance at ASU, may turn in documents, or receive status information on their student loans. Students can also apply for emergency short-term loans or pick up forms to report special circumstances. Staff members are available to help students with financial assistance concerns. Refer to “Financial Aid,” page 52, for a full description of graduate financial support and services, or visit the Web site at www.asu.edu/graduate.

Advising and Career/Professional Development. Many graduate students have questions and concerns about which degree to pursue; how to combine their student roles with parenting, partnering, and worker roles; and what opportunities and possibilities their degrees may provide upon graduation. The Graduate College provides the following resources.

Advising. The Graduate College’s Academic Advising Office supplies general information about policies, procedures, requirements, and support services. Appointments are available throughout the year.

Students with regular admission status should contact their academic unit for degree program advisement and program of study planning.

Career/Professional Development Seminars. The Graduate College, in conjunction with Counseling and Consultation, offers seminars to groups of graduate students interested in exploring career-related subject matters. Examples of seminar topics are dual career issues, the impact of values on career decision making, and transferable skills.

Career Planning Services for Graduate Students. In conjunction with Career Services and Counseling and Consultation, the Graduate College provides a brochure listing numerous career planning services for graduate student needs. This publication is also available at career.asu.edu.

Diversity Programs. The Graduate College’s Diversity Programs are designed to increase the number of graduate students from groups underrepresented in certain fields of study. Students interested in these programs must first go to their respective departments for nomination.

Diversity Assistantship Program (DAP). The purpose of this merit-based program is to support research and creative activities related to a student’s field of study. Nominations are made by departments, and recipients are supervised by a faculty member.

Academic Support Program (ASP). The purpose of ASP is two-fold: financial assistance and peer mentoring. ASP is available primarily to first-year students; however, departments are asked to provide a student’s subsequent funding. The program is based on financial need and the nominations of students by departments. Financial support is provided in the form of federal work-study to support field-related research that is supervised by a faculty member. For additional academic support, a student meets weekly with an assigned peer mentor who is two or more years advanced in the academic program.

The Social and Academic Mentor Program. The Graduate College Social and Academic Mentor (SAM) program is designed to recruit top graduate students from domestic, international, and underrepresented populations. Academic units submit applications to the Graduate College to nominate a first-year student (mentee) and peer mentor match. The mentor, two or more years advanced in the program, promotes the mentee’s social and academic integration into graduate school by using a structured format. The mentor meets weekly with the mentee and schedules regular monthly meetings with the faculty advisor to discuss the mentee’s concerns, progress, accomplishments, or department-related matters.

Orientations. Each semester, the Graduate College hosts orientations for new graduate students and teaching assistants (TAs).

In addition to the General (new student) Orientation, teaching assistants have the opportunity to enrich and enhance their teaching through seminars offered each semester. At least two seminars are mandatory for first-time TAs. Among other topics, TAs can attend sessions on teaching lab sciences, human diversity, critical thinking, classroom management, ethical issues, and multimedia applications in the classroom.

Workshops for Undergraduate Students Considering Graduate Education. The Graduate College holds workshops to address the issues that students contemplating graduate study should consider. The purpose of graduate study, the choices among research and professional degrees, the selection of schools to apply to, and the types and sources of financial support are among the topics discussed.

Student Organizations. The Graduate Student Council is part of the Associated Students of Arizona State University (ASASU), the student government for the university. The Graduate Research Support Office represents graduate student interests within ASASU and the Office of Student Life. It assists the Graduate College in planning orientations and other student-related activities and funds with the Graduate College small research grants to support graduate students' thesis and dissertation projects. In addition to the council, many other special interest organizations are open to graduate students.

Format Office. The thesis, dissertation, or equivalent is the culmination of an important stage of graduate studies. By researching and writing this final work, graduate students are able to demonstrate acquired skills essential to a discipline. The Graduate College publishes a *Format Manual* as a guide in preparing the master's or doctoral document. Both the *Format Manual* and forms pertaining to procedures for completing all graduation requirements are available in the Graduate College lobby in Wilson Hall or on the Web at www.asu.edu/graduate/resources/student/formatinfo.

Publications Program. The Graduate College publishes a number of brochures, fliers, and other items pertaining to academic program offerings, procedures, student financial assistance, and related topics and events in graduate education. For more information, call the Publications Unit at 480/965-3521.

Graduate Council

The Graduate Council establishes general policies for graduate programs and serves as an advisory board to the dean. As part of its duties, the council reviews proposals for new degree programs and concentrations, regularly conducts reviews of established academic programs, and sets policies and general standards for graduate admissions. Sixteen faculty and one student serve on the council, representing a wide variety of degree programs, with at least one member representing each college in the university. An Academic Senate representative is also elected to serve. Council members are appointed by the president of the university.

Offices of the Graduate College

The general offices of the college, including those of the dean, admissions, advising, financial assistance, and graduate academic services and programs are located on the first floor of Wilson Hall in the center of campus. Graduate College offices are open from 8 A.M. to 6 P.M., Monday through Thursday; and 8 A.M. to 5 P.M., on Friday.

For more information, call 480/965-3521, send e-mail to gradadmiss@asu.edu about admissions or asugrad@asu.edu about other topics, or access the Web site at www.asu.edu/graduate.

ADMISSION TO THE GRADUATE COLLEGE

Eligibility

Anyone who holds a bachelor's (or equivalent) or graduate degree from a college or university of recognized standing is eligible to apply for admission to the Graduate College. Remedies for undergraduate deficiencies may be assigned if the undergraduate degree is based on credits not

accepted by ASU, such as life experience or noncredit workshops and seminars.

Graduate College Requirements

Generally, an applicant must have a GPA of 3.00 (scale is 4.00 = A), or the equivalent, in the last two years of work leading to the bachelor's degree. A student who enters a graduate degree program is expected to have undergraduate educational experiences, including general education studies, that are similar to those required for the baccalaureate degree at ASU.

Requirements of the Academic Unit

Academic units, departments, or colleges, may have admission requirements in addition to those of the Graduate College. Many graduate programs require scores from a national admissions test such as the Graduate Record Examination, Graduate Management Admission Test, or the Miller Analogies Test. Some programs require a portfolio, letters of recommendation, or a statement of goals. Applicants should contact the academic unit regarding specific requirements.

Submission of an Application

For admission information and procedures, access the Web site at www.asu.edu/graduate/admissions, or refer to the *Application for Graduate Admission* booklet. Students may apply via the Web, by mail, or by fax.

Application Fee

Each application for entry to ASU graduate programs must be accompanied by a nonrefundable application fee. The fee is \$45 to apply for admission to a degree program and \$15 to apply for nondegree studies. For admission information and procedures, access the Web site at www.asu.edu/graduate/admissions, or refer to the *Application for Graduate Admission* booklet.

International Applicants

Applicants who will attend the university while holding F-1 or J-1 visas must meet the regulations of the Immigration and Naturalization Service in addition to the requirements of the Graduate College and the academic units to which they apply.

International applicants must meet the requirements of the Graduate College as well as those of the degree programs to which they apply. Applicants from outside the United States are also required to submit additional materials and should follow the procedures described in the *Application for Graduate Admission* booklet or on the Web at www.asu.edu/graduate/admissions. International applicants should read this information carefully to become familiar with all the requirements they must meet, consulting it often for instructions to follow regarding the submission of materials. The *Graduate Catalog* provides essential information about ASU and its graduate programs, but applicants can also consult the ASU listings in *Peterson's Graduate Education Directory* and in the *Directory of Graduate Programs* (published by the Educational Testing Service).

TOEFL Requirement. Among the additional materials required of international students are scores from English language examinations. All applicants whose native

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language is not English must submit a score from the Test of English as a Foreign Language (TOEFL). The TOEFL can be waived if the undergraduate degree is earned from an English-speaking institution. For a complete list of TOEFL requirements, see page 7 of the *Graduate Admissions* booklet, or access the Web site at www.asu.edu/graduate/admissions.

All international applicants who do not speak English as a primary language and who wish to apply for teaching assistantships must pass an examination that certifies their skill in speaking English—either the Test of Spoken English (TSE), which may be taken in the student's home country, or the Speaking Proficiency English Assessment Kit (SPEAK) test, which is administered at ASU. Some degree programs also require TSE or SPEAK scores of applicants whose native language is not English. For specific information about TSE requirements, contact the head of the academic unit.

As required by the U.S. Immigration and Naturalization Service, international applicants must also verify that they have the financial resources to cover their expenses during graduate study at ASU. The Financial Guarantee form is available in the *Application for Graduate Admission* booklet. It can also be accessed through the Graduate College Web site at www.asu.edu/graduate/admissions. International applicants must ensure that the guarantee form and a verification from a bank or sponsoring organization is completed and submitted to Graduate Admissions. The I-20 or the IAP66 (documents needed to obtain a student visa) are issued only after the completed, properly verified Financial Guarantee form has arrived. International students may enroll at ASU only if they have been admitted to a degree program, a certificate program, or the postbaccalaureate teacher education program. They must meet all appropriate immigration standards and requirements.

Applications are processed when they are received. However, international applicants should submit all materials in December or January in order to begin study the following fall semester and in August or September in order to begin study the following spring semester. An application fee of \$45 (in U.S. funds) must accompany the formal application. Applications received without the fee are not processed.

All F-1 or J-1 visa students must have insurance coverage against illness and accident before being permitted to register. Insurance must be maintained throughout the student's enrollment in the university and may be obtained at the time of registration.

Upon arrival on campus, students must report to an advisor in the International Student Office.

Additional Information

The Graduate College does not have deadlines. Applications are processed as they are received. However, many academic units have specific and early deadlines; many units review applications once a year, usually in January or February for fall admission. Applicants are urged to contact the academic units regarding deadlines.

Academic units, which must indicate their willingness to admit applicants, frequently set higher standards than those established by the Graduate College. Many qualified applicants are denied because of limits on the number of students admitted each year.

Notice of Admission Decisions

Only the dean of the Graduate College can make formal offers of admission. The Graduate College notifies all applicants in writing of the admission decision.

All academic credentials and supporting materials received by the university in connection with an application for admission become the property of ASU. If the applicant does not enroll in the university within one year, the admission documents may be destroyed.

The date (month/day/year) on the Graduate College dean's letter of admission is the actual date of admission. If the student is enrolled in courses on the admission date, those courses—if applicable—may be considered part of a program of study. Courses taken the semester before this date are considered nondegree hours.

Admission Classifications

Regular Admission. Applicants who fulfill all requirements for admission and are academically acceptable to both the academic unit and the Graduate College are granted regular admission.

Regular Admission with Deficiencies. A student whose grades and test scores are at an acceptable level but who does not have the undergraduate background expected by the academic unit and the university may be required to complete courses to remedy deficiencies. In such cases, the letter of admission specifies the deficiencies that must be completed before the student is awarded a graduate degree. Deficiency courses may not be applied toward the minimum hours required for the degree program.

Provisional Admission. A student who does not meet minimum academic standards but has counterbalancing evidence to suggest the potential for success may be admitted on a provisional basis. Provisional admission provides an academic unit with more evidence on which to base its decision. Normally the academic unit reviews the student's status following completion of 12 semester hours of approved graduate study. At that time, the academic unit recommends to the Graduate College a change in status to either regular admission or withdrawal from the program. When students have completed their provisional requirements, they should check with their advisors to make sure that the change of status has been recommended. A provisional student may also be assigned deficiencies.

Nondegree Admission. A student not interested in earning a degree or not ready to apply to a particular degree program may enroll as a nondegree student. The application process is streamlined and does not require submission of transcripts or test scores. For nondegree admission information and procedures, access the Web site at www.asu.edu/graduate/admissions, or refer to the *Application for Graduate Admission* booklet. Students may apply electronically. A maximum of nine hours taken at ASU while in this category may be applied toward a master's degree if appropriate for the student's program of study.

The six-year maximum time limit applies to nondegree semester hours appearing on a master's program of study. In addition, because of limited class size and resources, certain

academic units may limit the enrollment of nondegree students.

Recognition of a Degree

Recognition of a degree is acknowledgment that the program leading to the degree is equivalent to a program offered by ASU or is an acceptable program for the proposed graduate major at ASU. A student who enters a graduate degree program at ASU is expected to have undergraduate educational experiences, including general education studies, that are appropriate for the program.

Definition of a Unit of Credit

The Arizona Board of Regents has defined (May 26, 1979) a unit of credit for the institutions under its jurisdiction. A minimum of 45 hours of work by each student is required for each unit of credit. An hour of work is the equivalent of 50 minutes of class time (often called a “contact hour”) or 60 minutes of independent study work. For lecture-discussion courses, this requirement equates to at least 15 contact hours and a minimum of 30 hours of work outside of the classroom for each unit of credit. Even though the values of 15 and 30 may vary for different modes of instruction, the minimum total of 45 hours of work for each unit of credit is a constant. Since the unit of credit as defined by the Arizona Board of Regents is the cornerstone of academic degree programs at ASU, degrees granted by other institutions that are recognized by ASU should be based on a similar unit of credit.

GRADUATE COLLEGE PROCEDURES

Change in Graduate Degree Program

A change from one graduate degree program to another requires a new application to the Graduate College. The usual admission procedures are followed. For details on matters relating to the application fee, see “[Application Fee.](#)” page 521.

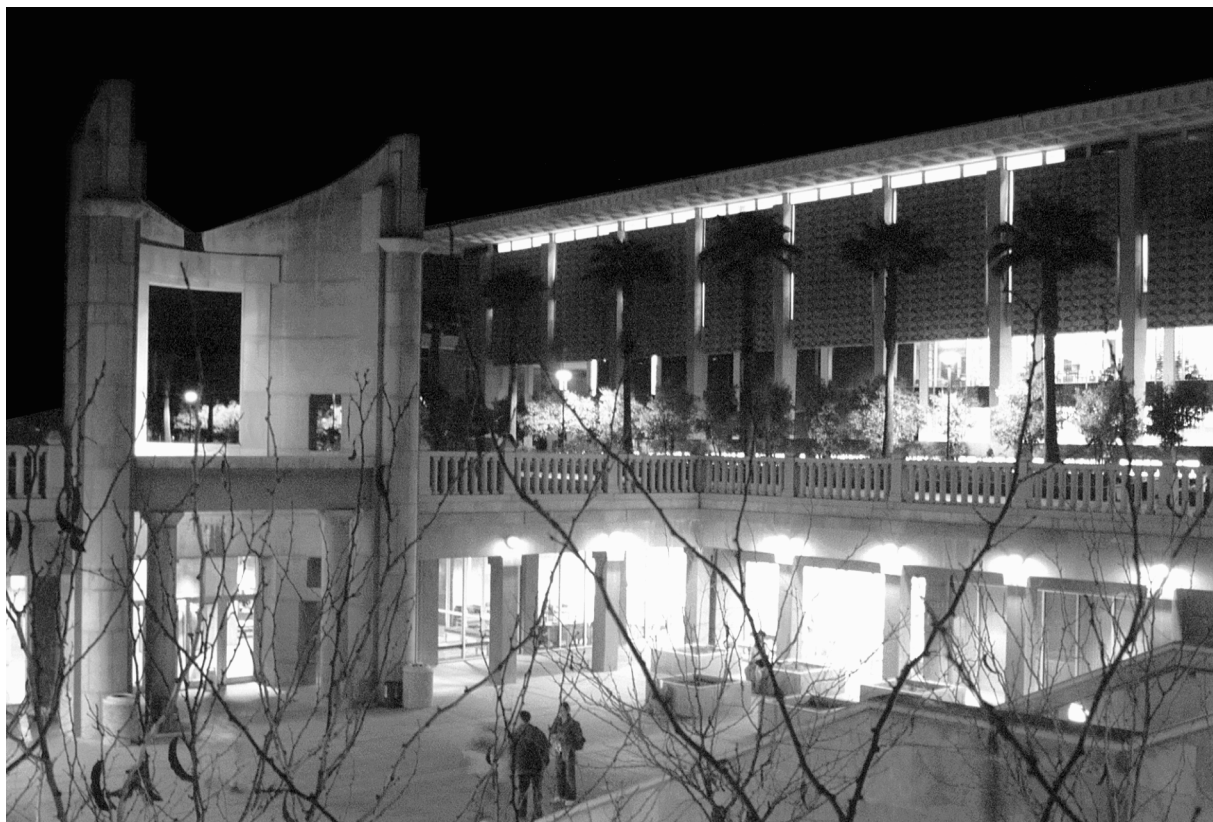
Readmission to the Graduate College

Any graduate student who has not been in attendance at the university for one or more semesters must submit an application for readmission to the Graduate College. The application should be submitted at least one month before the beginning of the semester in which the student plans to reenter. For details on readmission and other matters relating to the application fee, refer to the *Application for Graduate Admission* booklet, or access the Web site at www.asu.edu/graduate/admissions.

Determination of Catalog Requirements

The *Graduate Catalog* is published annually. Requirements for an academic unit or college, campus, or the university as a whole, may change and are often upgraded.

A student graduates under the curriculum, course requirements, and regulations for graduation in effect at the time of admission to a graduate degree program at ASU. A student may also choose to graduate under any subsequent catalog may use only one catalog.



Hayden Library illuminated as night falls

Tim Trumble photo

Enrollment Verification Guidelines for Graduate Students

	Full Time	Half Time	Less Than Half Time
Regular semester			
Graduate	9 or more hours	5–8 hours	4 or fewer hours
Graduate assistant*	6 or more hours	—	—
Five-week summer session			
Graduate	3 or more hours	2 hours	1 hour
Graduate assistant*	2 or more hours	1 hour	—
Eight-week summer session			
Graduate	5 or more hours	3–4 hours	2 or fewer hours

* For enrollment verification purposes, “graduate assistant” is a generic term that includes graduate assistants, teaching assistants, research assistants, graduate associates, teaching associates, and research associates.

Some changes in policies and procedures affect all students regardless of the catalog used by the student. These policies and procedures may appear in the catalog or in other university publications.

Registration

Graduate students, like all university students, register during the intervals indicated in the *Schedule of Classes* issued by the Office of the Registrar. Details regarding registration and course drop-add procedures are also provided in the *Schedule of Classes*. Day and evening graduate classes, offered on or off campus during the two regular semesters and the summer sessions, are considered part of the regular program.

SunDial, the ASU touch-tone telephone system for registration and fee payment, and the online registration system, accessed at any registrar site, ease the enrollment process.

Audit Enrollment

Graduate students may register as auditors in one or more courses with the approval of the supervisory committee chair and the consent of the instructor involved. The student must be registered properly and pay the fees for the course. An audited course is counted in the student’s maximum course load. It does not count for students who must take a minimum number of credits, e.g., teaching assistants or students receiving financial assistance. The mark of “X” is recorded for completion of an audited course, unless the instructor determines that the student’s participation or attendance has been inadequate, in which case a “W” may be recorded.

Withdrawal Policies and Procedures

Students who find it necessary to withdraw from the university should obtain and complete an official withdrawal form from any registrar site. Until officially withdrawn, the student is registered in all courses and, at the end of the semester, receives grades appropriate for the performance in each course. A student who officially withdraws from the university during the first four weeks of a semester receives the mark of “W” in all courses registered. A student who officially withdraws from the university later than the fourth week receives a mark of “W” or “E,” depending upon the quality of work at the time of official withdrawal. No student is permitted to withdraw during or after the last two

weeks of the semester (the last week of classes and final examination week).

Failure to withdraw officially from a course results in a grade of “E,” which is used in the computation of the GPA. The *Schedule of Classes* lists the procedures for withdrawal.

An instructor may withdraw a student from a class with a mark of “W” or a grade of “E” for disruptive classroom behavior. A student may appeal an instructor-initiated withdrawal to the standards committee of the college in which the course is offered. The decision of the committee is final.

A graduate student who does not enroll for three calendar years is considered withdrawn and must reapply for admission to a degree program.

Unrestricted Withdrawal. During the first four weeks of a semester or the first six days of a summer session, a student may withdraw from any course with a mark of “W.” See the *Schedule of Classes* or the *Summer Sessions Bulletin* for the dates of the unrestricted withdrawal period.

Restricted Withdrawal. From the fifth week to the end of the 10th week of a semester and from the seventh day to the end of the third week of a summer session, students may withdraw with a mark of “W” from courses only in which the instructor certifies that they are passing at the time of the withdrawal. See the *Schedule of Classes* or the *Summer Sessions Bulletin* for dates of the restricted withdrawal period.

Medical Withdrawal. Normally, a medical withdrawal request is made in cases where serious illness or injury prevents a student from completing course work or when other arrangements with the instructor are not possible. Consideration is usually given for complete withdrawal. An application for less than a complete withdrawal must be well documented to justify the selective nature of the medical withdrawal request. This policy applies both to cases involving physical health problems and those involving mental or emotional difficulties.

To receive permission for a medical withdrawal from courses, a student must present a Request for Documented Medical Withdrawal form and proper documentation (usually a letter from a physician) of the medical condition to the medical withdrawal designee of the college of the student’s major. For complete procedural information, contact the appropriate medical withdrawal designee.

Course Load

The course load is determined by the supervisory committee but is not to exceed 15 semester hours of credit during each of the two semesters. Refer to the latest *Summer Sessions Bulletin* for course load limits for five-week and eight-week sessions. An audited course is counted in the student's maximum load.

All teaching and research assistants and associates must enroll for a minimum of six semester hours during each semester (fall and spring) of their appointment. The six hours cannot include audit enrollment. Enrollment in continuing registration (595, 695, or 795) does not fulfill the six-hour requirement. A half-time (50 percent) teaching and research assistant or associate working 20 clock hours per week may not register for more than 12 hours of course work each semester; a third-time (33 percent) assistant or associate for more than 13 hours; and a quarter-time (25 percent) assistant or associate for more than 15 hours.

All graduate students doing research, working on theses or dissertations, taking comprehensive or final examinations, or using university facilities or faculty time must be registered for a minimum of one semester hour of credit (not audit) that appears on the program of study or is an appropriate graduate-level course, such as 595, 695, or 795 Continuing Registration.

Doctoral students fulfilling residence requirements for the Doctor of Philosophy and Doctor of Musical Arts degrees must be enrolled full time (nine semester hours minimum or six semester hours for research assistants or teaching assistants) during the specified period. See "Residency Classification Policies and Procedures," page 50, and specific degree requirements for fulfilling residence requirements for other doctoral degree programs.

Summer Course Loads. Refer to the latest *Summer Sessions Bulletin* for course load limits for five-week and eight-week sessions.

Enrollment Verification Guidelines. The registrar is responsible for verifying enrollment according to the general guidelines. See the ["Enrollment Verification Guidelines for Graduate Students" table, page 524.](#)

GRADUATE COLLEGE DEGREE REQUIREMENTS

Graduate Advising

Advising is much more than technical support; it is an integral part of graduate education. Students' programs of study are generally tailored to meet individual needs, and students should seek advice from faculty or advisors as they plan their course work, examinations, and other degree requirements.

Grading

The ["Grades" table, on this page](#), defines grades and gives their values.

A grade of "P" (pass) in a 400-level course may not appear on a program of study. Grades on transfer work or ASU law credit are not included in computing GPAs.

Grades of "D" and "E" cannot be used to meet the requirements for a graduate degree, although they are used to compute the GPAs. A student receiving a grade of "D" or "E" must repeat the course in a regularly scheduled (not an

independent study) class if it is to be included in the program of study. However, both the "D" or "E" and the new grade are used to compute GPAs.

Graduate course work (500-, 600-, and 700-level courses) reported as an "I" (incomplete) must be completed within one calendar year. At the time the "I" grade is given, the student must complete a "Request for Grade of Incomplete" form. The form first serves as a record of the "I" grade and the work required to complete it. When the student has completed the work, the form then serves as a change-of-grade authorization.

If the work specified on the form is not completed within one calendar year, the "I" grade (500-, 600-, and 700-level courses) becomes part of the student's permanent transcript. The student is not allowed to complete the course work as specified on the "Incomplete" form. The student may, however, repeat the course after the "I" has become permanent, by reregistering, paying fees, and fulfilling all course requirements. The grade for the repeated course appears on the transcript but does not replace the permanent "I."

Repeating ASU Courses. Graduate students (degree or nondegree) may retake any courses at any level at ASU, but all grades remain on the student transcript as well as in GPA calculations.

Grades		
Grade	Definition	Value
A	Excellent	4.00
B	Good	3.00
C	Passing	2.00
D	No graduate credit	1.00
E	Failure	0.00
I	Incomplete	—
W	Withdrawal ¹	—
X	Audit	—
Y	Satisfactory	—
Z	Course in progress ²	—

¹ This grade is given whenever a student officially withdraws.

² This grade is usually given pending completion of courses.

University Policy for Student Appeal Procedures on Grades

Informal. The following steps, beginning with step A, must be followed by any student seeking to appeal a grade. Student grade appeals must be processed in the regular semester immediately following the issuance of the grade in dispute (by commencement for fall or spring), regardless of whether the student is enrolled at the university. It is university policy that students filing grievances and those who are witnesses will be protected from retaliation. Students who believe they are victims of retaliation should immediately contact the dean of the college in which the course is offered.

- A. The aggrieved student must first undergo the informal procedure of conferring with the instructor, stating the evidence (if any) and reasons for questioning that the grade received was not given in good faith. The

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instructor is obliged to review the matter, explain the grading procedure utilized, and show how the grade in question was determined. If the instructor is a graduate assistant and this interview does not resolve the difficulty, the student may then go to the faculty member in charge of the course (regular faculty member or director of the course sequence) with the problem.

- B. If the grading dispute is not resolved in step A, the student may appeal to the department chair or other appropriate chair of the area within the department (if any). The department chair may confer with the instructor to handle the problem. Step B applies only in departmentalized colleges.
- C. If these discussions are not adequate to settle the matter to the complainant's satisfaction, the student may then confer with the dean of the college concerned (or the dean-designate), who will review the case. If unresolved, the dean or designate may refer the case to the college academic grievance hearing committee to review the case formally. In most instances, however, the grievance procedure does not go beyond this level.

Formal. The following procedure takes place after steps A, B, and C (or A and C) have been completed.

- D. Each college has on file in the office of the dean (and in each department of the college) the procedures and composition of the undergraduate or graduate academic grievance hearing committee for student grievances. Each college committee shall operate under grievance procedures as stated, which satisfy due process requirements. The committee shall always meet with the student and the instructor in an attempt to resolve the differences. At the conclusion of the hearing, the committee shall send its recommendations to the dean.
- E. Final action in each case is taken by the dean after full consideration of the committee's recommendation. Grade changes, if any are recommended, may be made by the dean. The dean shall inform the student, instructor, department chair (if any), the registrar, and the grievance committee of any action taken.

Scholarship

To be eligible for a degree in the Graduate College, a student must achieve two GPAs of "B" (3.00) or higher. The first GPA is based on all courses numbered 500 or higher that appear on the transcript. (Courses noted as deficiencies in the original letter of admission are not included.) The second GPA is based on all courses that appear on the program of study.

Graduate students (degree or nondegree) may retake any courses at any level at ASU, but all grades remain on the student transcript as well as in GPA calculations.

Academic excellence is expected of students doing graduate work. Upon recommendation from the head of the academic unit, the dean of the Graduate College can withdraw a student who is not progressing satisfactorily.

The designation of honors (*summa cum laude*, *magna cum laude*, and *cum laude*) is reserved for undergraduates. The Graduate College does not use these academic distinctions.

Graduate Credit Courses

Courses at the 500, 600, and 700 levels are graduate credit courses. Courses at the 400 level apply to graduate degree requirements when appearing on an approved program of study. However, 400-level courses are not graduate courses by definition and cannot be certified as such for purposes of employment or transferring to other institutions.

Reserving of Course Credit by Undergraduates. Seniors at ASU within 12 semester hours of graduation may enroll in a 400-level or graduate course and reserve the credit for possible use in a future graduate program. The course cannot be used to meet a baccalaureate graduation requirement, however. Before registration in the class, the student must submit a Graduate College Petition form requesting credit reservation; the form must be signed by the student's advisor, the head of the academic unit offering the class, and the dean of the Graduate College.

Permission to reserve a course does not guarantee admission to a graduate degree program or that the course may be used toward graduate degree requirements. A maximum of nine hours of credit may be reserved, and only courses with an "A" or "B" grade are applicable. Reserved credit earned before admission to a graduate degree program is classified as nondegree credit. The maximum course load for a student enrolled in a reserved course is 15 semester hours during a regular semester and six hours during a summer session.

Transfer Credit. Transfer of credit is the acceptance of credit from another institution for inclusion in a program of study leading to a degree awarded by ASU. The number of hours transferred from other institutions may not exceed 20 percent of the total minimum semester hours required for a master's degree unless stated otherwise for a specific degree program.

Transfer credit taken before admission to a graduate degree program at ASU Main or East is nondegree credit. Nondegree credit taken at ASU Main or East combined with nondegree credit taken at another institution may not exceed nine hours on the master's program of study. The nine-hour limit does not apply to doctoral programs.

The date (month/day/year) on the Graduate College dean's letter of admission is the actual date of admission. If the student is enrolled in courses on the admission date, those courses—if applicable—may be considered part of a program of study. Courses taken the semester before this date are nondegree hours. Courses taken at ASU West are considered transferred credit.

Certain types of graduate credits cannot be transferred to ASU, including the following:

1. credits awarded by postsecondary institutions in the United States that lack candidate status or accreditation by a regional accrediting association;
2. credits awarded by postsecondary institutions for life experience;
3. credits awarded by postsecondary institutions for courses taken at noncollegiate institutions (e.g., government agencies, corporations, and industrial firms);
4. credits awarded by postsecondary institutions for noncredit courses, workshops, and seminars offered

- by other postsecondary institutions as part of continuing education programs; and
5. credits given for extension courses.

Acceptable academic credits earned at other institutions that are based on a different unit of credit than the ones prescribed by the Arizona Board of Regents are subject to conversion before being transferred to ASU.

Transfer credits must be acceptable toward graduate degrees at the institution where the courses were completed. Only resident graduate courses (at the institution where the courses were completed) with an “A” or “B” grade may be transferred. A course with the grade of pass, credit, or satisfactory may not be transferred.

Official transcripts of any transfer credit to be used on a program of study must be sent directly to the Graduate Admissions Office from the Office of the Registrar at the institution where the credit was earned.

Graduate Supervisory Committees

When the program of study is filed, upon the recommendation of the head of the academic unit, the dean of the Graduate College appoints a graduate student’s supervisory committee, consisting of a chair and other resident faculty members. The number of members serving on this committee depends on the degree program.

Academic professionals (e.g., research scientists, research engineers), nontenure-track faculty (e.g., adjunct professors, research professors), and individuals granted affiliated faculty status through established university procedures may serve as cochairs, members, or extra members of thesis and dissertation committees upon approval by the Graduate College. Individuals who are recommended by an academic unit as eligible to serve as a cochair must meet the criteria established by the academic unit and be approved by the Graduate College.

Upon the recommendation of the committee chair and head of the academic unit, ASU West tenured (or tenure-track) faculty may serve on master’s and doctoral committees at ASU Main. ASU West tenured (or tenure-track) faculty may serve as cochairs for theses and dissertations at ASU Main upon the recommendation of the head of the academic unit and approval of the dean of the Graduate College. Cochairs must meet the academic unit’s criteria for chairing theses and dissertations.

Qualified individuals outside the university, upon the recommendation of the head of the academic unit and approval of the Graduate College, may serve as members of thesis and dissertation committees; however, such individuals may not serve as chairs or cochairs (unless they have affiliated faculty status). With the approval of the academic unit and the dean of the Graduate College, former ASU faculty with students completing their degrees may continue to serve as cochairs. At least 50 percent of the committee must be faculty from ASU Main.

Foreign Language Requirements

A graduate degree program may require proficiency in a foreign language. If a foreign language is required, students must demonstrate at least a reading knowledge in the area of study required by the supervisory committee and consistent with the requirements for the graduate degree program.

Normally, the language is selected from French, German, Russian, or Spanish, although other languages may be recommended when there is adequate justification.

Students who are required to demonstrate proficiency in a foreign language must pass a foreign language examination specific to their particular graduate program. The examinations are administered three times each year by the Department of Languages and Literatures, which certifies language competency. Students planning to take the examination must register in the Graduate College at least one month in advance of the examination date. The chair of the student’s supervisory committee is responsible for providing the Department of Languages and Literatures with materials from which the examination is then prepared. The chair should submit or recommend relevant books or journals of approximately 200 pages in length in the desired foreign language.

A student may petition the Graduate College for a re-examination but must pass the examination in no more than three attempts.

Theses and Dissertations

The master’s thesis or equivalent is an introduction to research writing. All doctoral degree candidates must submit a dissertation, with the exception of the Doctor of Musical Arts degree in Music (concentrations in choral conducting and solo performance), which requires three recitals and a research paper. The Ph.D. dissertation should be a valuable educational experience that demonstrates the candidate’s mastery of research methods, theory, and tools of the discipline. It should demonstrate the candidate’s ability to address a major intellectual problem and to propose meaningful questions and hypotheses. The dissertation should be a contribution to knowledge that is worthy of publication by an established press as a book or monograph or as one or more articles in a reputable journal.

For format, the Graduate College must review the final copy of the master’s thesis, doctoral dissertation, and other final documents that are required to be placed in the library. Copies of the *Format Manual* are available in the Graduate College and at www.asu.edu/graduate/resources/student/formatinfo on the Web. The student is required to submit a complete copy of the thesis or dissertation for format review at least 10 working days (two weeks if there are no holidays during the time period) before the oral defense. Doctoral students are also encouraged to submit a completed Survey of Earned Doctorates Awarded in the United States, conducted by the National Research Council.

Graduate students and their supervisory committee chairs jointly select a style guide or journal format representative of the field of study. The Graduate College allows certain flexibility in the format of the manuscript, but Graduate College and library guidelines must be followed.

The student must submit two final copies of a thesis or dissertation to the ASU Bookstore for binding. The student is responsible for the binding fees. Bound copies are placed in the Hayden Library and Archives. Doctoral students must submit one copy of the title page, approval page, and abstract (which must not exceed 350 words); the original signature of the doctoral student must appear on the University Microfilms International (UMI) Dissertation

GRADUATE COLLEGE

Agreement Form. The student is responsible for the UMI microfilming fee, which covers the expense of having the document sent to UMI, where it is microfilmed and catalogued. Information on the dissertation will appear in *Dissertation Abstracts International*.

Application for Graduation

Students should apply for graduation no later than the date specified in the “Graduate College Calendar,” found in the *Graduate Catalog*. All fees are payable at that time. Students applying for graduation after the deadline listed in the calendar are required to pay a late fee. At the end of the semester in which they apply for graduation, students are officially notified of any requirements for their degree that they have not yet completed.

Students are requested to complete a questionnaire that serves as a graduate student exit survey.

Students who do not complete all degree requirements by their anticipated graduation date are required to pay a re-filing fee.

Summer Sessions

Work taken during the summer sessions carries the same scholastic recognition as that taken during the regular semester. A complete schedule of offerings is available in the *Summer Sessions Bulletin*, which may be obtained from the Office of Summer Sessions.



The ballroom in Old Main, after the restoration of 2001

Tim Trumble photo

Dates and Deadlines

The “Graduate College Calendar,” in the current *Graduate Catalog*, lists deadlines for the submission of theses and dissertations to the Graduate College, the last day to apply for graduation, the last day to hold an oral defense of a thesis or dissertation, and the last day to submit theses and dissertations to the ASU Bookstore for binding.

Student Responsibility

It is the responsibility of the graduate student to know and observe all procedures and requirements of the Graduate College as defined in the *Graduate Catalog*, the *Schedule of Classes*, and the *Format Manual*. Each student should also be informed about the requirements concerning the student’s degree program and any special requirements within the academic unit.

ACADEMIC INTEGRITY

The highest standards of academic integrity are expected of all students. The failure of any student to meet these standards may result in suspension or expulsion from the university and/or other sanctions as specified in the academic integrity policies of the individual colleges.

Violations of academic integrity include, but are not limited to, cheating, fabrication, tampering, plagiarism, or facilitating such activities.

The university academic integrity policy is available at the Office of the Senior Vice President and Provost, or as part of the *Student Affairs Policies and Procedures Manual*— STA 104-01, at www.asu.edu/aad/manuals/sta/sta104-01.html on the Web.

MISCONDUCT IN SCHOLARLY RESEARCH AND CREATIVE ACTIVITIES

Students are expected to maintain the highest standards of integrity and truthfulness in scholarly research and creative activities. Misconduct in scholarly research and creative activities includes, but is not limited to, fabrication, falsification or misrepresentation of data, and plagiarism. Misconduct by any student may result in suspension or expulsion from the university and other sanctions as specified by the individual colleges. Policies on misconduct are available in the Office of the Vice Provost for Research and on the Web at www.asu.edu/aad/manuals/rsp/rsp111.html.

Graduate College Policies and Procedures

For more detailed information on Graduate College policies and procedures, see the current *Graduate Catalog*.

Policies and Procedures of the Graduate Council Appeals Board

The Graduate Council Appeals Board (GCAB) acts as the appeals body for graduate students seeking redress on academic decisions regarding their graduate program. Before filing an appeal, the graduate student should discuss the situation with the associate dean of the Graduate College to explore resolution of the matter at the unit or college level.

For more detailed information on the Graduate Council appeals policies and procedures, see the current *Graduate Catalog*.

ASU Graduate Degrees

Graduate degrees, majors, and concentrations offered by ASU Main, ASU East, and ASU West and through ASU Extended Campus are shown in the “ASU Graduate Degrees” table below organized by the name of the major. The table includes only officially approved concentrations; other informal areas of study may be available.

Master of Accountancy and Information Systems (M.A.I.S.)
 Master of Architecture (M.Arch.)
 Master of Arts (M.A.)
 Master of Business Administration (M.B.A.)
 Master of Computer Science (M.C.S.)
 Master of Counseling (M.C.)
 Master of Education (M.Ed.)
 Master of Engineering (M.E.)
 Master of Environmental Planning (M.E.P.)
 Master of Fine Arts (M.F.A.)
 Master of Health Services Administration (M.H.S.A.)

Master of Mass Communication (M.M.C.)
 Master of Music (M.M.)
 Master of Natural Science (M.N.S.)
 Master of Physical Education (M.P.E.)
 Master of Public Administration (M.P.A.)
 Master of Public Health (M.P.H.)
 Master of Science (M.S.)
 Master of Science in Design (M.S.D.)
 Master of Science in Engineering (M.S.E.)
 Master of Science in Technology (M.S.Tech.)
 Master of Social Work (M.S.W.)
 Master of Taxation (M.Tax.)
 Master of Teaching English as a Second Language (M.TESL)
 Doctor of Education (Ed.D.)
 Doctor of Musical Arts (D.M.A.)
 Doctor of Philosophy (Ph.D.)
 Juris Doctor (J.D.)

ASU Graduate Degrees

Major	Degree	Concentration	Campus
Accountancy and Information Systems	M.A.I.S.	—	Main
Aerospace Engineering	M.S., M.S.E., Ph.D.	—	Main
Agribusiness	M.S.	Agribusiness management and marketing, food quality assurance	East
Anthropology	M.A.	Archaeology, bioarchaeology, linguistics, medical anthropology, museum studies, physical anthropology, social-cultural anthropology	Main
	Ph.D.	Archaeology, physical anthropology, social-cultural anthropology	Main
Architecture	M.Arch.	—	Main
Art	M.A.	Art education, art history	Main
	M.F.A.	Ceramics, drawing, fibers, intermedia, metals, painting, photographic studies, photography, printmaking, sculpture, wood	Main
Asian Languages and Civilizations—Chinese/Japanese	M.A.	—	Main
Bioengineering	M.S., Ph.D.	—	Main
Biology ¹	M.S., Ph.D.	Ecology	Main

¹ This major has formalized concentration(s); other areas of study are available.

² Applications are not being accepted at this time.

³ This collaborative program is offered by the three state universities.

⁴ This major is jointly offered with the University of Arizona.

⁵ Students apply to this degree program through the College of Law, not the Graduate College.

ASU GRADUATE DEGREES

ASU Graduate Degrees (continued)

Major	Degree	Concentration	Campus
Building Design	M.S.	Design knowledge and computing, energy performance and climate-responsive architecture, facilities development and management	Main
Business Administration	M.B.A.	—	Main West Extended
	Ph.D.	Accountancy, computer information systems, finance, health services research, ² management, marketing, supply chain management	Main
Chemical Engineering	M.S., M.S.E., Ph.D.	—	Main
Chemistry	M.S., Ph.D.	Analytical chemistry, biochemistry, geochemistry, inorganic chemistry, organic chemistry, physical chemistry, solid-state chemistry	Main
Civil Engineering	M.S., M.S.E., Ph.D.	—	Main
Communication	M.A.	—	Main
	Ph.D.	Communicative development, intercultural communication, organizational communication	Main
Communication Disorders	M.S.	—	Main
Communication Studies	M.A.	—	West
Composition	M.M.	—	Main
Computational Biosciences	M.S.	—	Main
Computer Science	M.C.S., M.S., Ph.D.	—	Main
Construction	M.S.	Construction science, facilities, management	Main
Counseling	M.C.	—	Main
Counseling Psychology	Ph.D.	—	Main
Counselor Education	M.Ed.	—	Main
Creative Writing	M.F.A.	—	Main
Criminal Justice	M.A.	—	West
Curriculum and Instruction	M.A.	Bilingual education, early childhood education, elementary education, English as a second language, Indian education, language and literacy, mathematics education, science education, secondary education, social studies education	Main
		Bilingual education, early childhood education, elementary education, English as a second language, Indian education, language and literacy, mathematics education, professional studies, science education, secondary education, social studies education	Main
	Secondary education	Extended	

¹ This major has formalized concentration(s); other areas of study are available.

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⁵ Students apply to this degree program through the College of Law, not the Graduate College.

ASU Graduate Degrees (continued)

Major	Degree	Concentration	Campus
Curriculum and Instruction (continued)	Ed.D.	Bilingual education, curriculum studies, early childhood education, elementary education ² , English as a second language, Indian education, language and literacy, mathematics education, science education, secondary education ² , social studies education	Main
	Ph.D.	Art education, curriculum studies, early childhood education, elementary education, English education, exercise and wellness education, language and literacy, mathematics education, music education, physical education, science education, special education	Main
Dance	M.F.A.	—	Main
Design	M.S.D.	Graphic design, industrial design, interior design	Main
Economics	M.S., Ph.D.	—	Main
Educational Administration and Supervision	M.Ed.	—	Main
	Ed.D.	—	West Main Extended
Educational Leadership and Policy Studies	Ph.D.	—	Main
Educational Psychology	M.A., M.Ed.	—	Main
	Ph.D.	Learning; lifespan developmental psychology; measurement, statistics, and methodological studies; school psychology	
Educational Technology	M.Ed., Ph.D.	—	Main
Electrical Engineering	M.S., Ph.D.	—	Main
	M.S.E.	—	Main Extended
Elementary Education	M.Ed.	Bilingual education, educational technology, ESL education, reading	West
Engineering ³	M.E.	—	Main Extended
Engineering Science	M.S., M.S.E., Ph.D.	—	Main
English	M.A.	Comparative literature, English linguistics, literature and language, rhetoric and composition	Main
	Ph.D.	Literature, rhetoric/composition and linguistics	Main
Environmental Design and Planning	Ph.D.	Design; history, theory, and criticism; planning	Main
Environmental Planning	M.E.P.	Landscape ecological planning, urban and regional development, urban design	Main
Environmental Resources	M.S.	GIS/remote sensing, natural resource management, range ecology	East
Exercise and Wellness	M.S.	—	East
Exercise Science	Ph.D.	Biomechanics, motor behavior/sport psychology, physiology of exercise	Main

¹ This major has formalized concentration(s); other areas of study are available.

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ASU GRADUATE DEGREES

ASU Graduate Degrees (continued)

Major	Degree	Concentration	Campus
Exercise Science/Physical Education	M.S.	—	Main
Family and Human Development	M.S.	Family studies	Main
Family Science ¹	Ph.D.	Marriage and family therapy	Main
French	M.A.	Comparative literature, linguistics, literature	Main
Geography	M.A., Ph.D.	—	Main
Geological Sciences	M.S., Ph.D.	—	Main
German	M.A.	Comparative literature, language and culture, literature	Main
Health Services Administration	M.H.S.A.	—	Main
Higher and Postsecondary Education	M.Ed., Ed.D.	Higher education	Main
History	M.A.	Asian history, British history, European history, Latin American history, public history, U.S. history, U.S. Western history	Main
	Ph.D.	Asian history, British history, European history, Latin American history, U.S. history	Main
History and Theory of Art ⁴	Ph.D.	—	Main
Humanities	M.A.	—	Main
Industrial Engineering	M.S., M.S.E., Ph.D.	—	Main
Information Management	M.S.	—	Main
Interdisciplinary Studies	M.A.	—	West
Justice Studies	M.S.	—	Main
	Ph.D.	Criminal and juvenile justice; dispute resolution; law, justice, and minority populations; law, policy, and evaluation; women, law, and justice	Main
Law ⁵	J.D.	—	Main
Mass Communication	M.M.C.	—	Main
Materials Engineering	M.S., M.S.E.	—	Main
Materials Science	M.S.	—	Main
Mathematics	M.A., Ph.D.	—	Main
Mechanical Engineering	M.S., M.S.E., Ph.D.	—	Main
Microbiology	M.S., Ph.D.	—	Main
Molecular and Cellular Biology	M.S., Ph.D.	—	Main
Music	M.A.	Ethnomusicology, music history and literature, music theory	Main
	D.M.A.	Choral conducting, music composition, music education, solo performance (instrumental, keyboard, piano accompanying, piano pedagogy, voice)	Main
Music Education	M.M.	Choral music, general music, instrumental music, jazz studies	Main

¹ This major has formalized concentration(s); other areas of study are available.

² Applications are not being accepted at this time.

³ This collaborative program is offered by the three state universities.

⁴ This major is jointly offered with the University of Arizona.

⁵ Students apply to this degree program through the College of Law, not the Graduate College.

ASU Graduate Degrees (continued)

Major	Degree	Concentration	Campus
Natural Science	M.N.S.	Biology, chemistry, geological sciences, mathematics, microbiology, physics, plant biology	Main
Nursing	M.S.	Adult health nursing, community health nursing, community mental health/psychiatric nursing, family health nursing, parent-child nursing, women's health	Main
Nutrition	M.S.	—	East
Performance	M.M.	Music theatre/opera musical direction, music theatre/opera performance, performance, performance pedagogy, piano accompanying	Main
Philosophy	M.A., Ph.D.	—	Main
Physical Education	M.P.E.	—	Main
Physics	M.S., Ph.D.	—	Main
Plant Biology ¹	M.S., Ph.D.	Ecology, photosynthesis	Main
Political Science	M.A., Ph.D.	American politics, comparative politics, international relations, political theory	Main
Psychology	Ph.D.	Behavioral neuroscience, clinical psychology, cognitive/behavioral systems, developmental psychology, environmental psychology, quantitative research methods, social psychology	Main
Public Administration	M.P.A.	Public information management, public management, public policy analysis and evaluation, urban management and planning	Main Extended
	Ph.D.	—	Main
Public Health ³	M.P.H.	Community health practice, health administration and policy	Main
Recreation	M.S.	—	Main
Religious Studies	M.A.	—	Main
Science and Engineering of Materials	Ph.D.	High-resolution nanostructure analysis, solid-state device materials design	Main
Secondary Education	M.Ed.	Educational technology	West
Social and Philosophical Foundations of Education	M.A.	—	Main
Social Work	M.S.W.	Advanced direct practice; planning, administration, and community practice	Main Extended
	Ph.D.	—	West Main
Sociology	M.A., Ph.D.	—	Main
Spanish	M.A.	Comparative literature, language and culture, linguistics, literature	Main
	Ph.D.	Cultural studies, literature	
Special Education	M.A., M.Ed.	— Gifted, mildly disabled, multicultural exceptional, severely/multiply disabled Infants and young children	Main Main West

¹ This major has formalized concentration(s); other areas of study are available.

² Applications are not being accepted at this time.

³ This collaborative program is offered by the three state universities.

⁴ This major is jointly offered with the University of Arizona.

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ASU GRADUATE DEGREES

ASU Graduate Degrees (continued)

Major	Degree	Concentration	Campus
Speech and Hearing Science	Ph.D.	Developmental neurolinguistic disorders, neuroauditory processes, neurogerontologic communication disorders	Main
Statistics	M.S.	—	Main
Taxation	M.Tax.	—	Main
Teaching English as a Second Language	M.TESL	—	Main
Technology	M.S.Tech.	Aeronautical engineering technology, aviation human factors, aviation management technology, computer systems engineering technology, electronic systems engineering technology, environmental technology management, fire service administration, global technology and development, information technology, instrumentation and measurement technology, management of technology, manufacturing engineering technology, mechanical engineering technology, microelectronics engineering technology, security engineering technology	East
Theatre	M.A.	—	Main
	M.F.A.	Performance, scenography, theatre for youth	Main
	Ph.D.	Theatre for youth	Main

¹ This major has formalized concentration(s); other areas of study are available.

² Applications are not being accepted at this time.

³ This collaborative program is offered by the three state universities.

⁴ This major is jointly offered with the University of Arizona.

⁵ Students apply to this degree program through the College of Law, not the Graduate College.

Dual Degrees

Degrees	Administered By	Campus
J.D./M.H.S.A.	College of Law/School of Health Administration and Policy	Main
J.D./M.S. in Economics*	College of Law/Department of Economics	Main
J.D./Ph.D. in Justice Studies	College of Law/Committee on Law and Social Sciences	Main
M.A. in Anthropology/M.S. in Justice Studies	Department of Anthropology/School of Justice Studies	Main
M.A.I.S./M.B.A.	College of Business	Main
M.Arch./M.B.A.	School of Architecture/College of Business	Main
M.B.A./J.D.	College of Business/College of Law	Main
M.B.A./M.H.S.A.	College of Business	Main
M.B.A./M.S. in Economics	College of Business	Main
M.B.A./M.S. in Information Management	College of Business	Main
M.B.A./M.Tax.	College of Business	Main
M.B.A./Master of International Management	College of Business/American Graduate School of International Management (Thunderbird), Graduate School of Business Administration (Peru); Graduate School of Commerce (France); Monterrey Institute for Technical and Superior Studies, Mexico State Campus (Mexico); and Carlos III University of Madrid (Spain)	Main
M.S.E. in Industrial Engineering/Master of International Management of Technology	Department of Industrial and Management Systems Engineering/American Graduate School of International Management (Thunderbird)	Main

* Applications for this program are not being accepted at this time.

International Programs

ipo.asu.edu

William G. Davey, Ph.D., Director

PURPOSE

As an emerging world-class institution, Arizona State University seeks to interact with cultures throughout the world from both an intellectual and an educational point of view. The International Programs Office (IPO) endeavors to develop a global competence for students, faculty, and ASU as a whole. IPO therefore encourages students to study abroad, faculty to teach and conduct research in contact with scholars around the world, and academic units to develop fruitful forms of collaborative work with a variety of higher learning entities abroad.

The university, in its endeavors to fulfill these functions, takes notice of the rapidly changing conditions of the contemporary world. Canada and Mexico hold special relationships, as our neighbors and as our partners in the North American Free Trade Agreement. Europe is developing a supranational identity in the form of the European Community. The Pacific Rim constitutes one of the most dynamic economic regions of the world. All of these regions are interconnected through globalization and swiftly developing information channels. IPO assists the ASU community to: (1) keep pace with the quickly changing contours of higher education and (2) play a leading role in the international arena.

IPO is administratively part of the Office of the Senior Vice President and Provost. Its functions include developing and administering university programs abroad, encouraging faculty participation in exchanges, and pursuing relationships with foundations and agencies intent on furthering the international character of ASU.

ACADEMIC PROGRAMS

Two types of programs—study abroad and student exchange—are designed to enhance the academic development, professional preparation, and international perspective of students.

IPO offers over 100 fall and spring semester, summer sessions, and year-long international programs for ASU resident credit.

Exchange Programs. Exchange programs are those in which ASU students may study at a foreign institution, in return for which students from that institution have a reciprocal opportunity to study at ASU. ASU students simply pay their normal registration fees and tuition at ASU. In general, ASU registration fees and tuition may be paid by scholarships or waivers. Financial aid may, in most cases, be applied to the costs of exchange programs. Exchange programs offer students the chance to enter mainstream university life in the country of their choice. Normally, participation in an exchange program is dependent on prior

attainment of an adequate level of language competence to be able to function in classes in the host country.

In several instances, students may have the opportunity to obtain advanced-level intensive language instruction for approximately one month in the host country before the start of the academic term.

ASU has exchange agreements in several countries in Latin America, Asia, and Europe, as well as in Australia, New Zealand, and Canada. Program availability is under constant review.

Study Abroad Programs. Study abroad programs are arrangements with educational institutions in foreign countries; ASU students can study in these institutions and earn ASU resident credit for the courses taken (once on site, ASU students may be placed in special classes created for them, or they may study alongside students from other countries, depending on the nature of the program). Outgoing ASU students are charged a program fee, and arrangements are usually made for accommodations and other needs. Financial aid such as scholarships, grants, and loans may, in most cases, be applied to program costs.

Study abroad programs generally fall into one of three categories: language immersion programs, “island” programs, and programs in which courses are integrated with local students in many disciplines (these courses are offered in English). Immersion programs, in which students learn the language of the host country with little or no previous language knowledge, include programs in Germany, Israel, Italy, Mexico, and Portugal. “Island” programs are those in which students are not fully integrated into a foreign university but take courses specifically designed for the particular student.

Area Studies Programs. International Programs maintains close liaison with the ASU area studies programs, including the Center for Asian Studies, the Latin American Studies Center, the Program for Southeast Asian Studies, and the Russian and East European Language Consortium, among others. Many IPO programs are specifically designed for students in these areas.

Related Programs. Close relationships are maintained with a number of academic units on campus. The Barrett Honors College cooperates in the creation of special programs for the benefit of its students. The Department of Languages and Literatures assists in the staffing and management of a number of study abroad programs, especially those related to language acquisition. The College of Business maintains an advising service for College of Business students intending to study abroad. The College of Engineering and Applied Sciences and the Corporate Leaders Program also

INTERNATIONAL PROGRAMS

actively place students in study programs and internships around the world.

Procedures. Students interested in participating in such programs should identify their interests as soon as possible. Students should express their interests to the International Programs Office in TMPCT B198; if need be, students are directed to other offices. It is essential to consult with a departmental program advisor, since the return of credits ultimately depends on the concurrence of the faculty advisors. Students on an official study abroad or exchange program retain the catalog status they held at the time of their departure.

Information on the status of programs can be obtained from the International Programs Office in TMPCT B198, from the IPO Web page at ipo.asu.edu, or by phone at 480/965-5965.

How to Apply. Before participating in a study abroad or an exchange program, students must complete an IPO Qualifying Application. An interview is then conducted at which time qualified applicants are guided through any additional

application procedures that are specific to the student's particular international program. After the application process is completed, students attend pre-departure orientations conducted by IPO. These presentations are designed to thoroughly prepare participants for a rewarding international experience.

OTHER ACTIVITIES

The International Programs Office seeks to encourage a wide range of other academic activities. These activities include exchanges of faculty members and the development of institutional relationships with universities overseas to encourage joint research projects. As part of IPO, the Office of Immigration Programs for International Faculty and Scholars also assumes responsibility for a considerable number of international visitors who come to visit, work, study, or conduct research on the ASU campus. IPO also serves the ASU and local community by operating one of the nation's first U.S. Passport Offices located at a state university.

Semester and Academic Year Study Abroad and Exchange Programs¹

Country	City	University/Institution	Study Category ²	Semesters Available ³	Study Areas ⁴
Argentina	Buenos Aires	University of Belgrano	SA	F, S, AY	B L C E T A O
Australia	Brisbane	Queensland University of Technology	Both	F, S, AY	C E A O
		University of Queensland	SA	F, S, AY	B L C F E T A O
	Melbourne	Royal Melbourne Institute of Technology	Both	F, S, AY	B L C F E T A O
		University of Melbourne	SA	F, S, AY	B F A O
	Perth	Edith Cowan University	Both	F, S, AY	B F E T A O
	Sydney	Macquarie University	SA	F, S, AY	B L A O
	Tazmania	University of New South Wales	SA	F, S, AY	B L C F E T A O
		University of Tasmania	SA	F, S, AY	B L C F E T A O
Austria	Krems	College of Technical Programs	EX	F, S, AY	L T O
Belgium	Brussels, EU	American University World Capitals Program	SA	F, S	B I
	Brussels	American University World Capitals Program	SA	S	B L I
Bolivia	La Paz	Catholic University of Bolivia	EX	F, S, AY	B L C F E T A O
Canada	Montréal	University of Montréal	EX	F, S, AY	O
	Québec	Laval University	EX	F, S, AY	B L F E A O
	Vancouver	University of British Columbia	EX	F, S, AY	B F E A O
Chile	Santiago	American University World Capitals Program	SA	S	L A I
	Valparaíso	Catholic University of Valparaíso	SA	F, S	B L C F E A O
China	Beijing and Hong Kong	American University World Capitals Program at Beijing University	SA	S	L A I
Costa Rica	San José	University of Costa Rica	EX	F, S, AY	B L C F E A O

¹ Information is subject to change without notice.

² Study category abbreviations: SA= study abroad, EX= exchange, Both= study abroad and exchange

³ Semesters available abbreviations: F= fall, S= spring, AY= all year

⁴ Study areas abbreviations: B= business/law, L= languages, C= communication, F= fine arts, E= tech/engineering, T= tourism,

A= liberal arts/sciences, I= internship, O= other

⁵ Graduate students only.

Semester and Academic Year Study Abroad and Exchange Programs¹ (continued)

Country	City	University/Institution	Study Category ²	Semesters Available ³	Study Areas ⁴
Cuba	Havana	University of La Habana	SA	F, S, AY	L F A
Czech Republic	Prague	American Institute for Foreign Study	SA	F, S, AY	L F A I
		American University World Capitals Program	SA	F, S	L F A I
Denmark	Copenhagen	University of Copenhagen	EX	S, AY	B L F A I
Ecuador	Quito	Pontific Catholic University of Ecuador	EX	F, S, AY	B L C E A O
Egypt	Cairo	American University in Cairo	SA	F, S, AY	E A
England	Brighton	University of Brighton	EX	S	O
	Cambridge	INSTEP	SA	F, S	B A I
	Hull	University of Hull	EX	F, S, AY	B L F E A O
	Leeds	University of Leeds	EX	F, S, AY	B L C F E A O
	London	Birbeck College	SA	F, S, AY	B C F L I
	London	London School of Economics and Political Science	SA	AY	B L E A
	London	Richmond American International University	SA	F, S, AY	B C F E A I
	London	ASU London International Internships	SA	F, S	I
	London	AUWCP at University of Westminster	SA	F, S	B C F A I
	London	American Intercontinental University	SA	F, S, AY	B L C F A I O
France	Wolverhampton	University of Wolverhampton	EX	F, S, AY	B L F E A O
	Grenoble	University of Grenoble	EX	AY	B L C E A O
	Lille	Catholic University of Lille, Intensive Language	SA	S	L
France	Lillie	Catholic University of Lille	SA	S, AY	B L C E A O
	Paris	American University World Capitals Program	SA	S	L A I
Germany	Berlin	American University World Capitals Program	SA	F	L A I O
	Heidelberg	University of Heidelberg	EX	AY	B L A O
	Koln	Koln Technical College	EX	F	O
	Regensburg	University of Regensburg	EX	AY	B L A O
	Stuttgart	University of Stuttgart	EX	AY	B E A O
	Tubingen	University of Tubingen, Intensive Language	SA	S	L
	Tubingen	University of Tubingen	EX	S, AY	B L A O
Ireland	Cork	University College Cork	SA	F, S, AY	B L F E A
	Dublin	University College Dublin	SA	F, S, AY	L F A
	Limerick	University of Limerick	SA	S, AY	B L C E A O
Israel	Jerusalem	Hebrew University of Jerusalem	SA	F, S, AY	L A
	Beer Sheva	Ben-Gurion University	SA	F, S, AY	L A I O
	Tel Aviv	Tel Aviv University	SA	F, S, AY	B L F A
Italy	Castellanza	Carlo Cattaneo University	EX	F, S, AY	B L
	Florence	Richmond American International University	SA	F, S, AY	B L F A I
	Florence	Dante Alighieri Italian Linguistic Center	SA	F, S, AY	L
	Rome	American University World Capitols Program	SA	F, S, AY	L F A

¹ Information is subject to change without notice.² Study category abbreviations: SA= study abroad, EX= exchange, Both= study abroad and exchange³ Semesters available abbreviations: F= fall, S= spring, AY= all year⁴ Study areas abbreviations: B= business/law, L= languages, C= communication, F= fine arts, E= tech/engineering, T= tourism, A= liberal arts/sciences, I= internship, O= other⁵ Graduate students only.

INTERNATIONAL PROGRAMS

Semester and Academic Year Study Abroad and Exchange Programs¹ (continued)

Country	City	University/Institution	Study Category ²	Semesters Available ³	Study Areas ⁴
Japan	Hiroshima	Hiroshima Shudo University	EX	AY	B L A
	Nagoya	Nanzan University	EX	AY	B L F A
	Osaka	Kansai Gaidai University	EX	AY	B L C A
	Wakayama	Wakayama University	EX	AY	B E O
Macedonia	Skopje	University of Saints Cyril and Methodius	SA	F, S, AY	L A
Mexico	Various (including Mexico City)	Monterrey Institute for Technical and Superior Studies	EX	F, S, AY	B L C E T A I O
		Guadalajara	Autonomous University of Guadalajara	EX	F, S, AY	B L C E T A I O
	Obregón	Sonora Technological Institute	EX	F, S, AY	B L E T A O
	Hermosillo	University of Sonora	EX	F, S, AY	B L C F E A O
	Mexico City	Autonomous Technological Institute of Mexico	EX	F, S, AY	B E A
Netherlands	Breda	Autonomous University of Nuevo León	EX	F, S, AY	B L C F E O
		Netherlands Institute of Tourism and Transport	EX	F, S, AY	T
New Zealand	Auckland	University of Auckland	SA	F, S, AY	B L C A O
	Dunedin	University of Otago	SA	F, S, AY	B L F E A
	Hamilton	University of Waikato	Both	F, S, AY	B L C F E T A O
Northern Ireland	Ulster	University of Ulster	EX	F, S, AY	B L C E A O
Norway	Oslo	University of Oslo	SA	F, S, AY	L A O
Peru	Lima	Graduate School of Business Administration ⁵	EX	F, S, AY	B
Portugal	Various	The Language Center	SA	F, S, AY	L
Romania	Cluj-Napoca	Babes-Bolyai University	EX	—	L
Russia	Moscow	Finance Academy Under the Government of the Russian Federation	EX	F, S, AY	B
	Moscow	American University World Capitals	SA	F	L I
Scotland	Edinburgh	Edinburgh College of Art	EX	F, S, AY	F
	Edinburgh	University of Edinburgh	Both	AY	B L C F E A
	Glasgow	Strathclyde University	EX	F, S, AY	B L C E A O
Spain	Granada	Center for Modern Languages, University of Granada	SA	S, AY	L A
	Granada	University of Granada	EX	S, AY	B L F E A O
	Madrid	American University World Capitals Program	SA	S, AY	L A I
	Madrid	Carlos III University of Madrid	EX	S, AY	B
S. Africa, Zimbabwe	Cape Town, Harare	American University World Capitals Program	SA	F	A I
Sweden	Kalmar	University of Kalmar	EX	F, S, AY	B L C E T A
	Orebro	Orebro University	EX	F, S, AY	B L A
Thailand	Bangkok	Thammasat University	EX	F, S, AY	B L A
Various	Various	Semester at Sea	SA	F, S, AY	B C F A O

¹ Information is subject to change without notice.

² Study category abbreviations: SA= study abroad, EX= exchange, Both= study abroad and exchange

³ Semesters available abbreviations: F= fall, S= spring, AY= all year

⁴ Study areas abbreviations: B= business/law, L= languages, C= communication, F= fine arts, E= tech/engineering, T= tourism, A= liberal arts/sciences, I= internship, O= other

⁵ Graduate students only.

Summer Sessions

www.asu.edu/ssc

[Carol Switzer, M.S., Director](#)

PURPOSE

The summer sessions, offering more than 3,000 fully accredited courses, provide an opportunity for students to begin or continue academic work on a year-round basis. Summer courses are equivalent to fall and spring courses in terms of content, credit awarded, and the standards expected of students regarding academic performance.

There are three regular sessions, one of eight weeks and two of five weeks. The eight-week session and the first five-week session begin the same date. See the [“University Calendar,” page 15](#), for specific dates.

All ASU Main courses (except some EPE courses) are held in air-conditioned classrooms or laboratories. A limited number of courses are offered at off-campus locations.

During the summer, ASU also offers students the opportunity to earn graduate or undergraduate credit while studying in foreign countries through various Summer Study Programs. These programs are directed by ASU faculty and have been approved by the appropriate academic unit.

For more information, visit the Summer Sessions Web site at www.asu.edu/ssc.

Admission and Registration. The admission and registration process for summer sessions begins when the *Summer Sessions Bulletin* is distributed at the end of January.

Admission. All students must be admitted to ASU for the summer as a nondegree student before enrolling, except for continuing students attending ASU during the spring semester preceding the summer. New ASU students admitted for the fall semester following the summer must process the summer nondegree admission form before enrolling.

Nondegree Graduate or Undergraduate. An application form is provided in the *Summer Sessions Bulletin* and is also available on the Web at www.asu.edu/ssc/bulletin/application. The submission of transcripts or test scores is not required for this status.

Readmission. ASU students not enrolled during the spring semester preceding the current summer must be readmitted. See [“Readmission to the University,” page 70](#).

Conditional admission before graduation from high school may be granted. See [“Admission Before Receipt of Final Transcript,” page 59](#).

Advising. All students are strongly encouraged to seek academic advising before enrolling in summer courses. See [“Academic Advising,” page 69](#).

Bulletin. The *Summer Sessions Bulletin*, which contains the class schedule, the application form, and the registration procedure, is available the last week of January at the Office of Summer Sessions, ADM B167, and at all registrar sites.

The *Summer Sessions Bulletin* is also available on the Web at www.asu.edu/ssc.

To request the *Summer Sessions Bulletin*, summer study abroad brochures, or other summer information, call 480/965-6611 or write

SUMMER SESSIONS
ARIZONA STATE UNIVERSITY
PO BOX 873003
TEMPE AZ 85287-3003

Food Services. Meal plans are available. For more information, call 480/965-3464 or write

SODEXHO MARRIOTT SERVICES
ARIZONA STATE UNIVERSITY
PO BOX 870901
TEMPE AZ 85287-0901

Housing. Air-conditioned dormitories are available for ASU Main students. For more information, call 480/965-3515 or write

RESIDENTIAL LIFE
ARIZONA STATE UNIVERSITY
PO BOX 870801
TEMPE AZ 85287-0801

Immunization. Students born after December 31, 1956, are not permitted to register without proof of measles (rubeola) immunity or immunization given after January 1, 1980. See [“Immunization Requirements,” page 64](#).

Parking. A decal is required to park at ASU. For more information, call 480/965-6124 or write

PARKING SERVICES
ARIZONA STATE UNIVERSITY
PO BOX 870704
TEMPE AZ 85287-0704

Registration. Registration may be completed in person or by using SunDial. See the *Summer Sessions Bulletin*.

A maximum of seven semester hours in each five-week session or nine semester hours in the eight-week session may be taken. Hours of enrollment in any other institution or independent learning course are included in the maximum allowable course load during any given session.

Tuition and Fees. Summer sessions students pay for the actual number of semester hours enrolled, plus the Associated Students' Association fee, the financial aid trust fee, and the Student Recreation Complex fee. Students are also required to pay any special fees attached to specific classes. See the *Summer Sessions Bulletin*.

ASU Main Directory

For the “ASU East Directory,” see page 683. For the “ASU West Directory,” see page 694. For the “ASU Extended Campus Directory,” see page 713.

Organization	Location	Telephone	Web Address
Academic Transfer Articulation Office	ADM B362	480/965-8332	www.asu.edu/provost/articulation
Academic Transfer Programs		480/965-8332	www.asu.edu/admissions/transfercenter
Course Equivalency Guide		480/965-9172	www.asu.edu/provost/articulation
General Studies Guides		480/727-6599	www.asu.edu/provost/articulation
Transfer Guides		480/727-6599	www.asu.edu/provost/articulation
Accounts Receivable	ADM A109	480/965-6341	www-comp.vpas.asu.edu
Admissions	—	—	—
Graduate	WILSN 101	480/965-6113	www.asu.edu/graduate/admission
Law	LAW 101	480/965-1474	www.law.asu.edu
Readmissions (Undergraduate)	SSV 142	480/965-7440	www.asu.edu/registrar/readmissions
Undergraduate	SSV 112	480/965-7788	www.asu.edu/admissions
Adult Re-Entry	MU 14	480/965-2252	www.asu.edu/studentlife/reentry
Architecture and Environmental Design, College of	ARCH 134	480/965-8169	www.asu.edu/caed
Architecture, School of	AED 162	480/965-3536	www.asu.edu/caed/architecture
Design, School of	AED 154	480/965-4135	www.asu.edu/caed/design
Herberger Center for Design Excellence	ARCH 119	480/965-6693	www.asu.edu/caed/herberger
Planning and Landscape Architecture, School of	AED 158	480/965-7167	www.asu.edu/caed/planning
Arizona Drug and Gang Prevention Resource Center	ASUDC B2	480/727-5015 1-888-432-2547	www.asu.edu/adgprc
Arizona Prevention Resource Center	ASUDC B2	480/727-2772 1-800-432-2772	www.asu.edu/aprc
Associated Students of ASU (ASASU)	MU 310	480/965-3161	www.asu.edu/asasu
ASU Alumni Association	MAIN 200	480/965-2586	www.asu.edu/alumni
Administration	MAIN 200	480/965-2086	
Alumni Publications/ASU Vision Magazine	MAIN 200	480/727-6280	
Alumni Relations	MAIN 200	480/965-5276	
Alumni Travel	MAIN 200	480/965-0099	
Business Office	MAIN 200	480/965-9357	
Campuses, Chapters, and College Associations	MAIN 200	480/965-5276	
Career Programs	MAIN 200	480/965-5074	
Membership/Marketing	MAIN 200	480/965-8346	
Records Department	MAIN 200	480/965-2127	
Reunions	MAIN 200	480/965-4282	
Traditions	MAIN 200	480/965-7754	
Scholarships/Alumni Development	MAIN 200	480/965-4034	
Student Relations	MAIN 200	480/965-7754	
Sun Devil Advocates (Grass Roots Network)	MAIN 200	480/965-4078	
ASU West Alumni Programs	FAB S363	602/543-5315	
ASU East ¹	—	480/727-3278	www.east.asu.edu

¹ See “ASU East Directory,” page 683.

² See “ASU Extended Campus Directory,” page 713.

³ See “ASU West Directory,” page 694.

Organization	Location	Telephone	Web Address
ASU Extended Campus ²	—	480/965-3046	www.asu.edu/xed
ASU Main	—	480/965-9011	www.asu.edu
ASU West ³	—	602/543-5500	www.west.asu.edu
Bookstore, ASU	BKSTR	480/965-7928	bookstore.asu.edu/index2.html
Business, College of	BA 109	480/965-4227	www.cob.asu.edu
Accountancy and Information Management, School of	BA 223	480/965-3631	www.cob.asu.edu/acct
Business Administration (M.B.A.)	BA 160	480/965-3332	www.cob.asu.edu/mba
Business Administration (Ph.D.)	BA 151	480/965-3368	www.cob.asu.edu/grad/phd
Economics, Department of	BAC 659	480/965-3531	www.cob.asu.edu/ecn
Finance, Department of	BAC 519	480/965-3131	www.cob.asu.edu/fin
Health Administration and Policy, School of	BA 318	480/965-7778	www.cob.asu.edu/hap
International Business Studies	BA 109	480/965-0596	www.cob.asu.edu/up/ipo.cfm
Management, Department of	BA 323	480/965-3431	www.cob.asu.edu/mgt
Marketing, Department of	BAC 460	480/965-3621	www.cob.asu.edu/mkt
Small Business, Center for the Advancement of	BAC 111	480/965-3962	www.cob.asu.edu/up/smallbusiness.cfm
Supply Chain Management, Department of	BA 446	480/965-6044	www.cob.asu.edu/scm
Campus Dining Services	MU 138	480/965-3464	www.asucampusdining.com
Career Services	SSV 329	480/965-2350	career.asu.edu
Cashiering Services	SSV 244	480/965-7468	www.comp.vpas.asu.edu
Child and Family Services	MU 14C	480/965-9515	www.asu.edu/vpsa/family
Co-Curricular Programs	MCL 109B	480/965-9600	www.asu.edu/vpsa/partnerships
Community Service Program	MU 303	480/965-2255	www.asu.edu/mu/community
Counseling and Consultation	SSV 334	480/965-6146	www.asu.edu/counseling_center
	SHS A168	480/965-4726	—
Creative Writing (M.F.A.)	LL 307C	480/965-3528	www.asu.edu/clas/english/creativewriting
Disability Resources for Students	MCENT	—	www.asu.edu/drs
TTY	—	480/965-9000	—
Voice	—	480/965-1234	—
Drop/Add and Withdrawal Information	SSV 144	480/965-3124	—
Education, College of	EDB 108	480/965-3306	coe.asu.edu/coe
Computer Support/Student Computer Lab	EDB 122	480/965-2126	coecs.asu.edu
Curriculum and Instruction, Division of	ED 426	480/965-1644	www.ed.asu.edu/coe/candi
Curriculum and Instruction, Graduate Program Office	ED 434	480/965-4602	hal.asu.edu/cni/home.htm
Dean's Office	EDB 104	480/965-3306	courses.ed.asu.edu/deanos
Education Policy Studies Laboratory	EDB 4-01	480/965-1886	www.asu.edu/educ/eps/
Educational Leadership and Policy Studies, Division of	ED 120	480/965-6357	www.ed.asu.edu/elps
Educational Research and Services, Bureau of	ED 140	480/965-3538	bers.asu.edu
Indian Education, Center for	ED 402	480/965-6292	www.asu.edu/educ/cie
Professional Field Experiences, Office of (Student Teaching)	EDB L1-14	480/965-6255	www.ed.asu.edu/coe/pfe
Psychology in Education Admissions Information (Recording, Voice Mail)	—	480/965-6420	—
Psychology in Education, Division of	EDB 302	480/965-3384	coe.asu.edu/psyched

¹ See "ASU East Directory," page 683.

² See "ASU Extended Campus Directory," page 713.

³ See "ASU West Directory," page 694.

ASU MAIN DIRECTORY

Organization	Location	Telephone	Web Address
Education, College of (continued)			
Southwest Center for Education Equity and Language Diversity	ED 440	480/965-7134	www.asu.edu/educ/sceed
Student Services, Office of (Academic Advising and Certification)	EDB L1-13	480/965-5555	coe.asu.edu/osa
Student Services, Office of (Recruitment and Support Programs) (Tutoring Scholarships)	EDB L1-19	480/965-5555	coe.asu.edu/osa
Educational Opportunity Center	1000 E Apache No. 118	480/894-8451	www.asu.edu/studentlife/eoc
Engineering and Applied Sciences, College of	ECG 100	480/965-3421	www.eas.asu.edu
Bioengineering, Department of	ECG 334	480/965-3028	www.eas.asu.edu/~bme
Chemical and Materials Engineering, Department of	ECG 202	480/965-3313	www.eas.asu.edu/~cme
Civil and Environmental Engineering, Department of	ECG 252	480/965-3589	www.eas.asu.edu/~civil
Computer Science and Engineering, Department of	GWC 206	480/965-3190	cse.asu.edu
Construction, Del E. Webb School of	SCOB 241	480/965-3615	construction.asu.edu
Electrical Engineering, Department of	ENGRC 552	480/965-3424	www.eas.asu.edu/ee
Engineering, School of	ECG 104	480/965-1726	—
Industrial Engineering, Department of	GWC 502	480/965-3185	www.eas.asu.edu/~imse
Mechanical and Aerospace Engineering, Department of	ECG 346	480/965-3291	www.eas.asu.edu/~mae
Equal Opportunity/ Affirmative Action TTY	ADM B171 —	480/965-5057 480/965-0471	www.eoaa.asu.edu —
Exercise Science (Ph.D.)	PEBW M201	480/965-7906	www.asu.edu/clas/espe
Extended Education, College of ²	DTC C319	480/965-3046	www.asu.edu/xed
FASTT (Financial Aid Services Through Technology)	—	—	www.asu.edu/fa
Fine Arts, Herberger College of	GHALL 132	480/965-6536	herbergercollege.asu.edu
Art, School of	ART 102	480/965-3468	herbergercollege.asu.edu/art
Dance, Department of	PEBE 107A	480/965-5029	herbergercollege.asu.edu/dance
Music, School of	MUSIC E185	480/965-3371	herbergercollege.asu.edu/music
Theatre, Department of	GHALL 232	480/965-5337	herbergercollege.asu.edu/theatre
Fine Arts Box Office	FAC	480/965-6447	
Freshman Year Experience	SSV 176	480/965-1512	www.asu.edu/vpsa/fye
Gerontology (Certificate)	WHALL 116	480/965-3225	www.asu.edu/graduate/gerontology
Graduate College	WILSN lobby	480/965-3521	www.asu.edu/graduate
Admissions	WILSN 101	480/965-6113	www.asu.edu/graduate
Advising Office	WILSN lobby	480/965-3521	www.asu.edu/graduate/ checklist.html#ADVISING
Financial Assistance	WILSN 123	480/965-3521	www.asu.edu/graduate/fr_financial.html
Format Office	—	480/965-3521	www.asu.edu/graduate/resources/student/ formatinfo
General Office	—	480/965-3521	formatinfo
Scholarships	—	480/965-3521	—
Graduation Section	—	—	www.asu.edu/registrar/graduation
Commencement Office	ADM B167	480/965-6611	www.asu.edu/ssc/commence
Graduate Division	SSV 140	480/965-6980	—
Undergraduate Division	SSV 140	480/965-3256	—

¹ See “ASU East Directory,” page 683.

² See “ASU Extended Campus Directory,” page 713.

³ See “ASU West Directory,” page 694.

Organization	Location	Telephone	Web Address
Greek Life	MU 305	480/965-2255	www.asu.edu/mu/greeklife
Health and Wellness Center	SHS	480/965-3346	www.asu.edu/health
Appointments	—	480/965-3349	—
Fax	—	480/965-8914	—
Measles Information	—	480/965-8177	—
Honors College, Barrett	IRISH A121	480/965-2359	www.asu.edu/honors
Human Resources Customer Service Center	ADM B263	480/965-2701	www.asu.edu/hr
Information Technology	—	—	www.asu.edu/it
Computer Accounts Office	CPCOM 105	480/965-1211	www.asu.edu/it/fyi/accounts
Computing Site Hours	—	480/965-6500	www.asu.edu/it/fyi/sites/siteschedule.html
Computing Sites	CPCOM Atrium	480/965-4459	www.asu.edu/it/fyi/sites
	BAC 16	480/965-3074	—
	ECG 150	480/965-6280	—
	GWC 185	480/965-4307	—
Customer Assistance Center	CPCOM 202	480/965-5939	www.asu.edu/cacenter
Geographic Information Systems (GIS) Services	CPCOM 235	480/965-4007	www.asu.edu/gislab
Help Desk	CPCOM 202	480/965-6500	www.asu.edu/helpdesk
Instruction Support Lab	CPCOM 213	480/965-6739	is.asu.edu
Visualization Services	CPCOM 235	480/965-9699	www.asu.edu/visualization
International Programs Office	TMPCT B198	480/965-5965	ipo.asu.edu
International Student Office	SSV 265	480/965-7451	www.asu.edu/studentlife/iso
International Undergraduate Admissions	SSV 101	480/965-2688	www.asu.edu/admissions/international
Justice Studies (Ph.D.)	WILSN 316	480/965-7682	www.asu.edu/copp/justice
Law, College of	LAW 101	480/965-6181	www.law.asu.edu
Admissions Office	LAW 120	480/965-1474	—
TTY	—	480/965-2048	—
Learning Resource Center	SSV 394	480/965-6254	www.asu.edu/vpsa/lrc
Liberal Arts and Sciences, College of	SS 111	480/965-6506	www.asu.edu/clas
Aerospace Studies, Department of	TC 324	480/965-3181	www.asu.edu/clas/afrotc
African American Studies Program	COWDN 227	480/965-4399	www.asu.edu/clas/afamstu
Anthropology, Department of	ANTH 233	480/965-6213	www.asu.edu/clas/anthropology
Biology, Department of	LSC 226	480/965-3571	lifesciences.asu.edu/biology
Chemistry and Biochemistry, Department of	PS D102	480/965-3461	www.asu.edu/clas/chemistry
Chicana and Chicano Studies, Department of	COWDN 224	480/965-5091	www.asu.edu/clas/chicana
English, Department of	LL 542	480/965-3168	www.asu.edu/clas/english
Exercise Science and Physical Education, Department of	PEBW M212	480/965-3875	www.asu.edu/clas/espe
Family and Human Development, Department of	COWDN 106	480/965-6978	www.asu.edu/clas/frhd
Geography, Department of	SCOB 340H1	480/965-7533	geography.asu.edu
Geological Sciences, Department of	PS F686	480/965-5081	geology.asu.edu
History, Department of	SS 204	480/965-5778	www.asu.edu/clas/history
Interdisciplinary Humanities Program	LL 641	480/965-6747	www.asu.edu/clas/humanities
Languages and Literatures, Department of	LL 440	480/965-6281	www.asu.edu/languages/index.htm
Mathematics and Statistics, Department of	PS A216	480/965-3951	math.la.asu.edu
Microbiology, Department of	LSE 210	480/965-1457	lifesciences.asu.edu/microbiology

¹ See "ASU East Directory," page 683.

² See "ASU Extended Campus Directory," page 713.

³ See "ASU West Directory," page 694.

ASU MAIN DIRECTORY

Organization	Location	Telephone	Web Address
Liberal Arts and Sciences, College of (continued)			
Molecular and Cellular Biology	LSE 441	480/965-0743	ls.la.asu.edu/mcb
Molecular Bioscience and Biotechnology	LSE 218	480/965-3414	lifesciences.asu.edu/mbb
Military Science, Department of	TC B100	480/965-3318	www.asu.edu/clas/military
Philosophy, Department of	PS A524	480/965-3394	www.asu.edu/clas/philosophy
Physics and Astronomy, Department of	PS F470	480/965-3561	phy.asu.edu
Plant Biology, Department of	LS E218	480/965-3414	lifesciences.asu.edu/plantbiology
Political Science, Department of	MCENT 205	480/965-6551	www.asu.edu/clas/polisci
Psychology, Department of	PSY 237	480/965-3326	psych.la.asu.edu
Religious Studies, Department of	ECA 377	480/965-7145	www.asu.edu/clas/religious_studies
Sociology, Department of	SS 321	480/965-3546	www.asu.edu/clas/sociology
Speech and Hearing Science, Department of	LL 173A	480/965-2374	www.asu.edu/clas/shs
Women's Studies Program	ECA 209	480/965-2358	www.asu.edu/clas/womens_studies
Libraries (See "University Libraries," page 546.)			
Memorial Union	MU	—	www.asu.edu/mu
Administrative Offices	MU mezzanine	480/965-5310	www.asu.edu/mu/staff.html
Event and Meeting Services	MU 1st level	480/965-3406	www.asu.edu/mu/ems.html
Information Desk	MU 1st level	480/965-5728	—
Lost and Found	MU 1st level	480/965-5728	—
Montgomery Computer Lab and Workroom	MU 1st level	480/727-6663	www.asu.edu/mu/lab.html
Sparky's Den	MU lower level	480/965-3646	www.asu.edu/mu/recreation.html
Multicultural Student Center	SSV 394	480/965-6060	www.asu.edu/studentlife/msc
New Student Programs	SSV 110	480/965-2880	www.asu.edu/admissions/newstudentprograms
Nursing, College of	NUR 344	480/965-3244	nursing.asu.edu
Community Health Services Clinic	—	480/941-9283	nursing.asu.edu/chs
Continuing and Extended Education	CSB 334	480/965-7431	nursing.asu.edu/ce
Graduate Program	NUR 444	480/965-3948	nursing.asu.edu/programs/graduate
Student Services Office	NUR 108	480/965-2987	nursing.asu.edu/studentservices
Operator, University	—	480/965-9011	—
Parents Association (Programs)	SSV 110	480/965-2602	www.asu.edu/admissions/parentprograms
Parking and Transit Services	TOWER 107	480/965-6406	www.asu.edu/dps/pts
Programming and Visual Arts	MU 304	480/965-6649	—
Public Programs, College of	WILSN 234	480/965-1034	www.asu.edu/copp
Advanced Public Executive Program	ASUDC C110	480/965-4006	www.asu.edu/copp/apep
American Indian Studies Program	AG 372	480/965-3634	www.asu.edu/copp/americanindian
Asian Pacific American Studies Program	AG 352	480/965-9711	www.asu.edu/copp/asianamerican
Human Communication, Hugh Downs School of	STAUF A412	480/965-5095	com.pp.asu.edu
Journalism and Mass Communication, Walter Cronkite School of	STAUF A231	480/965-5011	www.asu.edu/cronkite
Justice Studies, School of	WILSN 331	480/965-7682	www.asu.edu/copp/justice
Morrison Institute for Public Policy	UVCMN 203	480/965-4525	www.asu.edu/copp/morrison
Nonprofit Leadership and Management, Center for	AG 346	480/965-0607	www.asu.edu/copp/nonprofit
Public Affairs, School of	WILSN 208	480/965-3926	spa.asu.edu
Recreation Management and Tourism, Department of	MOEUR 134	480/965-7291	www.asu.edu/copp/recreation
Social Work, School of	WHALL 135	480/965-3304	ssw.asu.edu
Urban Inquiry, Center for	AG 320B	480/965-9216	www.asu.edu/copp/urban

¹ See "ASU East Directory," page 683.

² See "ASU Extended Campus Directory," page 713.

³ See "ASU West Directory," page 694.

Organization	Location	Telephone	Web Address
Readmissions (Undergraduate)	SSV 142	480/965-7440	www.asu.edu/registrar/readmissions
Registrar	SSV 140	—	www.asu.edu/registrar
Expedite	—	480/965-4747	—
TTY	—	480/965-3236	—
Voice	—	480/965-3124	—
Residency Classification	SSV 146	480/965-7712	www.asu.edu/registrar/residency
Residential Life	SSV 170	480/965-3515	www.asu.edu/reslife
Science and Engineering of Materials (Ph.D.)	PS B135	480/965-2460	www.asu.edu/graduate/SEM
Speech and Hearing Science (Ph.D.)	CSB 146	480/965-2373	www.asu.edu/clas/shs
Statistics (M.S.)	BAC 570	480/965-2671	www.asu.edu/graduate/statistics
Student Affairs Research and Evaluation Office	MU 14D	480/965-4070	www.asu.edu/vpsa/research
Student Aid Disbursement	SSV 235	480/965-2956	www.asu.edu/fastt/apply/disbursement.html
Student Business Services	ADM A105	480/965-6301	—
Student Development	MU Mezzanine	480/965-5310	www.asu.edu/vpsa/sd
Student Employment	SSV 202	—	www.asu.edu/fa/studemp
Off-Campus	—	480/965-6318	—
On-Campus	—	480/965-5186	—
Student Financial Assistance	SSV 216A	480/965-3355	www.asu.edu/fa
Student ID (Sun Card)	MU 190	480/965-2273	www.suncard1.com
Student Leadership Programs	MU 340	480/965-2255	www.asu.edu/vpsa/slp
Student Life	SSV 263	480/965-6547	www.asu.edu/studentlife
Student Media	MCENT 2	480/965-7572	www.asu.edu/studentmedia
State Press Advertising	—	480/965-6555	—
State Press Information	—	480/965-7572	—
State Press Newsroom	—	480/965-2292	www.asuwebdevil.com
Web Devil	—	480/727-6941	—
Student Organization Resource Center	MU 340	480/965-2255	www.asu.edu/clubs
Student Recreation Complex and Recreational Sports	SRC 220	480/965-8900	www.asu.edu/src
Summer Sessions, Office of	ADM B167	480/965-6611	www.asu.edu/ssc
Summer International Programs	AG 313	480/965-6611	www.asu.edu/ssc/StudyAbroad
Sun Devil Involvement Center	MU 3rd level	480/965-2255	www.asu.edu/mu/sdic.html
SunDial	—	480/350-1500	www.asu.edu/registrar/registration/intouch.html
Testing Support Services	SSV 382	480/965-6777	www.asu.edu/vpsa/tss
Tickets	—	—	—
Athletic Events, Intercollegiate (Sun Devil Ticket Office)	—	480/965-2381	—
Public Events Administrative Offices	—	480/965-5062	—
Public Events Box Office	GGMA	480/965-3434	—
Transcripts (Outgoing)	SSV 140B	480/965-7276	www.asu.edu/registrar/transcripts
Transportation Systems (Certificate)	ARCH 119	480/965-6395	eastair.east.asu.edu/transportation
Tuition Payment Office	SSV 235	480/965-4347	—
Undergraduate Academic Services, Division of	UASB	480/965-3097	www.asu.edu/duas
Academic Advising Services	UASB 129	480/965-4464	www.asu.edu/duas/cas

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ASU MAIN DIRECTORY

Organization	Location	Telephone	Web Address
Undergraduate Academic Services, Division of (continued)			
Academic Success at the University (UNI 100 and 101) (Student Success Center)	ED 410	480/965-3097	www.asu.edu/duas/uni100
Bachelor of Interdisciplinary Studies (B.I.S.)	UASB 200	480/965-1970	www.asu.edu/duas/bis
Campus Match	ED 410	480/965-3097	www.asu.edu/duas/campmat
Declaration of Graduation	—	—	www.asu.edu/duas/dog
Degree Audit Reporting System (DARS)	UASB 100	480/965-0859	www.asu.edu/duas/dars
General Studies Program	UASB 230	480/965-0739	www.asu.edu/duas/genstudies
Service Learning	UASB 200	480/727-6657	www.asu.edu/duas/servlearn
Summer Bridge	ED 410	480/965-3097	www.asu.edu/duas/bridge
Supplemental Instruction	ED 410	480/965-3097	www.asu.edu/duas/si
Writing Across the Curriculum Support and Development	ED 410	480/965-3097	www.asu.edu/duas/wac
Writing Center	LL 340	480/965-4272	www.asu.edu/duas/wcenter
University Evaluation, Office of	AG 281	480/965-9291	www.asu.edu/oue
University Libraries	LIB	480/965-6164	www.asu.edu/libraries
Architecture and Environmental Design Library	AED 153	480/965-6400	www.asu.edu/caed/AEDlibrary
Archives and Manuscripts, Department of	LIB 413	480/965-3145	www.asu.edu/lib/archives
Hayden Library (Circulation Desk)	LIB	480/965-3605	www.asu.edu/lib/hayden
Library Administration	LIB	480/965-3417	
Music Library	MUSIC W302	480/965-3513	www.asu.edu/lib/music
Noble Science and Engineering Library	NOBLE	480/965-2600	www.asu.edu/lib/noble
Reference Questions	—	480/965-4932	www.asu.edu/lib/hayden/ref
Video Resources	ECA 100	480/965-5046	www.asu.edu/lib/video
West Campus Library	FLHLB	602/543-5717	www.west.asu.edu/library
University Testing Services	EDB 301	480/965-7146	www.asu.edu/uts
Upward Bound	SSV 276	480/965-6483	www.asu.edu/studentlife/ub/main.html
Veterans Services Section	SSV 148	480/965-7723	www.asu.edu/registrar/veterans
Veterans Upward Bound	1000 E. Apache No. 106	480/965-3944	www.asu.edu/studentlife/vub
Winter Session	—	480/965-9797	www.asu.edu/xed/wntrssn.html

¹ See "ASU East Directory," page 683.

² See "ASU Extended Campus Directory," page 713.

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Regents' Professors

The title "regents' professor" is conferred on selected members of the ASU tenured faculty who have achieved and are sustaining the highest level of distinction by their exceptional contributions to the mission of the university in research or other creative activity and in teaching or professional service.

JOHN ALCOCK

Biology

DAVID L. ALTHEIDE

Justice Studies

C. AUSTEN ANGELL

Chemistry and Biochemistry

CONSTANTINE A. BALANIS

Electrical Engineering

DAVID C. BERLINER

*Educational Leadership and Policy Studies
and Psychology in Education*

PETER R. BUSECK

Chemistry and Biochemistry and Geological Sciences

ROBERT B. CIALDINI

Psychology

GEOFFREY CLARK

Anthropology

JEFFREY COOK

Architecture

JOHN M. COWLEY

Physics and Astronomy, Emeritus

NORMAN DUBIE

English

NANCY H. EISENBERG

Psychology

LEROY EYRING

Chemistry and Biochemistry, Emeritus

DAVID K. FERRY

Electrical Engineering

DAVID WILLIAM FOSTER

Spanish

RONALD GREELEY

Geological Sciences

GERALD THOMAS HEYDT

Electrical Engineering

DAVID R. HICKMAN

Music

PETER IVERSON

History

DAVID H. KAYE

Law

GARY D. KELLER

Spanish

MARK KLETT

Art

RAYMOND W. KULHAVY

Psychology in Education

DANIEL M. LANDERS

Exercise Science and Physical Education

SHENG H. LIN

Chemistry and Biochemistry, Emeritus

JANE MAIENSCHIEIN

Biology and Philosophy

JAMES W. MAYER

Chemical and Materials Engineering

LEE MEYERSON

Psychology, Emeritus

CARLETON B. MOORE

Chemistry and Biochemistry and Geological Sciences

JEFFRIE G. MURPHY

Law and Philosophy

MICHAEL O'KEEFFE

Chemistry and Biochemistry

CAIO PAGANO

Music

DENNIS J. PALUMBO

Justice Studies, Emeritus

GEORGE R. PETTIT

Chemistry and Biochemistry

ALBERTO ALVARO RIOS

English

NANCY FELIPE RUSSO

Psychology

DAVID J. SMITH

Physics and Astronomy and Center for Solid State Science

JOHN C.H. SPENCE

Physics and Astronomy

SUMNER STARRFIELD

Physics and Astronomy

MARY BETH STEARNS

Physics and Astronomy, Emerita

WILLIAM T. TROTTER

Mathematics

CHRISTY G. TURNER II

Anthropology

J. BRUCE WAGNER JR.

*Chemistry and Biochemistry
and Center for Solid State Science, Emeritus*

KURT WEISER

Art

ASU Main Faculty and Academic Professionals

The faculty and academic professionals listed are involved in undergraduate and graduate instruction and research. The year of first appointment follows the name. Emeritae and emeriti are included.

A

Aanenson, Todd (2000), Faculty Associate of Construction; B.S., Arizona State University

Aannestad, Per (1975), Associate Professor of Physics and Astronomy; B.S., University of Oslo (Norway); Ph.D., University of California, Berkeley

Abbaszadegan, Morteza (1999), Associate Professor of Civil and Environmental Engineering and Adjunct Faculty of Microbiology; B.S., University of Montana; M.S., Northern Arizona University; Ph.D., University of Arizona

Abele, Deborah (1990), Faculty Associate of Planning and Landscape Architecture; B.A., Vassar College

Aberle, James T. (1989), Associate Professor of Electrical Engineering; B.S., M.S., Polytechnic Institute of New York; Ph.D., University of Massachusetts, Boston

Abramson, Jay (1999), Lecturer of Mathematics and Statistics; B.S., University of New Mexico; M.S., University of New Hampshire

Abston, Deborah (1990), Associate Librarian, Hayden Reference Services; B.S., M.S.L.S., Wayne State University

Acereda, Alberto (1998), Associate Professor of Latin American Literature; Licenciado, University of Barcelona (Spain); M.A., Ph.D., University of Georgia

Acevedo, Roberto M. (1964), Professor Emeritus of Spanish; B.A., University of California, Berkeley; M.A., Ph.D., University of Arizona

Acharya, Raghunath (1976), Professor Emeritus of Physics and Astronomy; B.Sc., M.Sc., University of Delhi (India); Ph.D., University of Rochester

Acker, Barbara (1991), Associate Professor of Theatre; B.F.A., University of Texas, Austin; M.A., Case Western Reserve University; Ph.D., Wayne State University

Acker, William J. (1970), Professor Emeritus of Geography; B.S., Purdue University; M.S., University of Kansas; M.A., Ph.D., Syracuse University

Adams, Donna (1983), Associate Professor of Nursing; B.S.N., University of Missouri, Columbia; M.S., Arizona State University; D.N.Sc., University of San Diego

Adams, James B. (1996), Professor of Materials Engineering; Interim Codirector, Science and Engineering of Materials; B.S., Duke University; M.S., Ph.D., University of Wisconsin, Madison

Adams, Karen L. (1984), Professor of English; Director, Program for Southeast Asian Studies; B.A., M.A., Ph.D., University of Michigan

Adams, Sue (2001), Faculty Associate of Nursing; B.S.N., University of Arizona; M.S., Arizona State University

Adelman, Madelaine (1998), Assistant Professor of Justice Studies; A.B., Ph.D., Duke University

Adelson, Roger D. (1974), Professor of History; B.A., George Washington University; B.Litt., University of Oxford (United Kingdom); M.A., Ph.D., Washington University

Aerni, Wayne (1991), Faculty Associate of Public Affairs; B.A., University of Oregon; M.P.A., D.P.A., Arizona State University

Afflitto, Frank M. (2001), Assistant Professor of Justice Studies; B.A., University of Massachusetts, Boston; M.A., Ph.D., University of California, Irvine

Agadjanian, Victor (1995), Assistant Professor of Sociology; B.A., Moscow State University (Russia); M.S., Ph.D., University of Southern California

Aguiar, John L. (1976), Professor Emeritus of Anthropology; B.A., University of California, Los Angeles; M.A., California State University, Los Angeles; Ph.D., University of California, San Diego

Ahn, Seung C. (1990), Associate Professor of Economics; B.A., Sogang University (South Korea); M.A., Ph.D., Michigan State University

Ahrendt, Laurie (2000), Faculty Associate of Nursing; B.S.N., M.S., Arizona State University

Aiken, Leona S. (1985), Professor of Psychology; B.S., Virginia Commonwealth University; M.S., Ph.D., Purdue University

Akins, William H. (1975), Professor Emeritus of Theatre; B.A., Duke University; M.A., Ph.D., University of Denver

Alarcon, Ricardo O. (1989), Professor of Physics and Astronomy; B.S., M.S., University of Chile (Chile); Ph.D., Ohio University

Alberts, Jess K. (1989), Professor of Communication; Director, Hugh Downs School of Human Communication; B.S.Ed., M.A., Abilene Christian University; Ph.D., University of Texas, Austin



Alcock, John

(1972)
Regents' Professor of Biology; B.A., Amherst College; Ph.D., Harvard University

Alcorn, Marianne (1981), Law Librarian, Reference; B.A., University of Washington; M.L.S., University of Southern California

Aldama, Arturo (1996), Associate Professor of Chicana and Chicano Studies; B.A., Evergreen State University; M.A., Ph.D., University of California, Berkeley

Aldrich, Frank T. (1969), Professor Emeritus of Geography; B.A., University of Texas, Austin; M.S., Ph.D., Oregon State University

Alexander, Robert J. (1975), Professor of German; B.A., Macalester College; M.A., Ph.D., University of Wisconsin, Madison

Alford, Terry L. (1993), Associate Professor of Materials Engineering; B.S., M.S., North Carolina State University, Raleigh; Ph.D., Cornell University

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Alisky, Marvin (1957), Professor Emeritus of Political Science; B.A., M.A., Ph.D., University of Texas, Austin

Allee, David R. (1991), Associate Professor of Electrical Engineering; B.S., University of Cincinnati; M.S., Ph.D., Stanford University

Allen, Craig M. (1991), Associate Professor of Journalism and Mass Communication; B.A., Linfield College; M.S., University of Oregon; Ph.D., Ohio University

Allen, James P. (1989), Professor of Chemistry and Biochemistry; B.S., Saint Joseph's University; M.S., Ph.D., University of Illinois

Allen, Jonathan (2001), Assistant Professor of Chemical Engineering and Civil and Environmental Engineering; B.S., University of Pennsylvania; M.S., Sc.D., Massachusetts Institute of Technology

Allison, Maria T. (1984), Professor of Recreation Management and Tourism; Associate Dean, Academic Programs, Graduate College; B.S., M.S., University of New Mexico; Ph.D., University of Illinois

Alozie, Nicholas O. (1991), Professor of Public Affairs; B.A., M.P.A., Texas Southern University; M.A., Ph.D., University of Texas, Dallas

Alpers, Rojann (1995), Associate Professor of Nursing; B.S.N., M.S., Arizona State University; Ph.D., University of Iowa

Alquist, Lewis R. (1984), Professor of Art; B.F.A., Florida Atlantic University; M.F.A., Cranbrook Academy of Art



Altheide, David L.
(1973)

Regents' Professor of Justice Studies; B.A., Central Washington State College; M.A., University of Washington; Ph.D., University of California, San Diego

Alvarado, Ronald H. (1974), Professor Emeritus of Biology; B.A., University of California, Riverside; M.S., Ph.D., Washington State University

Amann, Nancy (2001), Lecturer of Speech and Hearing Science; B.A., M.S., Gallaudet University

Amazeen, Eric P. (1999), Assistant Professor of Psychology; B.A., Franklin and Marshall College; M.A., Ph.D., University of Connecticut

Amazeen, Polemnia G. (1999), Assistant Professor of Psychology; B.A., Franklin and Marshall College; M.A., Ph.D., University of Connecticut

Ames, James G. (1985), Senior Research Associate, Manufacturing Institute; B.S., San Diego State University

Anderson, Gary (1975), Professor Emeritus of Curriculum and Instruction; B.S., M.Ed., Edinboro State College; Ph.D., University of Pittsburgh

Anderson, James R. (1984), Associate Research Scientist; B.A., Williams College; Ph.D., California Institute of Technology

Anderson, Lisa M. (2000), Assistant Professor of Women's Studies; A.B., Mount Holyoke College; M.A., Smith College; Ph.D., University of Washington

Anderson, Marcia L. (1986), Librarian, Collection Development; B.A., University of Michigan; M.L.S., Wayne State University

Anderson, Melvin S. (1967), Professor Emeritus of Finance; B.S., M.S., Oklahoma State University; Ed.D., University of Arkansas

Anderson-Rowland, Mary R. (1974), Associate Professor of Industrial Engineering; Associate Dean, Student Affairs and Special Programs; B.A., Hope College; M.S., Ph.D., University of Iowa

Andress, Barbara L. (1972), Professor Emerita of Music; B.A., M.A., Arizona State University



Angell, C. Austen
(1989)

Regents' Professor of Chemistry and Biochemistry; B.S., M.S., Melbourne University (Australia); Ph.D., University of London (United Kingdom)

Anijar, Karen Z. (1998), Associate Professor of Curriculum and Instruction; B.A., Florida State University; M.A., Ph.D., University of North Carolina, Greensboro

Appleton, Nicholas R. (1972), Professor of Curriculum and Instruction and Educational Leadership and Policy Studies; B.A., San Francisco State University; M.A., California State University, Northridge; Ed.D., University of Massachusetts, Amherst

Aranda, Luis (1975), Associate Professor of Legal and Ethical Studies; B.M., M.Ed., University of Arizona; J.D., Arizona State University

Arciniega, G. Miguel (1979), Associate Professor of Counselor Education; B.S., M.A., New Mexico State University; Ph.D., University of Arizona

Ariaratnam, Sam (2001), Associate Professor of Construction; B.A.Sc., University of Waterloo (Canada); M.S., Ph.D., University of Illinois, Urbana-Champaign

Arias, M. Beatriz (1989), Associate Professor of Curriculum and Instruction; B.A., M.A., Occidental College; Ph.D., Stanford University

Armbruster, Charlotte (1997), Faculty Associate of Nursing; B.S.N., M.S., Arizona State University

Armbruster, Dieter (1989), Professor of Mathematics and Statistics; Abitur, Zeppelin, Gymnasium (Germany); Diplom, Ph.D., University of Tübingen (Germany)

Armendt, Brad (1989), Associate Professor of Philosophy; Chair, Department of Philosophy; B.A., Rice University; Ph.D., University of Illinois, Chicago

Armstrong, Robert L. (1967), Professor Emeritus of Curriculum and Instruction; B.A., State Teachers College of Iowa; M.S., University of Iowa; Ed.D., University of Arizona

Arner, Douglas G. (1959), Professor Emeritus of Philosophy; B.S., Creighton University; M.A., Ph.D., University of Michigan

Arnold, William E. (1973), Professor of Communication; Director, Gerontology Program; B.S., M.A., Northern Illinois University; Ph.D., Pennsylvania State University

Arntzen, Charles J. (2000), Florence Ely Nelson Presidential Chair, Plant Biology; B.S., M.S., University of Minnesota; Ph.D., Purdue University

Aronson, Jerome M. (1966), Professor Emeritus of Plant Biology; B.A., Ph.D., University of California, Berkeley

Arredondo, Patricia (1999), Associate Professor of Psychology in Education; B.S., Kent State University; Ed.M., Boston College; Ed.D., Boston University

Arreola, Daniel (1990), Professor of Geography; B.A., University of California, Los Angeles; M.A., California State University, Hayward; Ph.D., University of California, Los Angeles

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Arrowsmith, J. Ramon (1995), Associate Professor of Geological Sciences; B.A., Whittier College; Ph.D., Stanford University

Arterian, Hannah R. (1979), Professor of Law; B.A., Elmira College; J.D., University of Iowa

Ashbrook, Mark (2000), Lecturer of Mathematics and Statistics; B.S., M.S., University of Illinois; M.A., University of Kansas

Ashcraft, Robert F. (1995), Associate Professor of Recreation Management and Tourism; Director, Center for Nonprofit Leadership and Management; B.A., University of Arizona; M.A., Northern Arizona University; Ph.D., Arizona State University

Ashcroft, Edward A. (1988), Professor of Computer Science and Engineering; B.A., Cantab (United Kingdom); Ph.D., Imperial College of London (United Kingdom)

Ashford, Jose B. (1984), Professor of Social Work; B.A., Loyola University, New Orleans; M.S.W., Ohio State University; Ph.D., Bowling Green State University

Ashforth, Blake (1996), Professor of Management; B.Comm., Ph.D., University of Toronto (Canada)

Ashley, Richard (1981), Associate Professor of Political Science; B.A., University of California, Santa Barbara; M.A., Ph.D., Massachusetts Institute of Technology

Askland, Andrew (1999), Director, Center for the Study of Law, Science and Technology; A.B., Holy Cross College; B.S., University of Maryland; M.A., University of Colorado; J.D., University of Maryland; Ph.D., University of Colorado

Atsumi, Takayori P. (1968), Professor Emeritus of Music; B.F.A., Kunitachi Music College (Japan); M.M., New England Conservatory of Music

Augsburg, Tanya (1997), Lecturer, Division of Undergraduate Academic Services; B.A., New York University; M.A., Ph.D., Emory University

Aulerich, Christopher E. (1989), Faculty Associate, Del E. Webb School of Construction

Autore, Donald D. (1959), Professor Emeritus of Technology; B.S.E., University of Michigan; M.S.E., Arizona State University

Axelrod, Morris (1972), Professor Emeritus of Sociology; B.A., Ph.D., University of Michigan

Axford, Roger W. (1975), Professor Emeritus of Curriculum and Instruction; B.A., Nebraska Wesleyan University; M.A., Ph.D., University of Chicago

Ayyanar, Raja (2000), Assistant Professor of Electrical Engineering; B.E., P.S.G. College of Technology (India); M.S., Indian Institute of Science (India); Ph.D., University of Minnesota

Azuma, Tamiko (1998), Assistant Professor of Speech and Hearing Science; B.A., University of California, Santa Cruz; M.A., Ph.D., Arizona State University

B

Backhaus, Ralph A. (1977), Professor of Plant Biology; B.S., Rutgers, The State University of New Jersey; M.S., Ph.D., University of California, Davis

Backus, Charles E. (1968), Professor of Electrical Engineering; Campus Chief Executive Officer and Provost, ASU East; Vice President, ASU; B.S.M.E., Ohio University; M.S., Ph.D., University of Arizona

Bacon, Catherine K. (1990), Clinical Associate Professor of Speech and Hearing Science; B.A., University of California, Santa Barbara; M.A., University of Minnesota

Bacon, Sid P. (1988), Professor of Speech and Hearing Science; B.G.S., M.A., University of Kansas; Ph.D., University of Minnesota, Twin Cities

Bacon, Thomas (1993), Professor Emeritus of Music; B.S., Oakland University

Badger, William W. (1985), Professor of Construction; Director, Del E. Webb School of Construction; B.S.M.E., Auburn University; M.S.C.E., Oklahoma State University; Ph.D., Iowa State University

Baek, Jae-Meen (2001), Assistant Professor of Curriculum and Instruction; B.S., Ewha Women's University (South Korea); M.S., Ph.D., University of Wisconsin, Madison

Baer, Steven M. (1988), Associate Professor of Mathematics and Statistics; B.S., M.S., Ph.D., University of Illinois

Bagwell, Marilyn (1972), Professor Emerita of Nursing; B.S.N., University of California, Los Angeles; M.A., Arizona State University; Ph.D., Texas Woman's University

Bahr, Donald M. (1967), Professor of Anthropology; A.B., M.A., Ph.D., Harvard University

Bailey, James E. (1974), Professor Emeritus of Industrial Engineering; B.S.I.E., M.S.I.E., Ph.D., Wayne State University

Bailey, Wayne A. (2000), Professor of Music; Director, School of Music; B.M.E., Iowa State University; M.M., University of Michigan; D.M.A., University of Colorado

Baker, Aaron (1992), Assistant Professor of Interdisciplinary Humanities; B.A., Hobart College; M.A., Ph.D., Indiana University

Baker, Brenda J. (1998), Assistant Professor of Anthropology; B.A., Northwestern University; M.A., Ph.D., University of Massachusetts, Amherst

Baker, Dale R. (1989), Professor of Curriculum and Instruction; B.A., University of Oklahoma; M.A.T., Trenton State College; Ed.D., Rutgers, The State University of New Jersey

Baker, Marc A. (1988), Adjunct Faculty of Plant Biology; B.A., San Jose State University; M.A., Humboldt State University; Ph.D., Arizona State University

Baker, Virgil R. (1966), Professor Emeritus of Geography; B.S., M.S., University of Nebraska; Ph.D., University of Utah



Balanis, Constantine A.

(1983)

Regents' Professor of Electrical Engineering; B.S.E.E., Virginia Polytechnic Institute and State University; M.E.E., University of Virginia; Ph.D., Ohio State University

Balasubramanian, Krishnan (1983), Professor of Chemistry and Biochemistry; M.Sc., Birla Institute of Technology Science (India); M.A., Ph.D., Johns Hopkins University

Baldini, Pier Raimondo (1978), Professor of Italian; B.A., San Francisco State University; M.A., University of British Columbia (Canada); Ph.D., University of California, Los Angeles

Ball, Terence (1998), Professor of Political Science; B.A., University of California, Santa Cruz; M.A., Ph.D., University of California, Berkeley

Ballentine, James Terry (2000), Faculty Associate of Nursing; B.S., M.S., Arizona State University

Balling, Robert C. (1987), Professor of Geography; Director, Climatology Laboratory; A.B., Wittenberg University; M.A., Bowling Green State University; Ph.D., University of Oklahoma

Ballon-Aguirre, Enrique (1992), Professor of Spanish; Bachiller en Letras, Bachiller en Derecho, University of Arequipa (Peru); Doctor en Literatura, National University of San Marcos (Peru); Doctorat en Études Iberiques, University of Paris III (France)

- Baral, Chitta** (1999), Associate Professor of Computer Science and Engineering; B.Tech., Indian Institute of Technology (India); M.S., Ph.D., University of Maryland, College Park
- Barcelo, H el ene** (1990), Associate Professor of Mathematics and Statistics; Ms.C., University of Quebec (Canada); Ph.D., University of California, San Diego
- Bardewyck, Loretta A.** (1957), Professor Emerita of Nursing; Dean Emerita, College of Nursing; P.H.N., B.S., University of Minnesota, Twin Cities; M.S., Cornell University
- Bardrick, Richard A.** (1956), Professor Emeritus of Psychology; A.B., Ph.D., University of California, Los Angeles
- Bardsley, Doreen** (2001), Lecturer of Curriculum and Instruction; B.A., M.Ed., University of Regina (Canada); Ph.D., Arizona State University
- Barker, David** (1983), Professor of Theatre; B.S.E., Duquesne University; M.F.A., Rutgers, The State University of New Jersey
- Barkley, Margaret V.** (1963), Professor Emerita of Family and Human Development; B.S., Millikin University; M.S., Ed.D., University of Illinois
- Barkson, Joseph A.** (1958), Professor Emeritus of Engineering; B.S.E.E., University of Michigan; M.S., Ph.D., University of Illinois
- Barlow, Richard B.** (1964), Professor Emeritus of History; B.A., M.A., Ph.D., University of Pennsylvania
- Barnard, John P.** (1991), Associate Learning Resources Specialist, Library Instruction, Systems, and Technology; B.S., State University of New York; M.Ed., Ph.D., Arizona State University
- Barnes, Andrew** (1996), Associate Professor of History; B.A., Wesleyan University; M.A., Ph.D., Princeton University
- Barona, Andr es** (1986), Professor of Psychology in Education; B.S., M.Ed., Texas A&M University; Ph.D., University of Texas, Austin
- Barone, Thomas** (1990), Professor of Curriculum and Instruction and Educational Leadership and Policy Studies; B.A., Loyola University, New Orleans; M.A., University of New Orleans; Ed.D., Stanford University
- Barrera, Manuel** (1977), Professor of Psychology; B.S., University of Wisconsin, Eau Claire; M.A., Ph.D., University of Oregon
- Barrett, Marianne** (1994), Associate Professor of Journalism and Mass Communication; B.S., Kutztown University; M.P.S., Syracuse University; Ph.D., Michigan State University
- Barroll-Aschaffenburg, Rayna** (1980), Professor Emerita of Music; B.M., University of Texas; D.M.A., University of Maryland, College Park
- Bartels, Robert D.** (1981), Professor of Law; B.A., University of Michigan; J.D., Stanford University
- Bartlett, Mark** (2000), Associate Law Librarian; B.A., University of New Brunswick (Canada); M.L.I.S., Dalhousie University (Canada)
- Barto, Michelle** (1999), Lecturer of Speech and Hearing Science; B.A., M.Ed., Arizona State University
- Barton, C. Michael** (1987), Professor of Anthropology; Collections Administrator; B.A., University of Kansas; M.A., Ph.D., University of Arizona
- Barton, John L.** (1994), Senior Lecturer of Psychology; B.A., University of Nebraska, Lincoln; M.A., Ph.D., Arizona State University
- Bartz, Donna** (1968), Professor Emerita of Theatre; B.F.A., M.A., University of Colorado
- Bashford, Howard H.** (1997), Associate Professor of Construction; B.S., M.S., University of Wyoming; Ph.D., Brigham Young University
- Batalden, Stephen K.** (1976), Professor of History; Coordinator of Russian, East European Studies Consortium; B.A., Augsburg College; M.A., Ph.D., University of Minnesota
- Bates, Dawn W.** (1989), Associate Professor of English; B.A., Ph.D., University of Washington
- Bates, Mary** (1996), Professor of Art; B.F.A., Colorado State University; M.F.A., Indiana University
- Baty, Wayne M.** (1962), Professor Emeritus of General Business; B.S., Southwest Missouri State College; M.A., Northwestern University; Ph.D., University of Southern California
- Bauer, Ernst** (1990), Distinguished Research Professor of Physics and Astronomy; Diplom., Dr. rer. nat., University of Munich (Germany)
- Bauer, Richard** (2000), Lecturer of Chemistry and Biochemistry; B.S., Saginaw Valley State University; M.S., Ph.D., Purdue University
- Baxter, Harry R.** (1982), Professor Emeritus of Engineering; B.A., New York University; M.B.A., Fairleigh Dickinson University; M.Tech., Arizona State University
- Bazzi, Rida** (1996), Assistant Professor of Computer Science and Engineering; B.E., American University of Beirut (Lebanon); M.S., Ph.D., Georgia Institute of Technology
- Beals, Stephen P.** (1996), Adjunct Professor of Speech and Hearing Science; B.S., Calvin College; M.D., Wayne State University College of Medicine
- Beardmore, Gary D.** (1979), Associate Research Technologist of Geological Sciences; B.A., Arizona State University
- Beattie, Donald** (2001), Assistant Professor of Military Science; B.S., Buffalo State College; M.A.E., University of Colorado, Boulder
- Beaudoin, Stephen P.** (1995), Associate Professor of Chemical Engineering; B.S., Massachusetts Institute of Technology; M.S., University of Texas, Austin; Ph.D., North Carolina State University
- Beck, Lasca** (1984), Clinical Associate Professor of Nursing; B.S.N., Texas Woman's University; M.S., Texas A&M University, Commerce
- Beckman, James R.** (1980), Associate Professor of Chemical Engineering; Associate Chair for Chemical Engineering; B.S., M.S., University of Wisconsin; Ph.D., University of Arizona
- Bedard, Roger L.** (1990), Evelyn Smith Family Endowed Professor of Theatre; B.A., University of Northern Iowa; M.F.A., University of Oregon; Ph.D., University of Kansas
- Bedient, Jack D.** (1963), Professor Emeritus of Mathematics and Statistics; A.B., Albion College; M.B.S., Ed.D., University of Colorado
- Bedworth, David D.** (1963), Professor Emeritus of Industrial Engineering; B.S.I.E., Lamar College of Technology; M.S.I.E., Ph.D., Purdue University
- Beggs, Donald** (1999), Lecturer of the Barrett Honors College; Faculty Chair, Barrett Honors College; A.B., University of California, Berkeley; Ph.D., University of California, Santa Cruz
- Behrens, John T.** (1994), Associate Professor of Psychology in Education; B.A., University of Notre Dame; M.A., Ph.D., Arizona State University
- Bell, George H.** (1976-82; 1989), Librarian, Noble Science Reference Services; B.A., William Paterson College; M.L.S., Pratt Institute

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Bell, James W. (1966), Professor Emeritus of Curriculum and Instruction; B.A., Washburn University of Topeka; M.Ed., Ed.D., University of Kansas

Bell, John E. (1965), Professor Emeritus of Curriculum and Instruction; B.S., University of Nebraska, Lincoln; M.A., Ed.D., University of Wyoming

Bell, Mary E. (1970), Professor Emerita of Education; B.S., Indiana State Teachers College; M.S., Butler University; Ed.D., Indiana University, Bloomington

Bell, Shirley (1988), Clinical Professor of Nursing; B.S.N., University of Cincinnati; M.S.N., Wayne State University; Ed.D., West Virginia University

Bellamy, Lynn (1976), Professor Emeritus of Chemical Engineering; B.S., Texas A&M University; M.S., Ph.D., Tulane University

Belok, Michael V. (1959), Professor Emeritus of Education; B.S., Indiana University, Bloomington; M.A., Arizona State University; Ph.D., University of Southern California

Benavides, Alfredo H. (1988), Associate Professor of Curriculum and Instruction; B.A., Texas A&I University; M.A., Ph.D., Michigan State University

Bender, Bert A. (1971), Professor of English; B.A., University of Washington; Ph.D., University of California, Irvine

Bender, Gordon L. (1953), Professor Emeritus of Biology; B.S., Iowa State College; M.S., University of Wisconsin; Ph.D., University of Illinois

Bender, Paul (1984), Professor of Law; A.B., LL.B., Harvard University

Benin, David B. (1970), Professor Emeritus of Physics and Astronomy; A.B., Cornell University; M.A., Ph.D., University of Rochester

Benin, Mary B. (1979), Associate Professor of Sociology; B.A., Vanderbilt University; M.A., Ph.D., University of Nebraska, Lincoln

Benn, James A. (2001), Assistant Professor of Religious Studies; B.A., University of Cambridge (England); M.A., University of London (England); Ph.D., University of California Los Angeles

Bennett, Peter A. (1984), Professor of Physics and Astronomy; B.A., University of Minnesota, Duluth; Ph.D., University of Wisconsin, Madison

Benzinger, Robert P. (1970), Professor Emeritus of Design; B.S.M.E., University of Wisconsin, Madison; M.A.E., Chrysler Institute of Engineering

Berch, Michael A. (1969), Professor of Law; B.A., J.D., Columbia University

Berens, Michael E. (1995), Adjunct Faculty of Biology; B.S., Arizona State University; Ph.D., University of Arizona



Berliner, David C. (1987)

Regents' Professor of Educational Leadership and Policy Studies and Psychology in Education; B.A., University of California, Los Angeles; M.A., California State University, Los Angeles; Ph.D., Stanford University

Berman, David R. (1966), Professor of Political Science; B.A., Rockford College; M.A., Ph.D., American University

Berman, Neil S. (1964), Professor Emeritus of Chemical Engineering; B.S., University of Wisconsin; M.S., M.A., Ph.D., University of Texas

Bernard, Stephen Z. (1994), Faculty Associate of Construction; B.S., Arizona State University

Bernardi, Jose (1995), Associate Professor of Design; B.Arch., National University of Cordoba; M.S., University of Cincinnati

Bernstein, Bianca L. (1987), Professor of Counseling Psychology and Counselor Education; Dean, Graduate College; B.A., University of California, Berkeley; M.Ed., Ph.D., University of California, Santa Barbara

Bertelsen, Wendle R. (1964), Professor Emeritus of Architecture; B.Arch., University of Michigan; M.Arch., University of Arizona

Bess, Vicki (1994), Adjunct Faculty of Microbiology; M.S., Arizona State University

Betz, M. Austin (1974), Professor Emeritus of Civil Education; B.S., Lock Haven State College; M.Ed., Pennsylvania State University; M.A.T., Brown University; M.A., Ph.D., University of Illinois

Betz, Mathew J. III (1961), Professor Emeritus of Civil Engineering; B.S., M.S., Ph.D., Northwestern University

Bhattacharya, Sourav (1996), Associate Professor of Computer Science and Engineering; B.E., Jadavpur University (India); M.Tech., Indian Institute of Technology (India); M.S., University of Southwestern Louisiana; Ph.D., University of Minnesota

Biblarz, Dora (1980), Librarian Emerita; B.A., M.L.S., University of California, Los Angeles; M.A., University of California, Davis

Bickford, William B. (1966), Professor Emeritus of Engineering; B.S., M.S., Kansas State University; Ph.D., University of Illinois

Bieber, Allen L. (1963), Professor Emeritus of Chemistry and Biochemistry; Director, Interdisciplinary Committee on Molecular and Cellular Biology; B.S., M.S., North Dakota State University; Ph.D., Oregon State University

Bingham, Scott (1989), Associate Research Scientist of Plant Biology; B.S., Brown University; Ph.D., Brandeis University

Binkley, Roberta A. (2001), Lecturer of English; B.A., Colorado State University; M.A., Ph.D., University of Arizona

Bird, Jonathan Paul (1997), Associate Professor of Electrical Engineering; B.S.C., D.Phil., University of Sussex (United Kingdom)

Birge, Edward A. (1972), Associate Professor of Microbiology; Chair, Department of Microbiology; Codirector, Molecular Biosciences and Biotechnology Program; B.A., Ph.D., University of Wisconsin, Madison

Birk, James P. (1973), Professor of Chemistry and Biochemistry; B.A., Saint John's University; Ph.D., Iowa State University

Birtcher, Craig R. (1987), Assistant Research Specialist, Electrical Engineering; B.S.E., M.S., Arizona State University

Bitner, Mary Jo (1987), ATT Professor of Marketing; B.A., M.B.A., Ph.D., University of Washington

Bitter, Gary G. (1970), Professor of Curriculum and Instruction and Psychology in Education; B.S., Kansas State University; M.A., Kansas State Teachers College; Ph.D., University of Denver

Bivona, Daniel (1996), Associate Professor of English; Associate Dean of Academic Programs, College of Liberal Arts and Sciences; B.A., University of Connecticut; M.A., Northeastern University; Ph.D., Brown University

Bjork, Robert E. (1983), Professor of English; Director, Arizona Center for Medieval and Renaissance Studies; B.A., Pomona College; M.A., Ph.D., University of California, Los Angeles

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Blackham, Garth J.** (1962), Professor Emeritus of Counselor of Education; B.S., M.S., Utah State University; Ph.D., Cornell University
- Blackledge, Vernon O.** (1969), Professor Emeritus of Computer Science and Engineering; B.S.E.E., University of Illinois; M.S.E.E., University of Santa Clara; Ph.D., Arizona State University
- Blacklock, Cathy B.** (2000), Assistant Professor of Aerospace Studies; B.S., William Woods University; M.S., Lesley College
- Blackman, William C.** (1988), Research Professional Emeritus, Center for Environmental Studies; B.S., M.S., University of Missouri; M.P.A., University of Southern California; D.P.A., University of Colorado
- Blackson, Thomas** (1995), Associate Professor of Philosophy; B.A., DePauw University; Ph.D., University of Massachusetts
- Blair, Sampson Lee** (1995), Associate Professor of Sociology; B.S., M.S., Virginia Polytechnic Institute; Ph.D., Pennsylvania State University
- Blakemore, Arthur E.** (1979), Professor of Economics; Chair, Department of Economics; B.S., M.A., University of Detroit; Ph.D., Southern Illinois University, Carbondale
- Blancero, Donna (1993), Assistant Professor of Management; B.S., College of Old Westbury; M.S., New York Institute of Technology; Ph.D., Cornell University
- Blanchard, Jay S.** (1988), Professor of Psychology in Education; M.S.T., Drake University; Ph.D., University of Georgia
- Blankenship, Robert E.** (1985), Professor of Chemistry and Biochemistry; B.S., Nebraska Wesleyan College; Ph.D., University of California, Berkeley
- Blasingame, James B. Jr.** (2000), Assistant Professor of English; B.A., University of Northern Iowa; M.Ed., Drake University; Ph.D., University of Kansas, Lawrence
- Blasko, Vincent J.** (1980), Associate Professor of Marketing; B.S., M.B.A., Arizona State University; Ph.D., University of Texas, Austin
- Bloom, Irene** (1997), Lecturer of Mathematics and Statistics; B.A., M.S., University of Miami
- Blouin, Deborah K.** (1971), Associate Librarian, Hayden Reference Services; B.A., Cedar Crest College; M.L.S., State University of New York, Albany
- Blount, Douglas J.** (1990), Associate Professor of Mathematics and Statistics; B.S., M.S., Ph.D., University of Wisconsin, Madison
- Blumenfeld-Jones, Donald** (1990), Associate Professor of Curriculum and Instruction; B.A., Rutgers, The State University of New Jersey; M.F.A., Ed.D., University of North Carolina, Greensboro
- Boatsman, James R.** (1986), Peat Marwick Professor of Accountancy; B.S., M.S., Oklahoma State University; Ph.D., University of Texas, Austin
- Boatsman, Joyce L.** (1996), Lecturer of Accountancy and Information Management; B.S., Oklahoma State University; M.Tax., Arizona State University
- Bodell, Leonard S.** (1992), Adjunct Professor of Anthropology; B.A., Hobart and William Smith Colleges; M.D., New York Upstate Medical Center
- Bodman, Denise** (1996), Lecturer of Family and Human Development; B.S., M.S., Arizona State University
- Bogardus, Clifton** (1992), Adjunct Professor of Biology; M.D., University of Rochester
- Bogart, Quentin J.** (1970), Professor Emeritus of Educational Leadership and Policy Studies; B.A., M.S., Fort Hayes State College; Ph.D., University of Texas, Austin
- Boggs, Lohnie J.** (1959–65; 1966), Professor Emeritus of General Business; B.S., M.S., Ph.D., Ohio State University
- Bohlander, George W.** (1977), Professor of Management; B.A., San Francisco State College; M.B.A., University of Southern California; Ph.D., University of California, Los Angeles
- Bohman, Herbert M.** (1964), Professor Emeritus of Legal and Ethical Studies; B.A., B.S., Drake University; M.B.A., J.D., Indiana University
- Bolin, Robert** (1997), Professor of Sociology; B.A., Ph.D., University of Colorado
- Bolton, Cynthia J.** (1997), Lecturer of Philosophy; B.G.S., University of Michigan; M.A., Ph.D., Michigan State University
- Bonanni, Domenico** (1997), Assistant Librarian, Hayden Reference Services; B.A., University of Alberta (Canada); B.A., Arizona State University; M.L.I.S., Dalhousie University (Canada)
- Bontemps, Arna Alexander** (2001), Associate Professor of African American Studies; B.A., Fisk University; M.A., Atlanta University; Ph.D., University of Illinois
- Booksh, Karl S.** (1996), Assistant Professor of Chemistry and Biochemistry; B.S., University of Alaska; Ph.D., University of Washington
- Booth, James R.** (1980), Professor of Finance; B.S., M.A., Ph.D., University of Alabama
- Boradkar, Prasad** (2000), Assistant Professor of Design; B.E., Maharaja Sayajirao University, Baroda (India); M.Des., Industrial Design Centre, Bombay (India); M.A., Ohio State University, Columbus
- Borgo, Philip E.** (1967), Professor Emeritus of Civil Engineering; B.S.C.E., University of Cincinnati; M.S., Ohio State University
- Borovansky, Vladimir R.** (1968), Librarian, Collection Development; M.L.S., Ph.D., Charles University, Prague (Czechoslovakia)
- Borrer, Connie M.** (2000), Lecturer of Industrial Engineering; B.S., M.S., Southern Illinois University, Edwardsville; Ph.D., Arizona State University
- Bortner, Peg** (1979), Associate Professor of Justice Studies; Director, Center for Urban Inquiry; B.A., Edinboro State College; M.A., Ohio University; Ph.D., Washington University
- Bossen, Karen** (1997), Assistant Instructional Professional of Recreation Management and Tourism; B.A., Washington State University
- Boswell, Jacquelyn** (1982), Professor Emerita of Music; B.M.E., Murray State University; M.M.E., Louisiana State University; Ed.D., University of Illinois
- Boulin Johnson, Leonor** (1987), Associate Professor of Family and Human Development; Director, African American Studies; B.S., East Tennessee State University; M.S., Ph.D., Purdue University
- Bowers, Charles O.** (1948), Professor Emeritus of Music; B.S., Southeast Missouri State College; M.M., D.M.A., University of Rochester
- Boyd, Brian** (1996), Associate Professor of Management; Director, M.B.A. High Technology Program; B.S., Suffolk University; M.A., University of Connecticut; Ph.D., University of Southern California
- Boyd, James H.** (1976), Professor Emeritus of Accountancy and Information Management; B.B.A., Texas Christian University; M.S., Northeastern University; Ph.D., University of Texas, Austin; C.P.A., Texas

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Boyer, Don L.** (1988), Professor of Mechanical and Aerospace Engineering; B.S., Rensselaer Polytechnic Institute; Ph.D., Johns Hopkins University
- Boyer, Jay M.** (1976), Professor of English; B.A., Saint Louis University; M.A., Ph.D., State University of New York, Buffalo
- Boyes, William J.** (1974), Professor of Economics; B.S., Idaho State University; Ph.D., Claremont Graduate School
- Boyle, Bernard M.** (1969), Professor Emeritus of Architecture; B.Arch., University of Sydney (Australia); M.Arch., M.A., Ph.D., Yale University
- Brack, O M Jr.** (1973), Professor of English; B.A., M.A., Baylor University; Ph.D., University of Texas, Austin
- Brada, Josef C.** (1978), Professor of Economics; Director, International Business Studies; B.S., M.A., Tufts University; Ph.D., University of Minnesota, Twin Cities
- Bramlett-Solomon, Sharon** (1986), Associate Professor of Journalism and Mass Communication; B.A., M.A., Memphis State University; Ph.D., Indiana University, Bloomington
- Brandon, Tedd A.** (1981), Senior Research Professional, Bioengineering; Director, Animal Care Facility; B.S., University of California, Davis
- Brandt, Beverly K.** (1987), Professor of Design; B.F.A., University of Michigan; M.A., Michigan State University; Ph.D., Boston University
- Brandt, Elizabeth A.** (1974), Professor of Anthropology; B.A., Florida State University; M.A., Ph.D., Southern Methodist University
- Branstetter, Ellamae** (1967), Professor Emerita of Nursing; B.S., St. Louis University; M.P.H., University of Minnesota, Twin Cities; Ph.D., University of Chicago
- Braun, J. Jay** (1973), Professor of Psychology; B.A., University of Oregon; M.A., Ph.D., Ohio State University
- Braver, Sanford L.** (1970), Professor of Psychology; B.A., Wayne State University; Ph.D., University of Michigan
- Bray, Sandra** (1987), Associate Librarian, Technical Services Department; B.A., Ottawa University; M.L.S., Indiana University, Bloomington
- Brazel, Anthony J.** (1974), Professor of Geography; B.A., M.A., Rutgers, The State University of New Jersey; Ph.D., University of Michigan
- Breckenridge, Jack D.** (1962), Professor Emeritus of Art; B.S., University of Wisconsin, Milwaukee; M.F.A., University of Iowa
- Brem, Sarah Kate** (1999), Assistant Professor of Psychology in Education; A.B., University of Chicago; M.S., Ph.D., Northwestern University
- Bremner, Andrew** (1984), Professor of Mathematics and Statistics; Chair, Department of Mathematics and Statistics; B.A., M.A., University of Oxford (United Kingdom); Ph.D., University of Cambridge (United Kingdom)
- Brenenstuh, Daniel C.** (1978), Associate Professor of Management; B.S., M.B.A., Ohio University; M.S., St. Bonaventure University; D.B.A., Indiana University
- Brennan, Patrick** (1996), Professor of Law; Associate Dean for Academic Affairs and Research, College of Law; B.A., Yale University; M.A., University of Toronto; J.D., University of California, Berkeley
- Briggs, John M.** (1999), Associate Professor of Plant Biology; B.S., M.Sc., Pittsburg State University; Ph.D., University of Arkansas
- Briley, Lane D.** (1970), Associate Research Professional of Chemistry and Biochemistry; B.A., Arizona State University
- Brillhart, Barbara** (1996), Associate Professor of Nursing; B.S.N., M.S.N., California State University, Los Angeles; Ph.D., Texas Woman's University
- Brink, Jean R.** (1974), Professor of English; B.A., Northwestern University; M.A., Harvard University; Ph.D., University of Wisconsin, Madison
- Britton, Daniel R.** (1976), Professor of Art; B.F.A., M.F.A., University of Colorado
- Britton, David** (1987), Professor of Music; B.M., North Texas State University
- Broadley, Hugh T.** (1969), Professor Emeritus of Art; A.B., Park College; M.A., Yale University; Ph.D., New York University
- Brookey, Robert Alan** (2000), Assistant Professor of Communication; B.A., M.A., University of Arkansas; Ph.D., University of Minnesota
- Brooks, Daniel G.** (1981), Associate Professor of Supply Chain Management; Director, Executive M.B.A. Program; B.S., M.S., Colorado School of Mines; M.B.A., Ph.D., Indiana University, Bloomington
- Brooks, Talbot** (2001), Assistant Academic Professional of Geography; Network Administrator; B.S., Rochester Institute of Technology; M.S., Arizona State University
- Broome, Benjamin J.** (1999), Professor of Communication; B.A., University of Georgia; M.A., Ph.D., University of Kansas
- Brose, Marianna F.** (1963), Professor Emerita of English; B.A., College of William and Mary; Diploma, Royal Academy of Dramatic Art (United Kingdom); M.A., Arizona State University
- Brouwer, Daniel C.** (2000), Assistant Professor of Communication; B.Sc., Ohio University; M.A., Ph.D., Northwestern University
- Brown, Alan R.** (1968), Associate Professor of Education; B.A., M.A., California State University, Los Angeles; Ph.D., University of Texas, Austin
- Brown, Brent W.** (1972), Associate Professor of Public Affairs; B.A., Brigham Young University; M.A., Arizona State University; Ph.D., University of Illinois
- Brown, Claudia** (1998), Assistant Professor of Art; B.A., M.A., M.Phil., Ph.D., University of Kansas
- Brown, David E.** (1993), Adjunct Professor of Biology; B.A., San Jose State College
- Brown, Duane** (1950), Professor Emeritus of Chemistry and Biochemistry; B.S., Brigham Young University; Ph.D., Cornell University
- Brown, Jean C.** (1991), Clinical Associate Professor of Speech and Hearing Science; B.S., University of Montevallo; M.A., University of Tennessee; M.S.W., Arizona State University
- Brown, Stephen W.** (1974), Professor of Marketing; Edward M. Carson Chair of Services Marketing; Director, Center for Services Leadership; B.S., M.B.A., Ph.D., Arizona State University
- Brown, Theodore M.** (1963), Professor Emeritus of Chemistry and Biochemistry; B.S., M.S., University of Toledo; Ph.D., Iowa State University
- Brown, Theresa** (2000), Faculty Associate of Nursing; B.S.N., Arizona State University
- Brown, William A.** (1999), Assistant Professor of Recreation Management and Tourism; B.S., Northeastern University; M.A., Ph.D., Claremont Graduate University
- Bruhn, Karen** (1998), Lecturer of the Barrett Honors College; B.A., City University of New York; M.A., Ph.D., University of North Carolina, Chapel Hill

Brune, Daniel C. (1986), Associate Research Professional of Chemistry and Biochemistry; B.A., University of Kansas; Ph.D., Indiana University, Bloomington

Bruner, May I. (1961), Professor Emerita of Nursing; B.S., University of Hawaii, Honolulu; M.S., University of Colorado

Brunning, Dennis R. (1984), Librarian, Collection Development; B.A., University of Iowa; M.A., M.L.S., University of Illinois

Brunson-Hadley, Judy L. (1998), Adjunct Professor of Anthropology; B.A., M.A., Ph.D., Arizona State University

Brush, Thomas A. (1998), Associate Professor of Educational Technology; Academic Program Leader, Educational Technology; B.A., M.S., State University of New York, Potsdam; Ph.D., Indiana University

Bryan, Harvey (1999), Associate Professor of Architecture; B.Arch., Arizona State University; M.Arch., M.Sc., Ph.D., University of California, Berkeley

Bryan, Karen M. (1997), Assistant Professor of Music; Associate Director, Undergraduate Studies, School of Music; B.M., Georgia State University, Atlanta; M.A., University of Georgia, Atlanta; Ph.D., Indiana University, Bloomington

Bryan, Tanis (1992), Adjunct Professor of Speech and Hearing Science; B.S., M.A., Ph.D., Northwestern University

Bryant, Edwin H. (2000), Adjunct Professor of Biology; A.B., California State University; Ph.D., University of Kansas

Bryant, Fred O. (1950), Professor Emeritus of Exercise Science and Physical Education; B.S., Springfield College; M.S., University of Illinois; Ed.D., Arizona State University

Brzuzy, Stephanie (1995), Associate Professor of Social Work; B.S.W., Indiana University, Bloomington; M.S.W., University of Illinois, Urbana-Champaign; Ph.D., Ohio State University

Buckingham, Willis J. (1969), Professor Emeritus of English; A.B., Harvard University; M.S., University of Wisconsin, Madison; Ph.D., Indiana University

Buksbaum, Rebecca (2000), Faculty Associate of Nursing; B.A., University of Illinois; M.S.N., University of Hartford, West Hartford

Buley, Jerry L. (1973), Associate Professor of Communication; B.A., University of Colorado; M.A., Michigan State University; Ph.D., Florida State University

Burdette, Walter E. (1956), Professor Emeritus of Technology; B.S., M.S., Kansas State College of Pittsburg; Ed.D., University of Missouri, Columbia

Burdick, Richard K. (1976), Professor of Statistics; B.S., University of Wyoming; M.S., Ph.D., Texas A&M University

Burg, B. Richard (1967), Professor of History; B.A., University of Colorado; M.A., Western State College of Colorado; Ph.D., University of Colorado

Burgess, Paul L. (1969), Professor of Economics; B.A., Ph.D., University of Colorado

Burgoyne, Edward E. (1951), Professor Emeritus of Chemistry and Biochemistry; B.S., Utah State University; M.S., Ph.D., University of Wisconsin, Madison

Burk, Karl W. (1949), Professor Emeritus of Technology; B.A., M.A., Arizona State University; Ed.D., Bradley University

Burke, Janet M. (1996), Assistant Administrative Professional, the Barrett Honors College; Associate Dean, the Barrett Honors College; B.A., Wells College; M.A., Syracuse University; Ph.D., Arizona State University

Burke, Rebecca J. (1981), Librarian; Head, Government Documents/Map Collection; B.A., San Jose State University; M.L.S., University of Arizona

Burke, William F. Jr. (1977), Professor of Microbiology; B.A., University of Dallas; M.S., North Texas State University; Ph.D., Arizona State University

Burnette, Wendell (2000), Assistant Professor of Architecture

Burnham, Maralou E. (1988), Assistant Research Scientist, Center for Advanced Research in Transportation; B.A., University of Southern California; M.A., Ph.D., Arizona State University

Burns, Elizabeth K. (1983), Professor of Geography; Director, Center for Advanced Transportation Research; B.A., Smith College; M.A., Ph.D., University of California, Berkeley

Burrows, Veronica (1986), Associate Professor of Chemical Engineering; B.S., Drexel University; Ph.D., Princeton University

Burstein, David (1982), Professor of Physics and Astronomy; B.A., Wesleyan University; Ph.D., University of California, Santa Cruz

Burstein, Karen (1998), Lecturer of Curriculum and Instruction; B.A.E., M.A., Ph.D., Arizona State University

Burt, Donald M. (1974), Professor of Geological Sciences; A.B., Princeton University; A.M., Ph.D., Harvard University

Burton, Dora (1976), Assistant Professor of Russian; M.D., First Leningrad and Kazan Medical Institute (Russia); M.A., Ph.D., University of Washington

Burton, Foster M. (1969), Professor Emeritus of Construction; B.S.C.E., B.S., Carnegie Institute of Technology; M.B.A., New York University; Ph.D., University of Pittsburgh



Buseck, Peter R.
(1963)

Regents' Professor of Chemistry and Biochemistry and Geological Sciences; B.A., Antioch College; M.A., Ph.D., Columbia University

Bush, Jeffrey E. (1997), Associate Professor of Music Education; B.M., M.M., Northern Illinois University, De Kalb; Ph.D., University of Arizona

Bustoz, Joaquin (1975), Professor of Mathematics and Statistics; Director, SUMS Institute; B.A., M.A., Ph.D., Arizona State University

Butler, Jay Q. (1972), Associate Professor of Real Estate; Director, Arizona Real Estate Center; B.B.A., M.B.A., University of New Mexico; Ph.D., University of Washington

Butler-Diaz, Jacqueline (1997), Adjunct Professor of Anthropology; B.A., B.S., M.A., Arizona State University

C

Cabianca, William A. (1967), Professor Emeritus of Counselor Education; B.Ed., Gonzaga University; M.Ed., Ph.D., Washington State University

Cady, Linell E. (1983), Professor of Religious Studies; Interim Dean, College of Liberal Arts and Sciences; B.A., Newton College; M.T.S., Th.D., Harvard University

Cafarella, Robert J. (1991), Faculty Associate of Planning and Landscape Architecture; B.S., Northeastern University; M.U.P., New York University

Caicco, Gregory (2000), Assistant Professor of Architecture; B.Arch., Carleton University (Canada); M.Phil., University of Cambridge (United Kingdom); Ph.D., McGill University (Canada)

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Calhoun, Ronald J.** (2001), Assistant Professor of Mechanical and Aerospace Engineering; B.S., M.S., Ph.D., Stanford University
- Calkins, Jerry M.** (1992), Adjunct Professor of Bioengineering; B.S.Ch.E., M.S.Ch.E., University of Wyoming; Ph.D., University of Maryland, College Park; M.D., University of Arizona
- Callarman, Thomas E.** (1980), Associate Professor of Management; Director, Institute for Manufacturing Enterprise Systems; B.B.A., West Texas State University; M.B.A., Arizona State University; Ph.D., Purdue University
- Calleros, Charles R.** (1980), Professor of Law; B.A., University of California, Santa Cruz; J.D., University of California, Davis
- Cam, Hasan** (2001), Assistant Professor of Computer Science and Engineering; B.S., M.S., Istanbul Technical University (Turkey); Ph.D., Purdue University
- Cameron, Theresa** (1997), Associate Professor of Planning and Landscape Architecture; B.A., State University of New York, Buffalo; M.U.P., University of Michigan; D.Des., Harvard University
- Campbell, Gary L.** (1997), Fine Arts Specialist; B.A., M.F.A., University of Southern California
- Campbell, Heather E.** (1991), Associate Professor of Public Affairs; B.A., University of California, San Diego; M.Phil., Ph.D., Carnegie Mellon University
- Campos-Outcalt, Douglas** (1998), Adjunct Professor of Anthropology; B.S., M.P.A., Arizona State University; M.D., University of Arizona
- Canary, Daniel J.** (1999), Professor of Communication; B.A., California State University, Fullerton; M.A., California State University, Fullerton; M.A., Ph.D., University of Southern California
- Candan, Kasim Selcuk** (1997), Assistant Professor of Computer Science and Engineering; B.S., Bilkent University (Turkey); Ph.D., University of Maryland, College Park
- Candela, Giuseppe** (1995), Associate Professor of Italian; M.A., Ph.D., University of Wisconsin
- Candelaria, Cordelia C.** (1992), Professor of English and Chicana and Chicano Studies; Chair, Department of Chicana and Chicano Studies; B.A., Fort Lewis College; M.A., Ph.D., University of Notre Dame
- Canovas, Frédéric** (1999), Assistant Professor of French; Diplôme d'études Universitaires Générales de Lettres Modernes, Maîtrise de Lettres Modernes, Diplôme d'études Approfondies de Lettres Modernes, Lyon University (France); Ph.D., University of Oregon
- Canright, James E.** (1964), Professor Emeritus of Plant Biology; B.A., Miami University; A.M., Ph.D., Harvard University
- Capco, David G.** (1984), Professor of Biology; B.S., Edinboro State College; M.S., University of Houston; Ph.D., University of Texas, Austin
- Cardy, Robert L.** (1988), Professor of Management; B.S., Central Michigan University; Ph.D., Virginia Polytechnic Institute and State University
- Carlsen, Paul A.** (1978), Professor Emeritus of Technology; B.A.E., M.N.S., Ed.D., Arizona State University
- Carlson, A. Cheree** (1988), Professor of Communication; B.A., M.A., Colorado State University; Ph.D., University of Southern California
- Carlson, Ingeborg L.** (1964), Professor Emerita of German; Abitur, Hölderlin School (Germany); Vorsemester and cand.phil., University of Heidelberg (Germany); Dr. phil., University of Erlangen-Nuremberg (Germany)
- Carlson, Marilyn P.** (1995), Associate Professor of Mathematics and Statistics; B.S., Central Missouri State University; M.S., Ph.D., University of Kansas
- Carlson, Ron** (1986), Professor of English; B.A., M.A., University of Utah
- Carlyle, Matthew W.** (1997), Assistant Professor of Industrial Engineering; B.S., Georgia Institute of Technology; Ph.D., Stanford University
- Carney, James D.** (1967), Professor Emeritus of Philosophy; B.A. equivalent, Northern Baptist Theological Seminary; M.A., Roosevelt University; Ph.D., University of Nebraska, Lincoln
- Carpenter, Ellon D.** (1988), Associate Professor of Music; B.A., Denison University; M.A., Kent State University; Ph.D., University of Pennsylvania
- Carpenter, Ray W.** (1981), Professor, Center for Solid State Science; B.S., M.S., Ph.D., University of California, Berkeley
- Carpio, Myla Vicenti** (1967), Assistant Professor of American Indian Studies; B.A.E., University of New Mexico; M.A., Arizona State University
- Carr, Christopher** (1985), Professor of Anthropology; B.A., University of Illinois; M.A., Ph.D., University of Michigan
- Carrington, Jane M.** (1995), Faculty Associate of Nursing; B.S.N., Arizona State University; M.S.N., University of Pennsylvania
- Carroll, Kevin K.** (1975), Associate Professor of History; B.A., Canisius College; M.A., Ph.D., Harvard University
- Carroll, Steven** (1985), Professor Emeritus of Biology; B.S., Tulane University; M.S., Oregon State University; Ph.D., University of Oregon
- Carter, Joseph R.** (1991), Avnet Professor of Supply Chain Management; Chair, Department of Supply Chain Management; B.S., M.B.A., Northeastern University; Ph.D., Boston University
- Carter, Phillip L.** (1995), Professor of Supply Chain Management; Harold E. Fearon Chair, Purchasing Management; Director, Center for Advanced Purchasing Studies; B.S.E.E., Rose-Hulman Institute of Technology; M.B.A., D.B.A., Indiana University
- Carver, George L.** (1965), Professor Emeritus of Classical Languages; B.A., M.A., University of Texas, Austin; S.T.B., Saint Mary's Seminary; Ph.D., Saint Louis University
- Casanova, Ursula** (1987), Professor Emerita of Educational Leadership and Policy Studies; B.A., Hunter College; M.S., State University of New York, Brockport; Ph.D., Arizona State University
- Casavantes, Michael D.** (1990), Lecturer of Journalism and Mass Communication; B.A., University of Texas, El Paso; M.A., New Mexico State University
- Case, James L.** (1969), Professor Emeritus of Speech and Hearing Science; B.S., Weber State College; M.S., Ph.D., University of Utah
- Casey, Katherine Marie** (2000), Faculty Associate of Nursing; B.S., University of Wisconsin; M.S., Arizona State University
- Cashman, Holly** (2001), Assistant Professor of Spanish; B.A., Hood College; M.A., Ph.D., University of Michigan, Ann Arbor
- Cassidy, Virginia L.** (1988), Librarian Emerita; A.B., Oberlin College; M.L.S., Pratt Institute
- Castaneda, Eddie** (1990), Associate Professor of Psychology; B.S., M.A., University of Texas, El Paso; Ph.D., University of Michigan
- Castle, Gregory** (1992), Associate Professor of English; B.A., California State University, Fresno; M.A., Ph.D., University of California, Los Angeles

- Castro, Felipe G.** (1991), Professor of Psychology; B.A., University of California, Santa Barbara; M.S.W., University of California, Los Angeles; Ph.D., University of Washington
- Caudle, M. Tyler** (1997), Assistant Professor of Chemistry and Biochemistry; B.S., University of North Carolina, Charlotte; Ph.D., Duke University
- Cavaliere, William A.** (1946), Professor Emeritus of Technology; B.A., M.A., Arizona State University
- Cavanaugh, Carolyn J.** (1996), Academic Associate of Psychology; A.B., Duke University; Ph.D., Arizona State University
- Cavanaugh, Ellen May** (1995), Faculty Associate of Nursing; B.S.N., University of Phoenix; M.S., University of Arizona
- Cavender, Gray** (1977), Professor of Justice Studies; B.S., University of Tennessee; M.S., Middle Tennessee State University; Ph.D., Florida State University; J.D., University of Tennessee, Knoxville
- Cavinato, Joseph L.** (2000), Adjunct Professor of Supply Chain Management; B.S., B.A., M.B.A., American University; Ph.D., Pennsylvania State University
- Cayer, N. Joseph** (1980), Professor of Public Affairs; B.A., M.P.A., University of Colorado; Ph.D., University of Massachusetts, Amherst
- Cervený, Randall S.** (1986), Professor of Geography; B.S., M.A., Ph.D., University of Nebraska, Lincoln
- Cesarotti, Evelyn L.** (1992), Associate Professor of Nursing; B.S.N., University of West Florida; M.S., Ph.D., University of Arizona
- Cesta, John R.** (1975), Associate Professor of Finance; B.S., Capital University; M.B.A., Ph.D., Florida State University
- Cevette, Michael J.** (1989), Adjunct Professor of Speech and Hearing Science; B.A., University of Nevada, Las Vegas; M.S., Utah State University; Ph.D., University of Utah
- Chade, Hector A.** (1997), Assistant Professor of Economics; Licenciado en Economía, National University of Cuyo (Argentina); M.S., Ph.D., University of Illinois, Urbana-Champaign
- Chakrabarti, Chaitali** (1990), Associate Professor of Electrical Engineering; B.Tech., Indian Institute of Technology (India); M.S., Ph.D., University of Maryland, College Park
- Chamberland, Bertrand L.** (1995), Adjunct Professor of Chemistry and Biochemistry; B.A., St. Anselm's College; Ph.D., University of Pennsylvania
- Chamberlin, Ralph V.** (1986), Professor of Physics and Astronomy; B.S., University of Utah; M.S., Ph.D., University of California, Los Angeles
- Chambers, Anthony** (1998), Professor of Japanese; B.A., Pomona College; M.A., Stanford University; Ph.D., University of Michigan
- Chance, John K.** (1987), Professor of Anthropology; Chair, Department of Anthropology; A.B., University of Pennsylvania; A.M., Ph.D., University of Illinois
- Chancy, Myriam** (1997), Associate Professor of English; B.A., University of Manitoba (Canada); M.A., Dalhousie University (Canada); Ph.D., University of Iowa
- Chandler, Douglas E.** (1980), Professor of Biology; B.S., University of Rochester; M.A., Johns Hopkins University; Ph.D., University of California, San Francisco
- Chang, Yung** (1996), Assistant Professor of Microbiology; M.D., Beijing Medical College (China); Ph.D., University of Iowa
- Chaparian, Michael G.** (2000), Adjunct Professor of Plant Biology; B.S., Michigan Technological University; Ph.D., Wayne State University
- Chapman, Jeffrey** (1999), Professor of Public Affairs; Director, School of Public Affairs; A.B., Occidental College; M.A., Ph.D., University of California, Berkeley
- Chapsky, Lars** (1998), Assistant Professor of Engineering; B.A., Ph.D., University of California, Berkeley
- Chapuis, Jean-Charles** (1991), Associate Research Professional, Cancer Research Institute; B.S., Ph.D., University of Lausanne (Switzerland)
- Chartier, George M.** (1971), Professor Emeritus of Psychology; B.S., University of Illinois; M.A., Ph.D., University of Oregon
- Chase, Marcelle P.** (1983), Law Librarian Emeritus; M.L.S., Ball State University; J.D., University of Brussels (Belgium)
- Chasey, Allan D.** (1995), Associate Professor of Construction; B.S., Arizona State University; M.S., Air Force Institute of Technology; Ph.D., Virginia Polytechnic Institute and State University
- Chasey, Eugene F.** (1965), Professor Emeritus of Education; B.S., Northwestern State College; M.A., Colorado State College; Ed.D., University of Wyoming
- Chassin, Laurie** (1979), Professor of Psychology; B.A., Brown University; M.S., Ph.D., Columbia University
- Chatha, Karamvir** (2001), Assistant Professor of Computer Science and Engineering; B.S.E., University of Bombay (India); M.S., Ph.D., University of Cincinnati
- Chattopadhyay, Aditi** (1990), Professor of Mechanical and Aerospace Engineering; M.S., Ph.D., Georgia Institute of Technology
- Chaudhuri, Joyotpaul** (1985), Professor of Political Science; B.A., Central State University, Oklahoma; M.A., Ph.D., University of Oklahoma
- Chawla, Nikhilesh** (2000), Assistant Professor of Materials Engineering; B.S., New Mexico Institute of Mining and Technology; M.S., University of Tennessee, Knoxville; Ph.D., University of Michigan, Ann Arbor
- Chen, Kang Ping** (1991), Associate Professor of Engineering; B.S., Peking University (China); Ph.D., University of Minnesota, Twin Cities
- Chen, Nai-Kuang** (1998), Assistant Professor of Computer Information Systems; B.B.A., Soochow University (Taiwan); M.S., George Washington University; Ph.D., University of Connecticut
- Chen, Stanley S.** (1967), Professor Emeritus of Engineering; Diploma, Taipei Institute of Technology (Taiwan); M.S., Ohio University; Ph.D., University of Wisconsin, Madison
- Chen, Yinong** (2001), Lecturer of Computer Science and Engineering; B.S., M.S., Chongqing University (China); Ph.D., University of Karlsruhe (Germany)
- Chenoweth, Timothy** (1996), Assistant Professor of Computer Information Systems; B.S., U.S. Coast Guard Academy; M.B.A., Ph.D., Washington State University
- Childress, Nancy** (1991), Associate Professor of Mathematics and Statistics; B.S., B.S.Ed., M.S., Ph.D., Ohio State University
- Chilton, Leslie Anne** (1998), Academic Associate, Division of Undergraduate Academic Services; Coordinator, Student Success Curriculum; B.A., M.A., Ph.D., Arizona State University
- Chin, Michelle** (2001), Assistant Professor of Political Science; B.S., Andrews University; M.A., Ph.D., Texas A&M University
- Chizmeshya, Andrew V. G.** (1994), Associate Research Scientist, Center for Solid State Science; B.S., University of Toronto (Canada); M.Sc., Ph.D., Queen's University, Kingston (Canada)
- Chlistowa, Xenia** (1980), Professor Emerita of Dance

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Choi, Hyaewool (1998), Assistant Professor of Korean; B.A., M.A., Yonsei University (South Korea); Ph.D., State University of New York, Buffalo

Choi, Jaehoon (1989), Assistant Research Engineer, Telecommunication Research Center; B.S., Han-Yang University (South Korea); M.S., Ph.D., Ohio State University

Choi, Kwan-Yiu (1987), Assistant Research Scientist, Center for Solid State Electronics Research; B.S., The Chinese University of Hong Kong (China); M.S., Rutgers, The State University of New Jersey; Ph.D., Arizona State University

Choi, Thomas (1998), Associate Professor of Management and Supply Chain Management; A.B., University of California, Berkeley; Ph.D., University of Michigan

Chou, Ju-Hsi (1975), Professor Emeritus of Art; B.A., University of Kentucky; M.A., Ph.D., Princeton University

Christensen, George (1975), Professor Emeritus of Architecture; B.Arch., Illinois Institute of Technology

Christensen, Philip R. (1987), Korrick Professor of Geological Sciences; B.S., M.S., Ph.D., University of California, Los Angeles

Christian, Charles W. (1985), Professor of Accountancy and Information Management; B.B.A., University of Georgia; J.D., University of Virginia; Ph.D., University of Georgia

Christie, James F. (1988), Professor of Curriculum and Instruction; B.A., University of California, Berkeley; M.A., Syracuse University; Ph.D., Claremont Graduate School

Christine, Carol J. (1998), Clinical Assistant Professor of Curriculum and Instruction; B.A., M.A., Arizona State University; Ph.D., University of Arizona

Christopher, F. Scott (1986), Professor of Family and Human Development; B.S., M.S., University of Nebraska; Ph.D., Oregon State University

Chubrich, Robert E. (1971), Professor Emeritus of Speech and Hearing Science; B.A., Grinnell College; M.A., Indiana University, Bloomington; Ph.D., State University of New York, Buffalo

Church, Kathleen K. (1969), Professor of Biology; Vice Provost, Office of the Senior Vice President and Provost; B.S., M.A., University of Utah; Ph.D., University of California, Berkeley



Cialdini, Robert B.
(1971)
Regents' Professor of Psychology; B.S., University of Wisconsin, Milwaukee; M.A., Ph.D., University of North Carolina, Chapel Hill

Cichacz, Zbigniew A. (1989), Associate Research Professor, Cancer Research Institute; M.Sc., Ph.D., Institute of Organic and Physical Chemistry (Poland)

Claiborn, Charles D. (1990), Professor of Counseling Psychology and Counselor Education; A.B., University of Missouri; M.A., Ohio State University; Ph.D., University of Missouri



Clark, Geoffrey A.
(1971)
Regents' Professor of Anthropology; B.A., M.A., University of Arizona; Ph.D., University of Chicago

Clark, James C. (1978), Associate Research Professional of Chemistry and Biochemistry

Clark, Robert C. (1981), Professor Emeritus of Music; B.Mus., Central Methodist College; S.M.M., Union Theological Seminary

Clark, William Dennis (1976), Associate Professor of Plant Biology; B.A., Sacramento State College; Ph.D., University of Texas, Austin

Clay, J. Eugene (1993), Associate Professor of Religious Studies; A.B., A.M., Ph.D., University of Chicago

Clewlow, Paul J. (1988), Faculty Research Associate, Cancer Research Institute; B.S., University of Leicester (United Kingdom); Ph.D., University College (United Kingdom)

Clinton, Robert N. (2001), Professor of Law; B.A., University of Michigan; J.D., University of Chicago

Clinton, Steven R. (1999), Assistant Professor of Supply Chain Management; B.A., University of Wisconsin, Madison; M.I.B.S., University of South Carolina; M.S., University of Wisconsin, Milwaukee; Ph.D., Michigan State University

Clothier, Ronald R. (1955), Professor Emeritus of Biology; A.B., Fresno State College; M.A., Montana State University; Ph.D., University of New Mexico

Cluff, Gordon L. (1963), Professor Emeritus of Speech and Hearing Science; B.A., Arizona State University; M.S., Ph.D., Southern Illinois University

Cobas, José A. (1975), Professor of Sociology; B.A., Maryville College; M.A., University of Tennessee, Knoxville; Ph.D., University of Texas, Austin

Cocchiarella, Martha (1998), Lecturer of Curriculum and Instruction; B.A., M.Ed., Ph.D., Arizona State University

Cochran, Douglas (1989), Associate Professor of Electrical Engineering; M.A., University of California, San Diego; Ph.D., Harvard University

Cochran, Jeffery K. (1984), Professor of Industrial Engineering; Associate Chair, Department of Industrial Engineering; B.S.E., M.S.N.E., M.S.I.E., Ph.D., Purdue University

Cocke, Robert D. (1983), Professor of Art; B.F.A., University of Arizona; M.F.A., University of Iowa

Codell, Julie F. (1991), Professor of Art; A.B., Vassar College; M.F.A., University of Michigan; M.F.A., Ph.D., Indiana University

Coghlan, William A. (1990), Adjunct Associate Professor of Chemical Engineering; B.S., Montana College of Mineral Science and Technology; M.S., Ph.D., Stanford University

Cogley, Timothy (1999), Associate Professor of Economics; A.B., Ph.D., University of California, Berkeley

Cohen, Herbert G. (1978), Associate Professor of Curriculum and Instruction; B.S., Muhlenberg College; M.A., Hofstra University; Ph.D., University of Iowa

Cohen, Stewart M. (1989), Professor of Philosophy; B.A., Wayne State University; M.A., University of California, Santa Barbara; Ph.D., University of Arizona

Cohn, Sanford J. (1979), Associate Professor of Curriculum and Instruction; B.A., M.Ed., Ph.D., Johns Hopkins University

Colbourn, Charles J. (2001), Professor of Computer Science and Engineering; Chair, Department of Computer Science and Engineering; B.Sc., University of Toronto (Canada); M.Math, University of Waterloo (Canada); Ph.D., University of Toronto (Canada)

Colby, Arthur L. (1965), Professor Emeritus of English; B.A., University of Massachusetts, Amherst; M.A., Ph.D., University of North Carolina, Chapel Hill

Cole, V. Scott (1995), Faculty Associate of Construction; B.S., Arizona State University; M.S., Central Michigan University

Coles, Jeffrey L. (1994), Professor of Finance; B.A. Pomona College; Ph.D., Stanford University

Colina, Sonia (1997), Assistant Professor of Spanish; B.A., University of Compostela (Spain); M.A., Southern Illinois University, Carbondale; M.A., State University of New York, Binghamton; Ph.D., University of Illinois, Urbana-Champaign

Collins, Daniel L. (1989), Associate Professor of Art; B.A., University of California, Davis; M.A., Stanford University; M.F.A., University of California, Los Angeles

Collins, James P. (1975), Professor of Biology; Chair, Department of Biology; B.S., Manhattan College; M.S., Ph.D., University of Michigan

Collofello, James S. (1979), Professor of Computer Science and Engineering; B.S., M.S., Northern Illinois University; Ph.D., Northwestern University

Comeaux, Malcolm L. (1969), Professor Emeritus of Geography; B.A., University of Southwestern Louisiana; M.A., Southern Illinois University, Carbondale; Ph.D., Louisiana State University, Baton Rouge

Comfort, Joseph R. (1981), Professor of Physics and Astronomy; A.B., Ripon College; M.S., Ph.D., Yale University

Comprix, Joseph (2000), Assistant Professor of Accountancy and Information Management; B.S., Ohio State University; Ph.D., University of Illinois, Urbana-Champaign

Congdon, Justin D. (2000), Adjunct Professor of Biology; B.S., M.S., California State Polytechnic University; Ph.D., Arizona State University

Conrad, Cheryl D. (1997), Assistant Professor of Psychology; B.S., University of California, Irvine; Ph.D., University of Illinois, Urbana-Champaign

Conrow, Jane A. (1968), Associate Dean, Library Services; B.A., M.L.S., Indiana University, Bloomington

Cook, Edward A. (1985), Associate Professor of Planning and Landscape Architecture; B.S.L.A., Washington State University; M.L.A., Utah State University



Cook, Jeffrey (1961)
Regents' Professor of Architecture; B.Arch., University of Manitoba (Canada); M.Arch., Pratt Institute

Cook, Paul (1987), Senior Lecturer of English; B.A., Northern Arizona University; M.A., Arizona State University; Ph.D., University of Utah

Cook, Phil A. (1963), Professor Emeritus of Education; B.A., Southwestern Oklahoma State College; M.A., Colorado State College; Ed.D., University of Kansas

Cook, Suzanne M. (1974), Associate Professor of Management; B.B.A., M.B.A., D.B.A., Texas Tech University

Cooper, Allene (1997), Senior Lecturer of English; B.A., M.A., University of Utah; Ph.D., Arizona State University

Coor, Lattie F. (1990), Professor of Public Affairs; President of the University; A.B., Northern Arizona University; M.A., Ph.D., Washington University

Corder, Brice W. (1971), Professor Emeritus of Exercise Science and Physical Education; B.A., Lynchburg College; M.Ed., Ed.D., Temple University

Corey, Constance H. (1973), Librarian Emerita; B.A., Denison University; M.L.S., University of Arizona; M.B.A., Arizona State University

Corey, Frederick C. (1987), Associate Professor of Communication; Associate Dean, College of Public Programs; B.S., Central Michigan University; M.S., Southern Illinois University, Carbondale; Ph.D., University of Arizona

Corman, Steven R. (1987), Associate Professor of Communication; B.S., Illinois State University; M.A., Ph.D., University of Illinois

Corse, Taylor (1989), Associate Professor of English; B.A., Florida State University; M.A., University of Michigan; Ph.D., University of Florida

Cosand, Walter A. (1976), Professor of Music; B.M., M.M., University of Rochester

Cota-Cárdenas, Margarita (1981), Associate Professor of Spanish; B.A., California State University, Turlock; M.A., University of California, Davis; Ph.D., University of Arizona

Couch, Sanford C. (1962), Professor of Russian; B.A., M.A., Ph.D., University of Wisconsin, Madison

Coudert, Allison (1989), Professor of Religious Studies; B.A., Vassar College; Ph.D., University of London (United Kingdom)

Coudroglou, Alike (1971), Professor of Social Work; B.A., College of Saint Benedict; M.S.W., University of Minnesota, Twin Cities; D.S.W., Columbia University

Coursen, Jerry (1987), Adjunct Associate Professor of Bioengineering; B.S., M.S., Arizona State University; Ph.D., University of Arizona

Cowgill, George L. (1990), Professor of Anthropology; A.M., University of Chicago; Ph.D., Harvard University

Cowley, Anne P. (1983), Professor of Physics and Astronomy; B.A., Wellesley College; M.S., Ph.D., University of Michigan



Cowley, John M. (1969)
Regents' and Galvin Professor Emeritus of Physics and Astronomy; B.S., M.S., D.Sc., University of Adelaide (Australia); Ph.D., Massachusetts Institute of Technology

Cox, Ronnie R. (1987), Clinical Associate Professor of African American Studies and Military Science; B.S., Fayetteville University; M.S., University of North Carolina; Ph.D., University of Tennessee

Craft, Elizabeth H. (1982), Administrative Professional, College of Extended Education; Director, Distance Learning and Technology, College of Extended Education; B.F.A., Ohio University; M.A., Arizona State University

Craft, John E. (1973), Professor of Journalism and Mass Communication; B.F.A., M.A., Ph.D., Ohio University

Crafts-Brandner, Steven (1996), Adjunct Faculty of Plant Biology; B.S., Western Kentucky University; M.S., Ph.D., University of Illinois

Crawford, John E. (1980), Professor Emeritus of Communication; B.A., Nebraska Wesleyan University; M.A., Sacramento State College; Ph.D., University of Southern California

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Crawford, W. Scott, Lt. Col. (2000), Professor of Military Science; Chair, Department of Military Science; B.S., United States Military Academy, West Point; M.S., Stanford University

Creath, J. Richard (1974), Professor of Philosophy; B.A., Knox College; M.A. (Philosophy), M.A. (History and Philosophy of Science), Ph.D., University of Pittsburgh

Creighton, Judith M. (1967), Professor Emerita of Family and Human Development; B.S., University of Arizona; M.S., M.C., Arizona State University; Ph.D., University of Arizona

Crewe, Katherine (1998), Assistant Professor of Planning and Landscape Architecture; B.A., Rhodes University (South Africa); M.L.A., University of California, Berkeley; Ph.D., University of Massachusetts, Amherst

Crittenden, W. Jackson (1988), Associate Professor of Political Science; B.A., Tufts University; M.Ed., Harvard University; D.Phil., University of Oxford (United Kingdom)

Croft, Lee B. (1973), Professor of Russian; B.S., Arizona State University; M.A., University of Arizona; Ph.D., Cornell University

Cronin, John R. (1966), Professor Emeritus of Chemistry and Biochemistry; B.A., College of Wooster; Ph.D., University of Colorado

Cronkite, Walter (1986), Professor of Journalism and Mass Communication

Cross, James (1986), Adjunct Professor of Art; B.A., University of California, Los Angeles

Crouch, Peter E. (1985), Professor of Electrical Engineering; Dean, College of Engineering and Applied Sciences; B.S., M.S., University of Warwick (United Kingdom); Ph.D., Harvard University

Crowder, Troy F. (1970), Professor Emeritus of Journalism and Mass Communication; B.A., University of South Dakota; M.A., University of Iowa

Crowe, Barbara J. (1981), Professor of Music; Director, Music Therapy; B.M., M.M., Michigan State University

Crowley, Sharon (1998), Professor of English; B.A., M.A., University of Nebraska, Lincoln; Ph.D., University of Northern Colorado

Crozier, Peter A. (1987), Senior Research Scientist, Center for Solid State Science, B.Sc., Ph.D., University of Glasgow (United Kingdom)

Culbertson, Robert J. (1991), Associate Professor of Physics and Astronomy; B.S., Kent State University; Ph.D., Pennsylvania State University, University Park

Cummings, Lawrence T. (1970), Professor Emeritus of Counselor Education; B.A., M.A., Arizona State University; Ed.D., University of California, Los Angeles

Curran, Mark (1968), Professor Emeritus of Spanish and Portuguese; B.S., Rockhurst College; Ph.D., Saint Louis University

Cutler, Lorraine M. (1991), Associate Professor of Design; Associate Dean, College of Architecture and Environmental Design; B.A., B.F.A., Arizona State University; M.A., University of Phoenix

Czygrinow, Andrzej M. (1999), Assistant Professor of Mathematics and Statistics; M.S., Adam Mickiewicz University (Poland); M.S., Ph.D., Emory University

D

D'Andrea, Frank L. (1972), Professor Emeritus of Music; B.A., M.A., Ed.D., Columbia University

D'Angelo, Frank J. (1970), Professor Emeritus of English; B.S., Loyola University, New Orleans; M.A., Tulane University; Ph.D., University of Nebraska, Lincoln

Daane, Calvin J. (1963), Professor Emeritus of Counselor Education; B.S., University of Wisconsin, Madison; M.A., Columbia University; Ed.D., Indiana University, Bloomington

Dagger, Richard K. (1976), Professor of Political Science; B.A., University of Missouri, St. Louis; Ph.D., University of Minnesota, Twin Cities

Dahl, Jeannine (1989), Professor Emerita of Nursing; B.S., University of Kansas; M.A., Ed.D., University of Northern Colorado

Dahl, Richard C. (1966), Professor Emeritus of Law; B.A., B.L.S., University of California, Berkeley; J.D., Catholic University of America

Daley, J. Michael (1978), Professor of Social Work; B.S., Spring Hill College; M.S.W., Saint Louis University; M.S., University of Pittsburgh; Ph.D., Tulane University

Dagleish, Donald D. (1962), Professor Emeritus of Military Science; B.A., Carleton College; M.A., Columbia University; Ph.D., University of Colorado

Dallyn, Selwyn L. (1983), Clinical Professor of Law; B.A., Graceland College; J.D., University of Iowa

Dalton, Kevin Andrew (1994), Senior Lecturer of the Barrett Honors College; B.A., Columbia University; M.Phil., University of Oxford (United Kingdom); Ph.D., University of Virginia

Damrel, David W. (2000), Assistant Professor of Religious Studies; B.A., B.J., M.A., University of Texas, Austin; Ph.D., Duke University

Daniel, Norman E. (1970), Professor Emeritus of Supply Chain Management; B.S., M.S., University of Tennessee, Knoxville; Ph.D., Indiana University

Dantico, Marilyn (1981), Associate Professor of Political Science; B.A., University of Illinois; M.A., Ph.D., Florida State University

Danzig, Arnold B. (2001), Associate Professor of Educational Leadership and Policy Studies; B.A., State University of New York; M.A., Ph.D., University of Maryland

Darling, J. Andrew (2001), Adjunct Professor of Anthropology; B.A., Swarthmore College; M.A., Ph.D., University of Michigan

Darst, Paul W. (1976), Professor of Exercise Science and Physical Education; B.S., M.S., University of Akron; Ph.D., Ohio State University

Dasgupta, Partha (1991), Associate Professor of Computer Science and Engineering; B.Tech., M.Tech., Indian Institute of Technology (India); Ph.D., State University of New York, Stony Brook

Datta, Manjira (1995), Associate Professor of Economics; B.A., M.A., Jadavpur University (India); Ph.D., Cornell University

Dauber, M. Robert (1990), Clinical Professor of Law; B.A., University of California, Berkeley; J.D., Arizona State University

Dauten, Joel J. (1960), Professor Emeritus of Finance; B.S., M.S., Washington University; Ph.D., University of Iowa

Davey, William G. (1976), Associate Professor of Communication; Director, International Programs; B.A., Pennsylvania State University; M.A., Columbia University; Ph.D., Indiana University, Bloomington

David, Julie Smith (1995), Associate Professor of Accountancy and Information Management; B.A., M.B.A., Ph.D., Michigan State University

Davidson, Elizabeth T. (1986), Research Professor of Biology; B.S., Mount Union College; M.S., Ph.D., Ohio State University

- Davidson, Joseph K.** (1973), Professor of Engineering; B.M.E., M.Sc., Ph.D., Ohio State University
- Davila, Eduardo** (1998), Lecturer of Management; B.S., University of Illinois, Urbana-Champaign; M.B.A., Arizona State University
- Davis, Frank S.** (1978), Senior Research Professional of Chemistry and Biochemistry; B.S.E., Arizona State University
- Davis, George R.** (1980), Professor Emeritus of Electrical Engineering; B.S.E.E., M.S., University of Illinois; Ph.D., University of Arizona
- Davis, Joseph M.** (1975), Associate Professor of Real Estate; B.S., University of South Carolina; M.B.A., Texas A&M University; Ph.D., University of Georgia
- Davis, Keith** (1958), Professor Emeritus of Management; B.B.A., M.B.A., University of Texas; Ph.D., Ohio State University
- Davis, Kirsten** (2001), Legal Writing Instructor; B.A., J.D., Ohio State University
- Davis, Mary C.** (1994), Associate Professor of Psychology; B.S., University of Idaho; M.S., Ph.D., University of Pittsburgh
- Davis, Olga Idriss** (1998), Assistant Professor of Communication; B.S., University of Redlands; M.A., Ph.D., University of Nebraska, Lincoln
- Davis, Robert E.** (1959), Professor Emeritus of Communication; B.A., M.A., Ph.D., University of Illinois
- Davis, Thomas J.** (1996), Professor of History; A.B., Fordham University; M.A., Ph.D., Columbia University; J.D., State University of New York, Buffalo
- Day, Thomas** (1995), Associate Professor of Plant Biology; B.S., Colorado State University; M.S., University of Idaho; Ph.D., Colorado State University
- de Jesús, Melinda L.** (1999), Assistant Professor of Asian Pacific American Studies; B.A., Lehigh University; M.A., University of York (United Kingdom); Ph.D., University of California, Santa Cruz
- de los Santos, Alfredo** (1999), Research Professor, Division of Educational Leadership and Policy Studies; B.A., M.L.S., Ph.D., University of Texas, Austin
- de Marneffe, Peter** (1989), Associate Professor of Philosophy; B.A., University of Massachusetts, Amherst; Ph.D., Harvard University
- Deach, Dorothy F.** (1967), Professor Emerita of Physical Education; B.S., M.S., University of Illinois; Ph.D., University of Michigan
- Deal, Clarice** (1996), Instructor of Portuguese; B.A., Organização Santa Marens de Educação e Cultura, São Paulo (Brazil); M.Ed., Arizona State University
- Dean, Arthur G.** (1971), Professor Emeritus of Industrial Engineering; B.A., M.S., Texas Tech University; Ph.D., Texas A&M University
- Debenport, Sylvia** (1978), Professor Emerita of Music; B.M.E., B.M., M.M., Indiana University, Bloomington
- DeFato, Rosalinda** (1970), Librarian; Team Leader, Hayden Reference Services; B.A., Saint John's University; M.L.S., University of California, Los Angeles
- DeGraftenreid, Don** (1990), Senior Research Administrator, Center for Advanced Research in Transportation; Manager, Technical Transportation Program; B.S.C.E., New Mexico State University
- DeGraw, Bette F.** (1986), Administrative Professional, College of Extended Education; Associate Professor of Public Affairs; Dean, College of Extended Education; Director, Downtown Center; B.A., Thiel College; M.S.W., Rutgers, The State University of New Jersey; D.P.A., Arizona State University
- DeLamotte, Eugenia** (1997), Associate Professor of English; A.B., Duke University; B.A., M.A., University of Oxford (United Kingdom); M.A., Ph.D., Harvard University
- Deli, Daniel N.** (2001), Assistant Professor of Finance; B.A., University of Illinois; M.S., University of Illinois; Ph.D., Arizona State University
- DeLibero, Joseph** (1996), Lecturer of Computer Science and Engineering; B.S., Iona College; M.S., Purdue University
- DeLorenzo, Lisa C.** (1998), Assistant Professor of Public Affairs; B.A., M.A.U.A., Saint Louis University; M.A., M.P.P.A., Ph.D., University of Missouri, St. Louis
- DeMars, James R.** (1981), Professor of Music; B.A., Macalester College; M.A., Ph.D., University of Minnesota, Twin Cities
- DeMassa, Thomas A.** (1966), Professor Emeritus of Electrical Engineering; B.S.E.E., M.S.E.E., Ph.D., University of Michigan
- Demeke, Howard J.** (1962), Professor Emeritus of Education; A.B., San Francisco State College; M.S., Ed.D., University of Southern California
- DeNardo, Dale** (1998), Assistant Professor of Biology; B.S., D.V.M., University of California, Davis; Ph.D., University of California, Berkeley
- Denhardt, Janet Vinzant** (1995), Professor of Public Affairs; B.A., Washington State University; M.P.A., D.P.A., University of Southern California
- Denhardt, Robert** (1999), Professor of Public Affairs; B.A., Western Kentucky University; M.A., Ph.D., University of Kentucky
- DeSerpa, Allan C.** (1975), Professor of Economics; B.A., University of Santa Clara; Ph.D., University of California, Santa Barbara
- Detrie, Thomas** (1984), Professor Emeritus of Design; B.F.A., M.F.A., Louisiana Tech University
- Deviche, Pierre** (1999), Associate Professor of Biology; B.S., Ph.D., University of Liege (Belgium)
- Devlin, John** (1998), Assistant Professor of Philosophy; B.A., University of Toronto (Canada); Ph.D., University of Michigan
- Dey, Sandwip** (1987), Professor of Materials Engineering; B.Tech., Banares Hindu University (India); M.S., Ph.D., Alfred University
- Dezelsky, Thomas L.** (1968), Professor Emeritus of Exercise Science and Physical Education; B.S., Central Michigan University; M.A., University of Michigan; H.S.D., Indiana University, Bloomington
- Di Gangi, Samuel** (1990), Associate Professor of Curriculum and Instruction; B.A., University of Pittsburgh; M.Ed., Ph.D., Arizona State University
- Diaz, Rodolfo E.** (2001), Associate Professor of Electrical Engineering; B.S., Yale University; M.S., Ph.D., University of California, Los Angeles
- Dickerson, Sherry S.** (1986), Faculty Associate of Public Affairs; B.S., Lamar University; M.P.A., Arizona State University
- Dierig, David A.** (1996), Adjunct Faculty of Plant Biology; B.S., M.S., Arizona State University; Ph.D., University of Arizona
- Dietrich, Suzanne Wagner** (1988), Associate Professor of Computer Science and Engineering; B.S., M.S., Ph.D., State University of New York, Stony Brook

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Dillner, Ann M. (2001), Assistant Professor of Chemical Engineering and Civil and Environmental Engineering; B.S., Southern Methodist University; M.S., Stanford University; Ph.D., University of Illinois, Urbana-Champaign

Dirksen, Shannon Ruff (1996), Associate Professor of Nursing; B.S.N., Arizona State University; M.S., Ph.D., University of Arizona

Ditsworth, Richard L. (1959), Professor Emeritus of Engineering; B.S., M.S., Iowa State College; Ph.D., Michigan State University

Dittert, Alfred E. Jr. (1967), Professor Emeritus of Anthropology; B.A., M.A., University of New Mexico; Ph.D., University of Arizona

Doak, R. Bruce (1991), Professor of Physics and Astronomy; B.S., Cornell University; M.S., Ph.D., Massachusetts Institute of Technology

Doan, Jerry (1979), Professor of Music; B.M.E., M.M., North Texas State University; D.M.A., University of Michigan

Doane, Winifred W. (1977), Professor Emerita of Biology; B.S., Hunter College; M.S., University of Wisconsin; Ph.D., Yale University

Doebler, Bettie Anne (1971), Professor Emerita of English; B.A., M.A., Duke University; Ph.D., University of Wisconsin, Madison

Doelle, William H. (2001), Adjunct Professor of Anthropology; B.A., University of Michigan; M.A., Ph.D., University of Arizona

Doig, Stephen (1996), Professor of Journalism and Mass Communication; B.A., Dartmouth

Dollin, Michael (1989), Faculty Associate of Planning and Landscape Architecture; Coordinator, Joint Urban Design Studio; Urban Designer, Joint Urban Design Studio; B.L.A., University of Arizona

Donelson, Kenneth L. (1965), Professor of English; B.A., M.A., Ph.D., University of Iowa

Dooley, Kevin (1997), Professor of Industrial Engineering and Management; B.S., M.S., Ph.D., University of Illinois, Urbana-Champaign

Dorman, Michael F. (1976), Professor of Speech and Hearing Science; B.S., University of Washington; M.A., Hollins College; Ph.D., University of Connecticut

Dorn, Ronald I. (1988), Professor of Geography; A.B., M.A., University of California, Berkeley; Ph.D., University of California, Los Angeles

Doty, Roxanne L. (1990), Associate Professor of Political Science; B.S., M.A., Arizona State University; Ph.D., University of Minnesota, Twin Cities

Doubek, Dennis L. (1976), Associate Research Professional, Cancer Research Institute; B.S., University of Arizona; Ph.D., University of Illinois

Douglas, Michael E. (1986), Museum Professional, Curator of Collections, Biology; B.S., M.S., University of Louisville; Ph.D., University of Georgia

Dow, John (1990), Professor of Physics and Astronomy; B.S., University of Notre Dame; Ph.D., University of Rochester

Dowling, Karen (1996), Assistant Professor of Computer Information Systems; B.A., University of Michigan; M.S., Ph.D., Arizona State University

Dowling, Thomas E. (1988), Professor of Biology; B.S., University of Michigan; Ph.D., Wayne State University

Downs, Catherine A. (1983), Clinical Professor of Clinical Laboratory Sciences; B.S., Arizona State University; M.A., Central Michigan University

Downs, Floyd L. (1988), Lecturer of Mathematics and Statistics; A.B., Harvard University; M.A., Columbia University

Doyel, David E. (1985), Adjunct Professor of Anthropology; B.A., University of Arizona; M.A., Ph.D., California State University, Chico

Doyle, Donald P. (1962), Professor Emeritus of Theatre; B.A., Arizona State University; M.A., Northwestern University; Ph.D., University of Minnesota, Twin Cities

Doyle, Roy P. (1959), Professor Emeritus of Curriculum and Instruction; B.A., Arizona State University; M.A., Ed.D., Columbia University

Drake, Jackson M. (1974), Professor Emeritus of Education; B.S., M.S., Southern Illinois University, Carbondale; Ed.D., Columbia University

Dreyfoos, Dale (1994), Professor of Music; B.M., Florida State University; M.M., University of Texas, Austin

Driscoll, Michael F. (1971), Associate Professor of Mathematics and Statistics; B.A., Saint John's University; M.S., Ph.D., University of Arizona

Droopad, Ravindranath (1989), Associate Research Scientist, Center for Solid State Electronics Research; Ph.D, Imperial College, University of London (United Kingdom)

Drucker, Jeffery S. (2000), Associate Professor of Physics and Astronomy; B.A., University of California, Irvine; Ph.D., University of California, Santa Barbara

Duane, Drake D. (1987), Adjunct Professor of Speech and Hearing Science; A.B., University of Michigan; M.D., Wayne State University



Dubie, Norman

(1978)

**Regents' Professor of English; B.A.,
Goddard College; M.F.A., University of
Iowa**

Dudek, Leona M. (1960), Professor Emerita of Education; B.Ed., National College of Education; M.A., Arizona State University

Duerden, Sarah J. (1998), Senior Lecturer of English; B.A., University of Sheffield (United Kingdom); M.A., Ph.D., Arizona State University

Duffy, Dennis M. (1977), Associate Professor of Construction; B.S., M.S., Ph.D., University of Arizona

Dugan, Jeanne (1994), Senior Lecturer of English; B.A., University of Michigan; M.A., Ph.D., Arizona State University

Duman, Tolga (1998), Assistant Professor of Electrical Engineering; B.S., Bilkent University (Turkey); M.S., Ph.D., Northeastern University

Dumka, Larry E. (1991), Associate Professor of Family and Human Development; B.A., University of Manitoba (Canada); M.A., Simon Fraser University (Canada); Ph.D., Purdue University

Duncan, Anne (2001), Assistant Professor of Interdisciplinary Humanities; B.A., Swarthmore College; M.A., Ph.D., University of Pennsylvania

Duncan, Kate C. (1991), Associate Professor of Art; B.A., M.A., University of New Mexico; Ph.D., University of Washington

Dundas, Mary Jane (1975), Associate Professor of Legal and Ethical Studies; B.A., California State University, Long Beach; J.D., Loyola Marymount University

Durand, Barbara A. (1992), Professor of Nursing; Dean, College of Nursing; B.S., College of Saint Teresa; M.S., University of California, San Francisco; Ed.D., University of San Francisco

Durrenberger, Robert W. (1971), Professor Emeritus of Geography; B.S., Moorhead State College; B.S., California Institute of Technology; M.S., University of Wisconsin, Madison; Ph.D., University of California, Los Angeles

Duttagupta, Chitralakha (2001), Lecturer of English; B.A., Calcutta University; M.A., Jadavpur University (India); M.T.E.S.L., Arizona State University; Ph.D., Jadavpur University (India); Ph.D., Arizona State University

Duvernay, Jennifer (2000), Assistant Librarian, Noble Science Reference Services; B.S., Carroll College; M.L.S., University of North Carolina, Chapel Hill

Dwyer, Karen (1994), Senior Lecturer of English; B.A., Lamar University; M.A., Ph.D., Purdue University

Dyer, Timothy J. (1998), Clinical Professor of Educational Leadership and Policy Studies; Recruitment and External Program Planning Coordinator, Educational Leadership and Supervision; B.A., M.A., Eastern Michigan University; Ed.D., Wayne State University

E

Eck, Roger (1970), Professor Emeritus of Computer Information Systems; B.S.Ch.E., Clarkson College of Technology; M.B.A., University of New Mexico; Ph.D., Tulane University

Eckard, Bonnie (1996), Professor of Theatre; B.F.A., University of Illinois; M.A., University of Arizona; Ph.D., University of Denver

Eckert, Thomas W. (1971), Professor of Art; B.A., M.F.A., Arizona State University

Edelsky, Carole (1976), Professor of Curriculum and Instruction; B.A., University of Cincinnati; Ph.D., University of New Mexico

Eder, James F. Jr. (1975), Professor of Anthropology; B.S., California Institute of Technology; M.A., Ph.D., University of California, Santa Barbara

Edsall, Robert M. (2000), Assistant Professor of Geography; B.A., Kenyon College; M.S., Ph.D., Pennsylvania State University

Edwards, Gus (1988), Associate Professor of Theatre

Edwards, John L. (1964), Professor Emeritus of Curriculum and Instruction; B.A., Ball State University; M.A., Ed.D., Arizona State University

Edwards, Marvin J. (1959), Professor Emeritus of Technology; B.S., M.A., Arizona State University

Edwards, Regina (1995), Assistant Instructional Professional, College of Extended Education; Associate Director, Academic and Professional Programs, College of Extended Education; B.S., M.A., University of Nebraska, Lincoln; Ph.D., University of Hawaii, Manoa

Eeds, Maryann H. (1975), Professor Emerita of Curriculum and Instruction; B.A., California State University, Sacramento; Ph.D., University of Oregon



Eisenberg, Nancy H.
(1976)

Regents' Professor of Psychology; B.A., University of Michigan; M.A., Ph.D., University of California, Berkeley

Ekmanis, Rolfs (1963), Professor of Russian; B.A., M.A., University of Wisconsin, Madison; Ph.D., Indiana University, Bloomington

El-Ghazaly, Samir M. (1988), Professor of Electrical Engineering; B.S.E.E., M.S., Cairo University (Egypt); Ph.D., University of Texas, Austin

El Hamel, Chouki (2002), Associate Professor of History; B.A., University of Muhammad I of Oujda (Morocco); M.A., Ph.D., University of Paris Pantheon-Sorbonne (France)

El-Sharawy, El-Badawy (1989), Associate Professor of Electrical Engineering; B.S.E., M.S.E., Mansoura University (Egypt); Ph.D., University of Massachusetts, Amherst

Ellin, Nan (1998), Associate Professor of Architecture; B.A., Bryn Mawr College; M.A., Ph.D., Columbia University

Elliott, Charles S. (1989), Professor Emeritus of Industrial Engineering; B.M.E., General Motors Institute; M.S., Indiana University, Bloomington; Ph.D., Michigan State University

Ellis, Andrew W. (1998), Assistant Professor of Geography; B.A., M.S., Ph.D., University of Delaware

Ellis, Robert H. (1962), Professor Emeritus of Journalism and Mass Communication; B.A., Arizona State University; M.A., Case Western Reserve University

Ellman, Ira Mark (1978), Professor of Law; B.A., Reed College; M.A., University of Illinois; J.D., University of California, Berkeley

Ellram, Lisa M. (1990), Professor of Supply Chain Management; B.S.B., M.B.A., University of Minnesota, Twin Cities; Ph.D., Ohio State University

Ellsworth, Lola M. (1938), Professor Emerita of Family and Human Development; B.S., Brigham Young University; M.A., Columbia University

Elman, Colin (1998), Assistant Professor of Political Science; B.A., Nottingham University (United Kingdom); M.A., Ph.D., Columbia University

Elman, Miriam Fendius (1995), Assistant Professor of Political Science; B.A., M.A., Hebrew University; Ph.D., Columbia University

Elmore, James W. (1949), Professor Emeritus of Planning and Landscape Architecture; A.B., University of Nebraska; M.S., Columbia University

Elser, James J. (1990), Professor of Biology; B.S., University of Notre Dame; M.S., University of Tennessee, Knoxville; Ph.D., University of California, Davis

Elser, Monica M. (1996), Academic Associate, Education Liaison; B.S., University of Notre Dame; M.S., University of Tennessee, Knoxville; M.Ed., Arizona State University

Enz, Billie J. (1990), Administrative Professional of Curriculum and Instruction; M.A., Ph.D., Arizona State University

Erickson, Mary L. (1990), Professor of Art; B.F.A., University of Illinois; M.A., Ph.D., Ohio State University

Ericson, John Q. (2001), Assistant Professor of Music; B.M., Emporia State University; M.M., Eastman School of Music; D.M.A., Indiana University

Ernzen, James J. (1996), Associate Professor of Construction; B.S., M.S., University of Notre Dame; Ph.D., University of Texas, Austin

Escobar, Edward J. (1993), Associate Professor of Chicana and Chicano Studies and History; B.A., California State University, Dominguez Hills; M.A., Ph.D., University of California, Riverside

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Etnier, Jennifer L. (1998), Assistant Professor of Exercise Science and Physical Education; B.S., University of Tennessee, Knoxville; M.A., University of North Carolina, Chapel Hill; Ph.D., Arizona State University

Etter, Patricia A. (1988), Archivist, Archives and Manuscripts; B.A., California State University, Long Beach; M.L.S., University of Arizona

Evancho, Dustin (1999), Assistant Professor of Aerospace Studies; B.S., University of Arizona

Evans, Donovan L. (1966), Professor of Engineering; Director, Center for Research on Education in Science, Mathematics and Statistics, Engineering, and Technology; B.S.M.E., University of Cincinnati; Ph.D., Northwestern University

Evans, John X. (1964), Professor Emeritus of English; B.A., Holy Cross College; M.A., Ph.D., Yale University

Eveland, Charles (1974), Professor Emeritus of Health Administration and Policy; B.S., University of Maryland; M.S., Baylor University; Ph.D., University of Michigan

Ewan, Joseph (1994), Assistant Professor of Planning and Landscape Architecture; B.S.D., Arizona State University; M.L.A., University of California, Berkeley

Ewing, Alison (1993), Law Librarian, Circulation/Reference; B.A., M.L.S., University of Michigan



Eyring, LeRoy
(1961)

Regents' Professor Emeritus of Chemistry and Biochemistry; B.S., University of Arizona; Ph.D., University of California, Berkeley

F

Faas, Larry A. (1967), Professor Emeritus of Curriculum and Instruction; B.S., Iowa State University; M.A., Colorado State College; Ed.D., Utah State University

Fabes, Richard A. (1983), Professor of Family and Human Development; Chair, Department of Family and Human Development; B.A., University of Colorado; M.S., Ph.D., Oklahoma State University

Fabricius, William (1990), Associate Professor of Psychology; B.A., Boston College; M.S., Wheelock College; Ph.D., University of Michigan

Facinelli, Diane A. (1993), Senior Lecturer of the Barrett Honors College; Assistant Dean, Barrett Honors College; B.A., M.A., Ph.D., Arizona State University

Faeth, Stanley H. (1980), Professor of Biology; B.S., M.S., University of Cincinnati; Ph.D., Florida State University

Fafitis, Apostolos (1984), Associate Professor of Civil and Environmental Engineering; B.S.E., Aristotelion University of Thessaloniki (Greece); M.Eng., South Dakota School of Mines and Technology; Ph.D., Northwestern University

Fagan, William (1996), Assistant Professor of Biology; B.A., University of Delaware; Ph.D., University of Washington

Fahlman, Betsy (1988), Professor of Art; B.A., Mount Holyoke College; M.A., Ph.D., University of Delaware

Faith, Roger L. (1981), Professor of Economics; B.A., St. Mary's College of California; M.A., Ph.D., University of California, Los Angeles

Falconer, Steven E. (1989), Associate Professor of Anthropology; B.A., Washington State University; M.A., Ph.D., University of Arizona

Fall, Patricia L. (1989), Associate Professor of Geography; B.A., Prescott College; M.S., Ph.D., University of Arizona

Faltis, Christian J. (1991), Professor of Curriculum and Instruction; B.A., San Francisco State University; M.A., San Jose State University; M.A., Ph.D., Stanford University

Faltz, Leonard M. (1979), Associate Professor of Computer Science and Engineering; B.S., City University of New York; M.S., Harvard University; Ph.D., University of California, Berkeley

Fargotstein, Barbara P. (1988), Clinical Associate Professor of Nursing; B.S., B.S.N., Arizona State University; M.N., University of California, Los Angeles

Farin, Gerald (1987), Professor of Computer Science and Engineering; B.A., M.A., Ph.D., University of Braunschweig (Germany)

Farmer, Frank D. (1970), Associate Professor of Mathematics and Statistics; B.A., M.A., University of California, Riverside; Ph.D., University of Washington

Farmer, Jack D. (1998), Professor of Geological Sciences; B.A., California State University, Chico; M.S., University of Kansas; Ph.D., University of California, Davis

Farnsworth, Bill (1999), Faculty Associate of Nursing; B.S.N., University of Massachusetts; M.S.N., University of Evansville

Fausel, Donald F. (1969), Professor Emeritus of Social Work; A.B., S.T.B., S.T.L., Saint Mary's University; M.S.W., Fordham University; D.S.W., Columbia University

Fearon, Harold E. (1961), Professor Emeritus of Purchasing Management; National Association of Purchasing Management Professor; B.S., M.B.A., Indiana University; Ph.D., Michigan State University

Fehr, Fred S. (1971), Professor Emeritus of Psychology; B.S., University of Wisconsin, Madison; M.A., Ph.D., Washington University

Feldhaus, Anne (1981), Professor of Religious Studies; B.A., Manhattanville College; Ph.D., University of Pennsylvania

Feldstein, Alan (1970), Professor Emeritus of Mathematics and Statistics; B.A., Arizona State University; Ph.D., University of California, Los Angeles

Feller, Joseph M. (1987), Professor of Law; B.A., Harvard University; Ph.D., University of California, Berkeley; J.D., Harvard University

Fenske, Robert H. (1974), Professor of Educational Leadership and Policy Studies; B.S., M.S., Ph.D., University of Wisconsin, Madison

Fernando, Harindra (1984), Professor of Mechanical and Aerospace Engineering; Director, Center for Environmental Fluid Dynamics; B.Sc., University of Sri Lanka (Sri Lanka); M.A., Ph.D., Johns Hopkins University

Ferrall, J. Eleanor (1969), Librarian Emerita, Reference Service; A.B., Heidelberg College; M.A., Arizona State University

Ferraro, Kathleen J. (1982), Associate Professor of Women's Studies; Director, Women's Studies Program; B.A., Case Western Reserve University; M.A., Ph.D., Arizona State University

Ferris, Jean (1985), Professor Emerita of Music; B.M., University of Michigan; M.A., Arizona State University



Ferry, David K. (1983)
Regents' Professor of Electrical Engineering; B.S.E.E., M.S.E.E., Texas Technological College; Ph.D., University of Texas, Austin

- Fessenden, Tracy** (1994), Associate Professor of Religious Studies; B.A., Yale University; Ph.D., University of Virginia
- Fewell, Jennifer H.** (1993), Associate Professor of Biology; B.A., Cornell University; M.A., Ph.D., University of Colorado
- Fife, Paul** (2000), Faculty Associate of Design; B.S.D., Arizona State University
- Figueira-McDonough, Josephina** (1990), Professor of Justice Studies; B.S., University of Lisbon (Portugal); M.S.W., Ph.D., University of Michigan
- Filley, Richard D.** (1985), Associate Administrative Professional; Director, Arizona State University Industrial Fellows Program; B.S., University of Washington
- Finch, A. Joyce** (1965), Professor Emerita of Nursing; B.S.N., Augustana College; M.S., University of Colorado; Ph.D., University of Texas, Austin
- Findler, Nicholas V.** (1982), Professor Emeritus of Computer Science and Engineering; B.Eng., Ph.D., Budapest University for Technical Sciences (Hungary)
- Fine, Robert** (1997), Senior Lecturer of Sociology; B.A., Boston University; M.A., University of Chicago; Ph.D., New York University
- Finer, Neal** (1977), Professor Emeritus of Curriculum and Instruction; B.A., University of Houston; M.A., University of the Americas (Mexico); Ph.D., University of Texas, Austin
- Fink, Jonathan** (1982), Professor of Geological Sciences; Vice Provost for Research; B.A., Colby College; Ph.D., Stanford University
- Fiori, Christine** (2001), Assistant Professor of Construction; B.S., M.S., Ph.D., Drexel University
- Firestone, Melvin M.** (1968), Professor Emeritus of Anthropology; B.A., University of New Mexico; M.A., Ph.D., University of Washington
- Fischer, Timothy P., Major.** (2000), Assistant Professor of Military Science; B.B.A., University of Wisconsin
- Fischman, Gustavo E.** (1999), Assistant Professor of Curriculum and Instruction; B.A., University of Buenos Aires (Argentina); M.A., Ph.D., University of California, Los Angeles
- Fish Ewan, Rebecca** (1994), Assistant Professor of Planning and Landscape Architecture; B.A., M.L.A., University of California, Berkeley
- Fisher, Marvin M.** (1958), Professor Emeritus of English; A.B., A.M., Wayne University; Ph.D., University of Minnesota, Twin Cities
- Fisher, Stuart G.** (1976), Professor of Biology; B.S., M.A., Wake Forest College; Ph.D., Dartmouth College
- Fisk, R. Leighton** (1979), Adjunct Professor of Bioengineering; B.S., M.S., Ph.D., University of Alberta (Canada)
- Fitch, Frank W.** (1997), Adjunct Faculty of Microbiology; M.S., M.D., Ph.D., University of Chicago

Fitch, Gregory W. (1974), Professor of Philosophy; B.A., Western Washington State College; M.A., Ph.D., University of Massachusetts, Amherst

Fitzgerald, Mary (1998), Assistant Professor of Dance; B.A., University of Maine; M.F.A., Arizona State University

Flaherty, Richard E. (1978), Professor Emeritus of Accountancy and Information Management; B.S., M.S., Ph.D., University of Kansas; C.P.A., Kansas

Fleming, Robert C. (1974), Professor Emeritus of Music; Assistant Director of Bands; B.S., Indiana University of Pennsylvania; M.F.A., Carnegie Mellon University; Ph.D., Southern Illinois University, Carbondale

Fletcher, Grant (1956), Professor Emeritus of Music; B.M., Illinois Wesleyan University; M.M., University of Michigan; Ph.D., University of Rochester

Fleury, Julie (2001), Professor of Nursing; B.S.N., Northern Arizona University; M.S., Ph.D., University of Arizona

Flores, Alfinio (1992), Professor of Curriculum and Instruction; B.S., M.S., National University of Mexico (Mexico); Ph.D., Ohio State University

Florschuetz, Leon W. (1964), Professor Emeritus of Engineering; B.S., M.S., Ph.D., University of Illinois

Floyd, Kory (2000), Assistant Professor of Communication; B.A., Western Washington University; M.A., University of Washington; Ph.D., University of Arizona

Flys, Michael (1975), Professor Emeritus of Spanish; Licenciado en Filosofia y Letras, Doctor en Filosofia y Letras, University of Madrid (Spain)

Foard, Fumiko (1990), Lecturer of Japanese; B.A., Keio Gijuku University (Japan); M.A., Arizona State University

Foard, James (1977), Professor of Religious Studies; B.A., College of Wooster; M.A., Ph.D., Stanford University

Follet, Robert E. (1995), Librarian; Head, Music Library; B.Mus., Oberlin College; M.Mus., University of Illinois; M.L.S., University of Texas, Austin

Foote, Joe S. (2000), Professor of Journalism and Mass Communication; Director, Walter Cronkite School of Journalism and Mass Communication; B.A., M.A., University of Oklahoma; Ph.D., University of Texas, Austin

Forsyth, Ben R. (1992), Professor of Health Administration and Policy; Senior Executive Assistant to the President; M.D., New York University



Foster, David William (1964)
Regents' Professor of Spanish; B.A., M.A., Ph.D., University of Washington

Foster, Joyce (1972), Professor Emerita of Zoology; B.A., M.A., DePauw University; Ph.D., Arizona State University

Foster, Michael S. (2001), Adjunct Professor of Anthropology; B.A., Colorado State University; M.A., Ph.D., University of Colorado, Boulder

Fouch, Matthew (2001), Assistant Professor of Geological Sciences; B.A., Pomona College; Sc.M., Ph.D., Brown University

Fouquette, Martin J. Jr. (1965), Associate Professor of Biology; B.A., M.A., Ph.D., University of Texas, Austin

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Fowler, John W.** (1995), Associate Professor of Industrial Engineering; B.S., M.S., Ph.D., Texas A&M University
- Fox, Cora V.** (2001), Assistant Professor of English; B.A., Grinnell College; M.A., University of Wisconsin, Madison
- Fox, Lynn** (1998), Faculty Associate of Nursing; B.A., Gustavus Adolphus College; M.S.N., Boston University; Ph.D., University of Texas, Austin
- Fox, Peter** (2001), Professor of Civil and Environmental Engineering; B.S., M.S., Ph.D., University of Illinois
- Fox, Steven, MSG** (2000), Instructor of Military Science; A.A., Central Texas College
- Francis, Karl E.** (1993), Adjunct Professor of Geography; B.S., Pennsylvania State University; M.S., Oregon State University; Ph.D., University of Wisconsin, Madison
- Francisco, Wilson A.** (1999), Assistant Professor of Chemistry and Biochemistry; B.S., University of Puerto Rico (Puerto Rico); Ph.D., Texas A&M University
- Frasch, Wayne D.** (1989), Professor of Plant Biology; B.A., Hope College; Ph.D., University of Kentucky
- Frasier, James E.** (1963), Professor Emeritus of Education; B.A., University of Northern Colorado; M.A., University of Michigan; Ed.D., University of Northern Colorado
- Freeman, Donald J.** (1989), Professor Emeritus of Education; B.A., Grinnell College; M.A., Ph.D., Michigan State University
- French, Peter A.** (2000), Professor of Philosophy; Director, Lincoln Center for Applied Ethics; B.A., Gettysburg College; M.A., University of Southern California, Los Angeles; Ph.D., University of Miami, Coral Gables
- Freund, John E.** (1957), Professor Emeritus of Mathematics and Statistics; B.A., M.A., University of California, Los Angeles; Ph.D., University of Pittsburgh
- Frindell, Vicki** (2000), Faculty Associate of Nursing; B.S.N., University of Arizona; M.S., University of Pennsylvania
- Fritzemeyer, Joseph R.** (1973), Professor Emeritus of Accountancy and Information Management; B.B.A., Baylor University; M.B.A., D.B.A., Indiana University; C.P.A., Texas
- Fromme, Petra** (2002), Assistant Professor of Chemistry and Biochemistry; M.S., Free University of Berlin (Germany); Ph.D., Technical University of Berlin (Germany)
- Fronske, Jeanne** (1975), Professor of Art; B.A., B.F.A., DePauw University; M.F.A., Ohio State University, Newark
- Frost, Michael D.** (1995), Faculty Associate of Construction; B.S., M.S., Arizona State University
- Fry, Harold** (1958), Professor Emeritus of Engineering; B.S., Colorado State University; M.E., University of Wyoming; M.S., University of Colorado
- Fry, Jana** (1995), Faculty Associate of Planning and Landscape Architecture; University Geographic Information Systems Coordinator; B.A., University of Denver; M.E.P., Arizona State University
- Fry, Warren D.** (1974), Learning Resources Specialist Emeritus; B.A., University of Northern Iowa; M.A., Arizona State University
- Fuchs, Jacob** (1951), Professor of Chemistry and Biochemistry; B.A., New York University; M.S., Ph.D., University of Illinois
- Fuchs, Rachel G.** (1983), Professor of History; B.A., M.A., Boston University; Ph.D., Indiana University
- Fulginiti, Laura C.** (1998), Adjunct Professor of Anthropology; B.A., Colorado College; M.A., Ph.D., University of Arizona
- Fullerton, Bill J.** (1958), Professor Emeritus of Education; B.S., Northwestern Oklahoma State College; M.A., Ed.D., University of Oklahoma
- Fullinwider, S. Pendleton** (1967), Professor Emeritus of History; B.S., United States Naval Academy; M.S., Ph.D., University of Wisconsin, Madison
- Funk, C. Joel** (2000), Adjunct Professor of Biology; B.S., Tabor College; M.S., Ph.D., Kansas State University
- Furnish, Dale Beck** (1970), Professor of Law; A.B., Grinnell College; J.D., University of Iowa; LL.M., University of Michigan
- Furr-Soloman, Connie** (2001), Assistant Professor of Theatre; B.A., University of North Carolina, Charlotte; M.F.A., University of Tennessee, Knoxville
- Furuta, Kenneth** (1990), Associate Librarian, Government Documents; A.B., University of California, Riverside; M.A., University of North Carolina, Chapel Hill; M.Admin., University of California, Riverside; M.L.S., University of Arizona
- Fuse, Montye** (1997), Assistant Professor of English; B.A., California State University, Long Beach; M.A., Ph.D., University of California, Berkeley

G

- Gaffney, Philip D.** (1957), Professor Emeritus of Education; B.S., Northern Illinois State University; M.A., Ph.D., State University of Iowa
- Gage, Leo** (1999), Assistant Professor of Aerospace Studies; B.S., United States Air Force Academy
- Gaines, Sylvia W.** (1972), Professor Emerita of Anthropology; B.A., M.A., Ph.D., Arizona State University
- Gale, Betty J.** (1982), Professor of Nursing; Chair, Division of Community Health/Psychosocial Nursing Systems; B.S.N., M.S., Arizona State University; D.N.Sc., University of San Diego
- Galician, Mary-Lou** (1983), Associate Professor of Journalism and Mass Communication; B.A., Long Island University, Brooklyn; M.S., Syracuse University; Ed.D., Memphis State University
- Gallinger, George W.** (1977), Associate Professor of Finance; B.A., Waterloo Lutheran University (Canada); M.B.A., York University (Canada); Ph.D., Purdue University
- Gammage, Grady Jr.** (1990), Faculty Associate of Planning and Landscape Architecture; B.A., Occidental College; J.D., Stanford University
- Gannod, Gerald C.** (1998), Assistant Professor of Computer Science and Engineering; B.Sc., M.Sc., Ph.D., Michigan State University
- Garcia, Antonio A.** (1989), Associate Professor of Bioengineering; B.S., Rutgers, The State University of New Jersey; Ph.D., University of California, Berkeley
- Garcia, Eugene E.** (2002), Professor of Psychology in Education; Dean, College of Education; B.S., University of Utah; M.A., Ph.D., University of Kansas
- Garcia, Peter J.** (2001), Assistant Professor of Chicana and Chicano Studies; B.M.E., University of New Mexico; M.M., Ph.D., University of Texas, Austin
- Garcia, Phyllis M.** (1992), Clinical Associate Professor of Curriculum and Instruction; B.A., University of Southern Colorado; M.A., Adams State College; Ed.D., University of Northern Colorado
- Garcia-Fernández, Carlos** (1990), Associate Professor of Spanish; M.A., University Pontifica of Salamanca (Spain); M.A., Ph.D., University of California, Davis

- Garcia-Fernández, Carmen** (2001), Associate Professor of Spanish; B.A., Teacher's Training College for Women (Peru); M.A., University of Kansas; Ph.D., Georgetown University
- Garcia-Pichel, Ferran** (1999), Assistant Professor of Microbiology; B.S., M.S., Autonomous University of Barcelona, Bellaterra (Spain); Ph.D., University of Oregon
- Garcia-Smith, Dianna** (1996), Faculty Associate of Nursing; B.S.N., Houston Baptist University; M.S., Arizona State University
- Gardner, Carl L.** (1994), Professor of Mathematics and Statistics; B.A., Duke University; Ph.D., Massachusetts Institute of Technology
- Garnero, Edward** (1999), Assistant Professor of Geological Sciences; A.B., University of California, Berkeley; Ph.D., California Institute of Technology
- Garrison, Eleanor** (1973), Professor Emerita of Nursing; B.S.N., M.S.N., Wayne State University
- Garrity, Marjorie L.** (1975), Professor Emerita of Nursing; B.S., University of Bridgeport; M.S., Case Western Reserve University
- Gasowski, Ronald E.** (1971), Professor of Art; B.S.D., University of Michigan; M.F.A., University of Washington
- Geiger, Karen** (1996), Lecturer of Accountancy and Information Management; B.S., University of Nevada; M.S., Arizona State University
- Gel, Esma S.** (2000), Assistant Professor of Industrial Engineering; B.S., Orta Dogu Technical University (Turkey); M.S., Ph.D., Northwestern University
- Gelb, Anne** (1998), Associate Professor of Mathematics and Statistics; B.S., University of California, Los Angeles; Sc.M., Ph.D., Brown University
- Gentrup, William F.** (1991), Associate Research Administrator, Arizona Center for Medieval and Renaissance Studies; B.A., M.A., Ph.D., Arizona State University
- George, Lisa** (1999), Assistant Professor of Classics; B.A., Vassar College; M.A., Bryn Mawr College; M.A., San Francisco State University; Ph.D., Bryn Mawr College
- Gerber, Leah R.** (2001), Assistant Professor of Biology; B.S., Mills College; M.M.A., Ph.D., University of Washington
- Gerdes, Karen E.** (1995), Associate Professor of Social Work; B.S., Florida State University; M.S.W., Brigham Young University; Ph.D., Florida State University
- Gereboff, Joel D.** (1978), Associate Professor of Religious Studies; Chair, Department of Religious Studies; B.A., New York University; Ph.D., Brown University
- Gerlach, Vernon S.** (1963), Professor Emeritus of Education; B.A., Wayne State University; M.A., University of Minnesota, Twin Cities; Ed.D., Arizona State University
- Gharavi, Lance** (2001), Assistant Professor of Theatre; B.F.A., Drake University; M.A., Ph.D., University of Kansas, Lawrence
- Giard, Jacques** (1998), Professor of Design; Director, School of Design; Dip.Des., IAA, Montreal (Canada); H.Dip.Des., Birmingham Polytechnic (United Kingdom); Ph.D., Concordia University (Canada)
- Gibbs, W.R.** (1987), Adjunct Professor of Physics and Astronomy; B.S., M.A., University of Texas; Ph.D., Rice University
- Gibney, John** (1992), Adjunct Professor of Bioengineering; B.S., St. Peter's College; M.D., New Jersey College of Medicine
- Gieschen, Donald W.** (1959), Professor Emeritus of Philosophy; B.S., Northwestern University; M.A., Ph.D., University of Minnesota, Twin Cities
- Giffin, Frederick C.** (1967), Professor Emeritus of History; B.A., Denison University; M.A., Ph.D., Emory University
- Gill, George A.** (1966), Professor Emeritus of Education; B.S., M.A., Arizona State University
- Gillingwater, Denis** (1973), Professor of Art; B.F.A., M.F.A., University of Cincinnati
- Giner, Oscar** (1998), Professor of Theatre; Director, Performance Program; B.A., M.F.A., D.F.A., Yale University
- Ginsburg, Shai** (2001), Assistant Professor of Hebrew; B.A., M.A., Hebrew University (Israel); Ph.D., University of Michigan
- Gisolo, Margaret** (1954), Professor Emerita of Dance; B.S., Indiana State University, Terre Haute; M.A., New York University
- Glass, Gene V** (1986), Professor of Educational Leadership and Policy Studies and Psychology in Education; B.A., University of Nebraska; M.S., Ph.D., University of Wisconsin
- Glass, Sandra R.** (1998), Lecturer of Curriculum and Instruction; B.A., National College of Education; M.A., Northeastern Illinois University; Ph.D., Arizona State University
- Glau, Gregory R.** (1994), Associate Instructional Professional of English; Director, Writing Programs; B.A., University of Arizona; M.A., Northern Arizona University; Ph.D., University of Arizona
- Glaunsinger, William S.** (1972), Professor Emeritus of Chemistry and Biochemistry; B.S., Miami University; Ph.D., Cornell University
- Glessner, Beth A.** (1995), Academic Associate of Languages and Literatures; Undergraduate Academic Advisor; B.A., Grove City College; M.A., Ph.D., Pennsylvania State University
- Glick, Jennifer E.** (2000), Assistant Professor of Sociology; B.A., Pennsylvania State University; M.A., Ph.D., University of Texas, Austin
- Glick, Milton D.** (1991), Professor of Chemistry and Biochemistry; Senior Vice President and Provost; A.B., Augusta College; Ph.D., University of Wisconsin, Madison
- Glick, Paul C.** (1982), Adjunct Professor of Sociology; B.A., DePauw University; M.A., Ph.D., University of Wisconsin, Madison
- Glick, William H.** (1995), Professor of Management; Chair, Department of Management; A.B., University of Michigan; Ph.D., University of California, Berkeley
- Glidden-Tracey, Cynthia** (1999), Clinical Assistant Professor of Psychology in Education; A.B., A.M., Ph.D., University of Illinois
- Gober, Patricia A.** (1975), Professor of Geography; B.S., University of Wisconsin, Whitewater; M.A., Ph.D., Ohio State University
- Godfrey, Donald G.** (1988), Professor of Journalism and Mass Communication; B.S., Weber State College; M.S., University of Oregon; Ph.D., University of Washington
- Goggin, Maureen Daly** (1994), Associate Professor of English; B.S., M.A., Northeastern University; Ph.D., Carnegie Mellon University
- Goggin, Peter N.** (1995), Assistant Professor of English; B.S., M.A., Northeastern University; Ph.D., Indiana University of Pennsylvania
- Goldberg, Beckian Fritz** (1990), Associate Professor of English; Director, Creative Writing Program; B.A., M.A., Arizona State University; M.F.A., Vermont College
- Goldinger, Stephen D.** (1992), Associate Professor of Psychology; B.A., Ph.D., Indiana University, Bloomington

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Goldman, Donald (2001), Senior Lecturer of Accountancy and Information Management; B.S., Arizona State University; B.A., University of Illinois

Goldstein, Elliott S. (1974), Associate Professor of Biology; B.S., University of Hartford; M.S., Ph.D., University of Minnesota, Twin Cities

Golen, Steven P. (1984), Associate Professor of Accountancy and Information Management; B.S., M.A., Western Kentucky University; Ph.D., Arizona State University

Golshani, Forouzan (1984), Professor of Computer Science and Engineering; B.S., Arya Mehr University of Technology (Iran); M.S., Ph.D., University of Warwick (United Kingdom)

Gomez, Reynaldo A. (1980), Associate Professor of Curriculum and Instruction; B.A., Southwest Texas State University; M.Ed., Stephen F. Austin State University; Ph.D., Pennsylvania State University

Gomez-Mejia, Luis R. (1989), Professor of Management; B.A., M.A., Ph.D., University of Minnesota, Twin Cities

Gonzales, Nancy A. (1992), Associate Professor of Psychology; B.S., Arizona State University; M.S., Ph.D., University of Washington

González, Josué M. (1998), Professor of Educational Leadership and Policy Studies; Director, Southwest Center for Education Equity and Language Diversity; B.A., M.A., Texas A&I University, Kingsville; Ed.D., University of Massachusetts, Amherst

Gonzalez-Santin, Edwin (1979), Senior Instructional Professional of Social Work; B.A., Cameron State College; M.S.W., Arizona State University

Goo, Benjamin (1955), Professor Emeritus of Art; B.F.A., University of Iowa; M.F.A., Cranbrook Academy of Art

Gooding, Elmer R. (1967), Professor of Economics; B.S., McPherson College; M.A., Ph.D., University of Kansas

Goodnick, Stephen M. (1996), Professor of Electrical Engineering; Chair, Department of Electrical Engineering; B.S., Trinity University; M.S., Ph.D., Colorado State University

Gordon, Leonard (1967), Professor Emeritus of Sociology; B.A., Wayne State University; M.A., University of Michigan; Ph.D., Wayne State University

Goren, Paul (2001), Assistant Professor of Political Science; B.S., Carnegie Mellon University; M.A., Ph.D., University of Pittsburgh

Gorman, Robert (2001), Professor of Law; A.B., LL.B., Harvard University

Gorur, Ravi S. (1987), Professor of Electrical Engineering; B.S., Bangalore University (India); M.S., Indian Institute of Science (India); Ph.D., University of Windsor (Canada)

Goul, Kenneth Michael (1985), Professor of Accountancy and Information Management; Director, Information Technology; B.S., M.B.A., Ph.D., Oregon State University

Gould, Ian R. (1998), Assistant Professor of Chemistry and Biochemistry; B.S., Ph.D., University of Manchester (United Kingdom)

Gourley, David R. (1967), Professor Emeritus of Marketing; B.S., Miami University; M.B.A., University of Toledo; D.B.A., Indiana University

Goyer, Robert S. (1981), Professor Emeritus of Communication; B.A., DePauw University; M.A., Miami University; Ph.D., Ohio State University

Grace, Edward E. (1963), Professor Emeritus of Mathematics and Statistics; B.S., Ph.D., University of North Carolina

Graf, William L. (1978), Regents' Professor Emeritus of Geography; B.A., M.Sc., Ph.D., University of Wisconsin, Madison

Gratton, Brian J. (1983), Professor of History; B.A., University of New Mexico; Ph.D., Boston University

Gray, Shelley (2001), Assistant Professor of Speech and Hearing Science; B.S., M.S., Ph.D., University of Arizona

Gray, Susan E. (1991), Associate Professor of History; A.B., Earlham College; M.A., Ph.D., University of Chicago

Greathouse, Betty M. (1997), Professor Emerita of Curriculum and Instruction; B.A., M.A., Ph.D., Arizona State University



Greeley, Ronald

(1977)

Regents' Professor of Geological Sciences; B.S., M.S., Mississippi State University; Ph.D., University of Missouri, Rolla

Green, Gregory (2001), Academic Associate, University Libraries, Collection Development; B.A., Brigham Young University; M.A., University of California, Berkeley

Green, James L. (1967), Professor Emeritus of English; B.A., M.A., University of Kansas; Ph.D., University of Nevada, Reno

Green, Jennifer L. (1991), Adjunct Professor of Chemistry and Biochemistry; B.Sc., Ph.D., University of Sydney (Australia)

Green, Mary E. (1967), Professor Emerita of English; B.A., Queens College; M.A., Saint John's University; Ph.D., University of Chicago

Green, Monica (2002), Professor of History; B.A., Barnard College; M.A., Ph.D., Princeton University

Green, Samuel B. (2000), Professor of Educational Psychology; B.A., West Virginia University; M.S., Marquette University; Ph.D., University of Georgia

Greenberg, Edward A. (1996), Associate Research Scientist for Nursing; B.A., University of California, Los Angeles; Ph.D., Arizona State University

Greeneich, Edwin W. (1982), Associate Professor of Electrical Engineering; B.S.E.E., M.S.E.E., Ph.D., University of California, Berkeley

Greensfelder, Kirk B. (2001), Assistant Professor of Aerospace Studies; Assistant Department Head, Department of Aerospace Studies; B.S., Miami University; M.B.A., University of South Dakota; M.S., Golden Gate University

Greenspan, Ruth L. (1997), Adjunct Professor of Anthropology; B.A., Carleton College; M.A., Ph.D., University of Oregon

Greives, Thomas L. (1997), Assistant Librarian, Hayden Reference Services; B.A., Purdue University; M.A., University of Southern California; M.L.S., Indiana University; A.B.D., University of Chicago

Grey, Betsy J. (1987), Professor of Law; B.A., Barnard College; J.D., Georgetown University

Grier, Marvin (1957), Professor Emeritus of Exercise Science and Physical Education; B.A., Wisconsin State College, La Crosse; M.A., New York University

Griffin, John M. (1997), Assistant Professor of Finance; B.A., Baylor University; M.S., Texas A&M University; Ph.D., Ohio State University

Griffin, William A. (1988), Professor of Family and Human Development; B.A., Auburn University; M.S., Virginia Polytechnic and State University; Ph.D., Texas Tech University

Griffith, LeRoy H. (1958), Professor Emeritus of Education; B.S., M.S., Drake University; Ph.D., University of Iowa

- Griffiths Nagy, Sandra I.** (1982), Academic Associate, Division of Undergraduate Academic Services; Assistant Director, Writing Across the Curriculum Program; B.Ed., M.A., Ph.D., Arizona State University.
- Grigsby, J. Eugene** (1966), Professor Emeritus of Art; A.B., Morehouse College; M.A., Ohio State University; Ph.D., New York University
- Grimm, Nancy B.** (1990), Professor of Biology; B.A., Hampshire College; M.S., Ph.D., Arizona State University
- Grinder, Robert E.** (1973), Professor Emeritus of Education; B.S., University of California, Berkeley; Ed.D., Harvard University
- Grobe, Edwin P.** (1957), Professor Emeritus of French; A.B., William Jewell College; M.A., Ph.D., Indiana University, Bloomington
- Gronin, Robert O.** (1983), Associate Professor of Electrical Engineering; Director, Student Academic Services, College of Engineering and Applied Sciences; B.S., M.S., Ph.D., University of Michigan
- Gross, Douglas R.** (1968), Professor Emeritus of Counselor Education; B.A., M.A., Western Michigan University; Ph.D., University of Wisconsin, Madison
- Grossman, Louis H.** (1966), Professor Emeritus of Management; B.A., University of Michigan; M.B.A., Ph.D., Michigan State University
- Groy, Thomas L.** (1983), Associate Research Professional of Chemistry and Biochemistry; B.S., Adams State College; Ph.D., Arizona State University
- Gruzinska, Aleksandra** (1973), Assistant Professor of French; B.A., M.A., State University of New York, Buffalo; Ph.D., Pennsylvania State University
- Gryder, Robert** (1959–63; 1964), Professor of Curriculum and Instruction; B.A., Northwestern State University; M.Ed., Louisiana State University; Ed.D., University of North Dakota
- Guerin, Sanford M.** (1984), Professor of Law; B.S., Boston University; J.D., University of San Francisco; LL.M., New York University
- Guerrero, Laura** (1996), Associate Professor of Communication; B.A., M.A., San Diego State University; Ph.D., University of Arizona
- Guhathakurta, Subhrajit** (1994), Associate Professor of Planning and Landscape Architecture; B.Arch., Jadavpur University (India); M.C.R.P., Iowa State University; Ph.D., University of California, Berkeley
- Guilbeau, Eric J.** (1977), Professor of Bioengineering; Chair, Department of Bioengineering; B.S., M.S., Ph.D., Louisiana Tech University
- Guinouard, Donald E.** (1966), Professor Emeritus of Counselor Education; B.S., M.S., Montana State College; Ed.D., Washington State University
- Guleserian, Theodore** (1971), Associate Professor of Philosophy; B.A., University of California, Riverside; Ph.D., Yale University
- Gullett, Gayle** (1993), Associate Professor of History; B.A., M.A., Loma Linda University; Ph.D., University of California, Riverside
- Gully, Anthony Lacy** (1972), Associate Professor of Art; B.A., University of California, Riverside; M.A., University of California, Berkeley; Ph.D., Stanford University
- Guntermann, Gail** (1977), Professor of Spanish; B.S., University of Montana; M.A., University of New Mexico; Ph.D., Ohio State University
- Guntermann, Karl L.** (1982), Professor of Real Estate; A.B., Knox College; M.B.A., D.B.A., Indiana University
- Gupta, Sandeep Kumar** (2001), Associate Professor of Computer Science and Engineering; B.Tech, Banaras Hindu University (India); M.Tech, Indian Institute of Technology (India); M.S., Ph.D., Ohio State University
- Gupta, Sanjay** (1990), Associate Professor of Accountancy and Information Management; B.Com., Bombay University (India); B.Laws, Calcutta University (India); M.S.A., Bowling Green State University; Ph.D., Michigan State University; C.P.A., Ohio
- Gust, J. Devens** (1975), Professor of Chemistry and Biochemistry; Chair, Department of Chemistry and Biochemistry; B.S., Stanford University; M.S., Ph.D., Princeton University
- Gustavsson, Nora S.** (1994), Associate Professor of Social Work; A.B., M.S.W., City University of New York; Ph.D., University of Southern California
- Gutiérrez, Guadalupe** (1999), Assistant Professor of Chicana and Chicano Studies; B.S., California State University, Northridge; M.A., Ph.D., University of Michigan, Ann Arbor
- Gutierrez, Nancy A.** (1985), Professor of English; Associate Dean, Administration and Personnel, College of Liberal Arts and Sciences; B.A., Denison University; M.A., Ph.D., University of Chicago
- Guzzetti, Barbara J.** (1988), Professor of Curriculum and Instruction; B.S., M.S., Northern Illinois University; Ph.D., University of Colorado
- Gwinner, Robert F.** (1970), Professor Emeritus of Marketing; B.S., University of Southern Mississippi; M.B.A., Ph.D., University of Arkansas

H

- Haberman, Donald C.** (1967), Professor Emeritus of English; B.A., Rutgers, The State University of New Jersey; M.A., Ph.D., Yale University
- Haberman, Lidia W.** (1967), Assistant Professor of Latin; B.A., Bryn Mawr College; M.A., Yale University
- Hackbarth, Glenn A.** (1976), Professor of Music; B.M., University of Wisconsin, Madison; M.M., D.M.A., University of Illinois
- Hackett, Edward J.** (1998), Professor of Sociology; B.A., Colgate University; M.A., Ph.D., Cornell University
- Hackett, Gail** (1988), Professor of Counseling Psychology and Counselor Education; Vice Provost for Academic Personnel; B.A., M.Ed., Ph.D., Pennsylvania State University
- Hadley, Neil F.** (1966), Professor Emeritus of Biology; B.A., Eastern Michigan University; Ph.D., University of Colorado
- Haefler, J. Richard** (1976), Associate Professor of Music; B.M., Ohio State University; M.M., University of Arizona; Ph.D., University of Illinois
- Haenn, Nora M.** (1999), Assistant Professor of Anthropology; B.A., Fordham University; M.A., Ph.D., Indiana University, Bloomington
- Haeussler, Alice M.** (1997), Adjunct Professor of Anthropology; B.A., University of Pennsylvania; M.A., Ph.D., Arizona State University
- Haggerson, Nelson L.** (1961–63; 1964), Professor Emeritus of Curriculum and Instruction; B.A., Vanderbilt University; M.S., New Mexico Western College, Silver City; Ph.D., Claremont Graduate School
- Hagler, Debra** (1996), Clinical Associate Professor of Nursing; B.S.N., New Mexico State University; M.S., University of Arizona

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Hahn, Arthur W.** (1962), Professor Emeritus of Art; B.F.A., San Francisco Art Institute; M.A., California State University, San Francisco
- Hahn, Thomas** (1998), Assistant Professor of Architecture; B.A., University of Washington; M.Arch., Arizona State University
- Hajicek, James** (1976), Professor of Art; B.F.A., Kansas City Art Institute; M.F.A., University of New Mexico
- Hakac, John** (1966), Professor Emeritus of English; A.B., Centre College; M.A., Ph.D., University of Texas, Austin
- Haley, Arthur J.** (1976), Professor of Recreation Management and Tourism; B.A., Stonehill College; M.Ed., Springfield College; Ph.D., Texas A&M University
- Hall, John S.** (1973), Professor of Public Affairs; B.A., M.A., San Diego State University; Ph.D., University of Oregon
- Halverson, Roy K.** (1988), Professor Emeritus of Journalism and Mass Communication; B.S., M.S., University of Wisconsin, Madison; Ph.D., University of Illinois
- Hamilton, Robert** (1980), Professor of Music; B.M., Indiana University, Bloomington; M.M., Catholic University of America
- Hammond, Philip C.** (1996), Adjunct Professor of Anthropology; B.A., Drew University; M.A., Ph.D., Yale University
- Hanish, Laura** (1997), Assistant Professor of Family and Human Development; B.S., Arizona State University; M.A., Ph.D., University of Illinois, Chicago
- Hanna, Albert Lyle** (1967), Professor Emeritus of Music; B.M., University of Cincinnati; Ph.D., Indiana University, Bloomington
- Hansen, Cory Cooper** (2001), Lecturer of Curriculum and Instruction; B.A., University of Calgary (Canada); M.Ed., Ph.D., Arizona State University
- Hanson, Gary** (1999), Professor of Educational Leadership and Policy Studies; Academic Program Coordinator, Education Policy Studies and Higher and Postsecondary Education; B.A., M.A., Ph.D., University of Minnesota
- Hanson, Randel D.** (1999), Assistant Professor of Justice Studies; B.A., Ph.D., University of Minnesota
- Hanson, Roland C.** (1966), Professor Emeritus of Physics and Astronomy; B.S., Michigan College of Mining and Technology; M.S., Ph.D., University of Illinois
- Happel, Stephen K.** (1975), Professor of Economics; B.A., University of Missouri; M.A., Ph.D., Duke University
- Hardert, Ronald A.** (1966), Professor Emeritus of Sociology; A.B., M.A., University of Cincinnati; Ph.D., Indiana University, Bloomington
- Hardt, Annabelle** (1968), Professor Emerita of Curriculum and Instruction; B.A., Southwestern University; M.A., Cornell University; Ph.D., University of Texas, Austin
- Haried, Andrew A.** (1969), Professor Emeritus of Accountancy and Information Management; B.A., Hastings College; M.A.S., Ph.D., University of Illinois; C.P.A., Arizona, Illinois, North Carolina
- Harlan, Sharon L.** (1998), Associate Professor of Sociology; B.A., Northeastern University; M.A., Ph.D., Cornell University
- Harrigan, Carol Ann** (1998), Faculty Associate of Nursing; B.S.N., Rhode Island College; M.S.N., Indiana University
- Harris, Jerry D.** (1972), Professor Emeritus of Educational Psychology; B.S., Illinois State University; Ph.D., University of Minnesota, Twin Cities
- Harris, Joseph** (1963), Professor Emeritus of Chemistry and Biochemistry; B.S., University of Maryland; M.A., Ph.D., Johns Hopkins University
- Harris, Kathryn M.** (1965), Assistant Professor of English; B.A., M.A., Arizona State University
- Harris, Mark** (1980), Professor Emeritus of English; B.A., M.A., University of Denver; Ph.D., University of Minnesota, Twin Cities
- Harris, Walter Jr.** (1980), Professor Emeritus of Music; B.S., Knoxville College; M.M., Ph.D., University of Minnesota, Twin Cities
- Harrison, Jon F.** (1991), Associate Professor of Biology; B.S., University of Toronto (Canada); M.S., University of Pittsburgh; Ph.D., University of Colorado
- Hartman, Thomas S.** (1990), Associate Professor of Architecture; D.P.L.G., Paris School of Beaux Arts (France)
- Hasset, Matthew J.** (1966), Professor Emeritus of Mathematics and Statistics; B.S., Fordham University; M.S., Ph.D., Rutgers, The State University of New Jersey
- Hastings, Vernon L.** (1973), Professor Emeritus of Construction; B.S.M.E., University of Nebraska; M.S.I.E., Oklahoma A&M University
- Hatfield, Mary M.** (1988), Professor Emerita of Curriculum and Instruction; B.S., M.S., Ph.D., University of Kansas
- Haugen, Kathryn L.** (1995–99; 2000), Faculty Associate of Nursing; B.S., Adelphi University; M.S., Arizona State University
- Hauser, Carmela** (2000), Faculty Associate of Nursing; B.S., University of Rochester; M.S., University of San Diego
- Hawkos, Lise J.** (1981), Associate Museum Professional, Slide Collection, School of Art; B.A., United States International University; M.A., University of Wisconsin, Madison
- Hayes, Colleen** (1998), Lecturer of Computer Information Systems; B.S., M.B.A., Arizona State University
- Hayes, Mark** (1996), Assistant Professor of Chemistry and Biochemistry; B.A., Humboldt State University; Ph.D., Pennsylvania State University
- Haygood, Robert C.** (1970), Professor Emeritus of Psychology; B.S., University of Illinois; M.S., Ph.D., University of Utah
- Haynes, Peter** (1975), Professor of Justice Studies; B.S., University of Southampton (United Kingdom); M.A., Ph.D., University of Toronto (Canada)
- Hazel, Jeffrey R.** (1975), Professor of Biology; B.A., College of Wooster; M.S., Ph.D., University of Illinois
- He, Jiping** (1994), Associate Professor of Bioengineering; B.S., Huazhong University of Science and Technology, Wuhan (China); M.S., Ph.D., University of Maryland
- Hedrick, Philip W.** (1992), Professor of Biology; B.A., Hanover College; M.S., Ph.D., University of Minnesota
- Heenan, Katherine L.** (1998), Senior Lecturer of English; B.A., California State University, Chico; M.A., Ph.D., University of Connecticut, Storrs
- Hegmon, Michelle** (1995), Associate Professor of Anthropology; B.A., University of Virginia; M.A., Ph.D., University of Michigan
- Heier, William D.** (1966), Professor Emeritus of Management; B.S., University of Maryland; M.A., George Washington University; Ph.D., American University
- Heindl, Jennifer** (1999), Lecturer of the Barrett Honors College; B.A., M.A., Ph.D., University of California, Berkeley
- Hejduk, Renata** (1999), Assistant Professor of Architecture; B.A., Barnard College; M.A., Tufts University
- Heller, Jules** (1976), Professor Emeritus of Art; Dean Emeritus, Herberger College of Fine Arts; B.A., Arizona State University; M.A., Columbia University; Ph.D., University of Southern California

Helms, Loyce Randel (1976), Professor of English; B.A., University of California, Riverside; Ph.D., University of Washington

Helmstadter, Gerald C. (1959), Professor Emeritus of Education; B.S., M.S., Iowa State University; Ph.D., University of Minnesota, Twin Cities

Helton, Jon C. (1973), Professor Emeritus of Mathematics and Statistics; B.S., Southwest Texas State College; M.A., Ph.D., University of Texas, Austin

Hembree, Gary G. (1986), Senior Research Scientist of Physics and Astronomy; B.A., University of California, San Diego; Ph.D., Arizona State University

Henderson, Mark (1984), Professor of Industrial Engineering; B.S.M.E., M.S.M.E., Ph.D., Purdue University

Hendrick, Thomas E. (1984), Professor of Supply Chain Management; B.S., M.B.A., University of Washington; Ph.D., University of Oregon

Hendricks, Lutz (1996), Assistant Professor of Economics; Diplom-Volkswirt, Universität zu Köln (Germany); M.A., American University; Ph.D., University of Pennsylvania

Hendrickson, Lester E. (1968), Professor Emeritus of Materials Science and Engineering; B.S., M.S., Michigan Technological University; Ph.D., University of Illinois

Hendrickson, Suzanne B. (1990), Lecturer of French; B.S., M.A., Louisiana State University, Baton Rouge; Ph.D., Washington University, St. Louis

Hendrickson, William L. (1976), Associate Professor of French; B.A., Arizona State University; M.A., University of Kansas; Ph.D., Princeton University

Henkel, Ray (1966), Professor Emeritus of Geography; B.S., Arizona State University; M.S., Ph.D., University of Wisconsin, Madison

Hennington, Jo Ann (1975), Professor Emerita of Management Communication; B.A., M.B.A., Ed.D., Arizona State University

Henry, Joseph (1988), Professor Emeritus of Engineering; B.S., West Virginia University; M.S., Ph.D., University of Michigan

Hepburn, John R. (1984), Professor of Justice Studies; B.A., Butler University; M.S., University of Kentucky; Ph.D., University of Iowa

Hepworth, Dean H. (1990), Professor Emeritus of Social Work; B.S., M.S.W., Ph.D., University of Utah

Herald, Cherry L. (1973), Research Professor, Cancer Research Institute; Associate Director, Cancer Research Institute; B.S., M.S., Ph.D., Arizona State University

Herald, Delbert L. (1973), Research Professor, Cancer Research Institute; B.A., University of Colorado; Ph.D., Arizona State University

Herbots, Nicole (1991), Associate Professor of Physics and Astronomy; Engineering Degree, Ph.D., Catholic University of Louvain (Belgium)

Herman, George R. (1956), Professor Emeritus of English; M.A., University of Kansas

Herman, Richard M. (1992), Adjunct Professor of Bioengineering; B.S., Case Western Reserve University; M.B., B.Ch., B.A.O., Queen's University Faculty of Medicine (United Kingdom)

Hernandez, Armand P. (1974), Professor Emeritus of Justice Studies; B.A., M.A., San Jose State University; Ed.D., University of Southern California

Hernández-G., Manuel de Jesús (1992), Associate Professor of Spanish; B.A., University of California, San Diego; M.A., Ph.D., Stanford University

Herrera, Richard (1989), Associate Professor of Political Science; Director, Graduate Studies; B.A., M.A., Saint Mary's University; Ph.D., University of California, Santa Barbara

Herring, Donald E. (1999), Assistant Professor of Design; B.A., American University; B.S.D., M.S.D., Arizona State University

Herrington, Scott S. (1981), Librarian; Head, Library Instruction, Systems, and Technology; B.A., State University of New York, Plattsburgh; M.L.S., University of Tennessee; Ph.D., Arizona State University

Hershauer, James C. (1969), Professor of Management; B.S., Purdue University; M.B.A., D.B.A., Indiana University, Bloomington

Hertz, Michael G. (1987), Associate Professor of Finance; B.A., M.B.A., M.S., University of Rochester; Ph.D., University of Oregon

Hervig, Richard L. (1981), Senior Research Scientist, Center for Solid State Science; B.S., University of Iowa; Ph.D., University of Chicago

Hestenes, David O. (1966), Professor Emeritus of Physics and Astronomy; B.A., Pacific Lutheran College; M.A., Ph.D., University of California, Los Angeles

Hester, John J. "Jeff" (1991), Professor of Physics and Astronomy; B.A., M.S., Ph.D., Rice University



Heydt, Gerald Thomas
(1995)

Regents' Professor of Electrical Engineering; Director, Center for Advanced Control of Energy and Power Systems; B.S.E.E., Cooper Union University; M.S.E.E., Ph.D., Purdue University



Hickman, David R.
(1982)

Regents' Professor of Music; B.M., University of Colorado; M.M., Wichita State University

Higgins, Norman C. (1968), Professor Emeritus of Educational Media and Computers; B.S., Central Missouri State College; M.S., Ph.D., Syracuse University

Higgins, Walter T. Jr. (1967), Professor of Electrical Engineering; B.E.E., Manhattan College; M.S., Ph.D., University of Arizona

Higgs, Allen A. (1980), Senior Research Specialist, Center for Solid State Science; B.S., Arizona State University

Hill, Gary W. (1999), Professor of Music; Director of Bands; B.M.E., M.M., University of Michigan

Hillman, Amy (2001), Associate Professor of Management; B.A., Trinity University; M.B.A., University of the Incarnate Word; Ph.D., Texas A&M University

Hinks, Robert W. (1981), Associate Professor of Civil and Environmental Engineering; B.Sc., University of Wales (United Kingdom); M.S.E., M.A., Ph.D., Princeton University

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Hinrichs, Richard N.** (1987), Associate Professor of Exercise Science and Physical Education; A.B., Oberlin College; M.A., University of Iowa; Ph.D., Pennsylvania State University
- Hirleman, Edwin D. Jr.** (1977), Professor Emeritus of Mechanical and Aerospace Engineering; B.S.M.E., M.S.M.E., Ph.D., Purdue University
- Hitt, Michael** (2000), Professor and Weatherup/Overby Chair in Executive Leadership; B.B.A., M.B.A., Texas Tech University; Ph.D., University of Colorado
- Hoffer, Warren W.** (1972), Professor of Music; B.M., M.M., University of Wisconsin, Madison
- Hoffman, Dan** (1999), Professor of Architecture; B.Arch., Cooper Union
- Hoffman, Dennis L.** (1979), Professor of Economics; Associate Dean, Graduate Programs, College of Business; B.S., Grand Valley State University; M.A., Ph.D., Michigan State University
- Hoffman, Steven A.** (1985), Associate Professor of Microbiology; B.A., Clark University; M.A., Ph.D., University of Colorado
- Hoffmeister, J. Ronald** (1983), Associate Professor of Finance; B.S., Millikin University; M.S., Ph.D., University of Illinois
- Hofmann, Gretchen E.** (1999), Assistant Professor of Biology; B.S., University of Wyoming; M.S., Ph.D., University of Colorado, Boulder
- Hogan, Fiona** (1984), Assistant Research Professor, Cancer Research Institute; B.Sc., M.Sc., Ph.D., University College, Dublin (Ireland)
- Hogan, Timothy D.** (1970), Professor of Economics; Director, Center for Business Research; Director, L. William Seidman Research Institute; A.B., University of California, Berkeley; M.A., University of California, Davis; Ph.D., Virginia Polytechnic Institute and State University
- Hogg, Gary L.** (1995), Professor of Industrial Engineering; Chair, Department of Industrial Engineering; B.S., Texas A&M University; M.S., Ph.D., University of Texas, Austin
- Hogue, Brenda** (2002), Associate Professor of Microbiology; B.A., Mississippi University; M.Ed., Duke University; Ph.D., University of Tennessee
- Hokin, Jeanne** (1997), Senior Lecturer of Art; B.A., Ph.D., University of California, Santa Barbara
- Holbert, Keith E.** (1989), Associate Professor of Electrical Engineering; B.S., M.S., Ph.D., University of Tennessee
- Holbrook, Amy K.** (1975), Associate Professor of Music; B.A., M.A., Mills College; Ph.D., University of Washington
- Holley, Lynn C.** (2000), Assistant Professor of Social Work; B.A., M.S.S.W., University of Tennessee, Knoxville; Ph.D., University of Washington
- Holloway, Allen Jr.** (1992), Adjunct Professor of Bioengineering; B.A., Yale University; M.D., Harvard University
- Holloway, John R.** (1969), Professor of Chemistry and Biochemistry and Geological Sciences; B.S., University of Oregon; Ph.D., Pennsylvania State University
- Holloway, Victoria** (1995), Associate Professor of Theatre; B.A., Boise State University
- Holschuh, Jane** (2000), Assistant Professor of Social Work; B.A., M.S.W., Ph.D., University of California, Berkeley
- Holway, James** (1993), Faculty Associate of Planning and Landscape Architecture; B.A., Cornell University; M.R.P., Ph.D., University of North Carolina, Chapel Hill
- Hom, Peter W.** (1984), Professor of Management; B.A., New York University; M.A., University of California, Berkeley; Ph.D., University of Illinois
- Homa, Donald L.** (1975), Professor of Psychology; B.S., University of Iowa; M.S., Ph.D., University of Wisconsin, Madison
- Homer, Judith** (1998), Clinical Associate Professor of Counseling Psychology and Counselor Education; Director, Counselor Training Center; B.A., M.S., Ph.D., University of Oklahoma
- Honegger, Gitta** (2001), Professor of German; Ph.D., University of Vienna (Austria)
- Hooper, J. Kenneth** (1991), Professor of Plant Biology; Chair, Department of Plant Biology; Chair, Molecular Biosciences and Biotechnology Program; B.A., Goshen College; M.S., Ph.D., University of Michigan
- Hood, Stafford** (1992), Associate Professor of Counselor Education; B.A., M.S., University of Wisconsin, Whitewater; Ph.D., University of Illinois
- Hoover, Helene M.** (1957), Professor of Family and Human Development; B.S., M.S., Louisiana State University; Ed.D., Oklahoma State University
- Hope, Diane** (1997), Assistant Research Professor of Biology; B.S., University of London (United Kingdom); M.S., Ph.D., University of Aberdeen (United Kingdom)
- Hopkins, Paul T. Jr., Capt.** (2001), Assistant Professor of Military Science; B.S., Wheaton College
- Hoppensteadt, Frank C.** (1995), Professor of Mathematics and Statistics and Electrical Engineering; Director, Center for System Science and Engineering Research; B.A., Butler University; M.S., Ph.D., University of Wisconsin, Madison
- Horan, Elizabeth R.** (1989), Associate Professor of English; A.B., Columbia University; Ph.D., University of California, Santa Cruz
- Horan, John J.** (1985), Professor of Counseling Psychology and Counselor Education; A.B., M.A., University of Detroit; Ph.D., Michigan State University
- Horowitz, Renee** (1986), Professor of Information and Management Technology; B.A., Brooklyn College; M.A., Ph.D., University of Colorado
- Horwath, Peter** (1973), Professor of German; Abitur, Realgymnasium, Landshut (Germany); B.A., M.A., Indiana University, Bloomington; Ph.D., University of Michigan
- Hottelling, Katsuko T.** (1991), Associate Librarian, Technical Services Department; B.A., M.A., University of North Carolina, Chapel Hill; M.A., University of Oregon
- Hoult, Thomas Ford** (1964), Professor Emeritus of Sociology; B.A., University of Illinois; M.A., Whittier College; Ph.D., University of Southern California
- Houston, Sandra L.** (1984), Professor of Civil and Environmental Engineering; Chair, Department of Civil and Environmental Engineering; B.S., University of Oklahoma; M.S.C.E., University of New Mexico; Ph.D., University of California, Berkeley
- Houston, William N.** (1984), Professor of Civil and Environmental Engineering; Professional Degree in Geological Engineering, Colorado School of Mines; M.S.C.E., Ph.D., University of California, Berkeley
- Howard, Pamela** (1996), Lecturer of Speech and Hearing Science; B.A., M.A., California State University, Fresno
- Howell, Susan** (2001), Adjunct Professor of Anthropology; B.A., San Jose State University; M.A., Ph.D., Arizona State University
- Howells, Edmund G.** (1960), Professor Emeritus of Philosophy; B.A., University of Utah; M.A., University of Michigan; M.A., Middlebury College; Ph.D., Stanford University

- Hu, Qiang** (2001), Assistant Research Professor of Plant Biology; B.S., Hubei University (China); M.S., Institute of Hydrobiology, Chinese Academy of Sciences (China); Ph.D., Ben-Gurion University of the Negev (Israel)
- Hubbard, Paul G.** (1950), Professor Emeritus of History; A.B., Wabash College; M.A., Ph.D., University of Illinois
- Hubele, Norma F.** (1984), Professor of Industrial Engineering; B.S., University of Massachusetts; M.S., Ph.D., Rensselaer Polytechnic Institute
- Hudak, Thomas** (1988), Professor of Anthropology; B.A., M.A., University of Wisconsin, Madison; Ph.D., University of Michigan
- Hudelson, Sarah J.** (1989), Professor of Curriculum and Instruction; B.A., College of Wooster; M.A., Ph.D., University of Texas, Austin
- Huey, Ben M.** (1979), Associate Professor of Computer Science and Engineering; Associate Dean for Planning and Administration; B.S., Harding College; M.S., Ph.D., University of Arizona
- Huey, Kimberly A.** (2001), Assistant Professor of Exercise Science and Physical Education; B.S., Seattle Pacific University; M.S., University of Arizona; Ph.D., University of California, San Diego
- Huff, Robert A.** (1985), Professor Emeritus of Education; B.A., University of Kansas; M.A., University of Missouri, Kansas City; Ed.D., University of Oregon
- Hui, Joseph Y.** (1999), Professor of Electrical Engineering; Chair, International Switching Symposium; Interim Director, Telecommunications Research Center; B.S., M.S., Ph.D., Massachusetts Institute of Technology
- Huizingh, William** (1959), Professor Emeritus of Accountancy and Information Management; B.S.B.A., M.B.A., University of Denver; Ph.D., University of Michigan; C.P.A., Arizona, Colorado
- Humphrey, Ted** (1966), Professor of Philosophy; Dean, the Barrett Honors College; A.B., M.A., University of California, Riverside; Ph.D., University of California, San Diego
- Humphreys, Jere T.** (1987), Professor of Music; B.M., University of Mississippi; M.M., Florida State University; Ph.D., University of Michigan
- Hunnicutt, Kay Hartwell** (1975), Associate Professor of Educational Leadership and Policy Studies; Academic Program Coordinator, DELTA Doctorate; B.S., M.A., Murray State University; Ph.D., Southern Illinois University, Carbondale; J.D., Arizona State University
- Hunter, Betty A.** (1966), Professor Emerita of Family and Human Development; B.S., M.Ed., University of North Carolina, Greensboro
- Hunter, Gary K.** (1999), Assistant Professor of Marketing; B.S., United States Military Academy; M.B.A., University of Tennessee; Ph.D., University of North Carolina
- Hunter, Sue** (1999), Assistant Librarian, Hayden Reference Services; B.A., McMaster University (Canada); M.L.S., Dalhousie University (Canada)
- Huntington, Virginia R.** (1962), Professor Emerita of Accountancy and Information Management; B.A., M.B.A., University of Kansas; Ph.D., University of Texas; C.P.A., Arizona, Missouri
- Hurdle, Donna E.** (1997), Assistant Professor of Social Work; B.A., Susquehanna University; M.S.W., University of Maryland, Baltimore; Ph.D., University of South Carolina, Columbia
- Hurlbert, Glenn** (1990), Associate Professor of Mathematics and Statistics; B.S., Wake Forest University; M.Sc., State University of New York, Stony Brook; Ph.D., Rutgers, The State University of New Jersey
- Huss, Gary** (1998), Senior Research Scientist of Geological Sciences; B.A., Rice University; M.S., University of New Mexico; Ph.D., University of Minnesota
- Hussman, Stephen J.** (1999), Assistant Archivist; B.A., Wilmington College of Ohio; M.A., Wright State University
- Huston, Gerald D.** (1962), Professor Emeritus of Accountancy and Information Management; B.S.C., M.A., Ph.D., University of Iowa
- Hutt, Michael D.** (1982), Davis Distinguished Professor of Marketing; B.B.A., M.B.A., Ohio University; Ph.D., Michigan State University
- Hwang, Yuhchang** (1995), Associate Professor of Accountancy and Information Management; B.A., Fu-Jen Catholic University (Taiwan); M.S., National Cheng-Chi University (Taiwan); Ph.D., University of California, Berkeley
- I**
- Iasemidis, Leon D.** (2000), Associate Professor of Bioengineering; B.S., National Technical University of Athens (Greece); M.S., Ph.D., University of Michigan
- Idso, Sherwood J.B.** (1984), Adjunct Professor of Geography and Plant Biology; Research Physicist, U.S.D.A. Agricultural Research Service; B.S., M.S., Ph.D., University of Minnesota
- Igoe, Ann Reid** (1999), Clinical Assistant Professor of Psychology in Education; B.S., Grand Canyon University; M.A., Ph.D., Arizona State University
- Ihrig, Edwin** (1979), Professor of Mathematics and Statistics; B.S., M.A., University of Maryland; Ph.D., University of Toronto (Canada)
- Indieke, LeRoy** (1968), Professor Emeritus of Accountancy and Information Management; B.S., Valley City State College; M.A., University of North Dakota; Ph.D., University of Illinois; C.P.A., Illinois
- Ingraham, Leonard W.** (1973), Lecturer Emeritus of Education; B.S., City College of City University; M.A., Ed.D., Columbia University
- Ingram, David** (1998), Professor of Speech and Hearing Science; Chair, Department of Speech and Hearing Science; B.S., Georgetown University; Ph.D., Stanford University
- Ingram, Kelly D.** (1998), Clinical Assistant Professor of Speech and Hearing Science; B.A., University of British Columbia (Canada); M.S., Purdue University
- Innes, Matthew** (2001), Assistant Professor of Architecture; B.Eng., Sheffield City Polytechnic (United Kingdom); M.S., University of Cambridge (United Kingdom)
- Inskeep, Gordon C.** (1968), Professor Emeritus of Management; B.Ch.E., Ohio State University; Ph.D., Columbia University
- Irvine, Daniel E.** (1995), Lecturer of Theatre; B.F.A., M.F.A., University of North Carolina, Chapel Hill
- Ismeurt, Robert L.** (1989), Associate Professor of Nursing; B.S.N., Florida State University; M.S., Arizona State University; Ph.D., University of Texas, Austin
- Isom, Matthew** (1996), Senior Lecturer of Mathematics and Statistics; Director, First-Year Mathematics and Statistics; B.A., Humboldt State University; M.A., Ph.D., University of Northern Colorado
- Itule, Bruce D.** (1985), Clinical Professor of Journalism and Mass Communication; Director, Student Media; B.A., University of Arizona; M.A., University of Colorado

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS



Iverson, Peter (1986)
Regents' Professor of History; B.A., Carleton College; M.A., Ph.D., University of Wisconsin, Madison

Iyer, Govind (1998), Associate Professor of Accountancy and Information Management; B.S., University of Bombay (India); M.Tx., Ph.D., Georgia State University

J

Jackiewicz, Elzbieta (1994), Lecturer of Mathematics and Statistics; M.Sc., University of Gdansk (Poland)

Jackiewicz, Zdzislaw (1987), Professor of Mathematics and Statistics; M.S., Technical University of Gdansk (Poland); M.S., Ph.D., University of Gdansk (Poland)

Jacks, Mary L. (1955), Professor Emerita of Business Administration; B.A., M.A., Arizona State University; C.P.S., Arizona

Jackson, Donald W. Jr. (1972), Professor of Marketing; B.A., Albion College; M.B.A., Ph.D., Michigan State University

Jackson, Naomi M. (1995), Associate Professor of Dance; B.A., McGill University (Canada); M.A., University of Surrey (United Kingdom); Ph.D., New York University

Jacob, Richard J. (1963), Professor Emeritus of Physics and Astronomy; B.S., Ph.D., University of Utah

Jacobowitz, Ronald (1970), Professor Emeritus of Mathematics and Statistics; B.A., City College of New York; M.S., University of Chicago; Ph.D., Princeton University

Jacobs, Bertram L. (1985), Professor of Microbiology; Director, Interdisciplinary Committee for Molecular and Cellular Biology; B.S., Rutgers, The State University of New Jersey; Ph.D., University of California, Berkeley

Jacobs, H. Donald (1972), Professor Emeritus of Curriculum and Instruction; Director, Reading Clinic; B.A.Ed., M.A.Ed., Central Washington State College; D.Ed., University of Oregon

Jacobson, Arthur (1956), Professor Emeritus of Art; B.S., M.S., University of Wisconsin, Madison; Ph.D., University of Minnesota, Twin Cities

Jacobson, David (1992), Associate Professor of Sociology; B.A., Hebrew University of Jerusalem, (Israel); M.S., London School of Economics, (United Kingdom); Ph.D., Princeton University

Jacobson, Dean L. (1974), Professor Emeritus of Materials Science and Engineering; B.S., M.S., University of Notre Dame; Ph.D., University of California, Los Angeles

Jacobson, Diana L. (1996), Faculty Associate of Nursing; B.S.N., University of Arizona; M.S., Arizona State University

Jain, Nemi C. (1976), Professor of Communication; B.S., M.S., Agra University (India); Ph.D., Michigan State University

Jakob, John H. (1960), Professor Emeritus of Architecture; B.Arch., Ohio State University; M.S.Arch., Columbia University

James, Melissa A., SSG (2000), Instructor of Military Science; A.A., Kansas State University

Jankowski, Daniel F. (1964), Professor of Mechanical and Aerospace Engineering; B.S.E., M.S.E., Ph.D., University of Michigan

Janssen, James G. (1968), Professor Emeritus of English; B.A., M.A., Marquette University; Ph.D., University of Wisconsin, Madison

Jarvis, Cheryl Burke (2000), Assistant Professor of Marketing; B.S., M.S., Texas A&M University; Ph.D., Indiana University

Jasper, Marcia A. (1976–86; 1993), Clinical Associate Professor of Nursing; B.S.N., Saint Olaf College; M.S., Arizona State University

Jelinek, James (1953), Professor Emeritus of Education; B.S., University of Illinois; M.A., Northwestern University; Ed.D., Indiana University, Bloomington

Jenkins, William (1979), Associate Professor of Art; B.A., Saint Lawrence University; M.F.A., State University of New York, Buffalo

Jennings, Marianne M. (1977), Professor of Legal and Ethical Studies; B.S., J.D., Brigham Young University

Jiang, Nan (2000), Associate Research Scientist of Physics and Astronomy; B.Sc., Jilin University (China); M.S., Chinese Science Academy (China); Ph.D., University of Birmingham (United Kingdom)

Joehnk, Michael D. (1982), Professor Emeritus of Finance; B.S., University of Arizona; M.B.A., Arizona State University; Ph.D., University of Arizona

Joganic, Edward F. (1996), Adjunct Professor of Speech and Hearing Science; B.S., M.D., M.S., University of Arizona

Johannes, Tricia (1998), Faculty Associate of Design; B.S.D., Arizona State University

Johanson, Donald C. (1997), Professor of Anthropology; Director, Institute of Human Origins; B.A., University of Illinois, Urbana-Champaign; M.A., Ph.D., University of Chicago

Johnson, Alan P. (1967), Professor Emeritus of English; B.A., Amherst College; M.A., University of Michigan; Ph.D., University of Minnesota, Twin Cities

Johnson, Douglas A. (1974), Professor of Accountancy and Information Management; B.B.A., Ph.D., University of Texas; C.P.A., Texas

Johnson, John M. (1972), Professor of Justice Studies; B.A., Indiana University, Bloomington; M.A., San Diego State College; Ph.D., University of California, San Diego

Johnson, Linda Nelson (1985), Associate Professor of Design; B.A., M.A., Iowa State University

Johnson, Marysia (1997), Assistant Professor of English; B.A., Saint Francis College, Brooklyn; M.A., Monterey Institute of International Studies; Ph.D., Georgetown University

Johnson, Paul C. (1994), Associate Professor of Civil and Environmental Engineering; B.S., University of California, Davis; M.A., Ph.D., Princeton University

Johnson, Penelope M. (1995), Clinical Assistant Professor of Nursing; B.S., University of Colorado; M.S., Arizona State University

Johnson, Robert A. (1999), Adjunct Professor of Biology; B.S., M.S., University of Illinois, Urbana-Champaign; Ph.D., Arizona State University

Johnson, Roy M. (1952–53; 1955), Professor Emeritus of Microbiology; A.B., M.S., University of Chicago; Ph.D., University of New Mexico

Johnson, Wendee (1990), Clinical Assistant Professor of Nursing; B.S.N., Gustavus Adolphus College; M.S.N., University of Pennsylvania

Johnson, William G. (1990), Professor of Health Administration and Policy; B.S., University of Pennsylvania; M.A., Temple University; Ph.D., Rutgers, The State University of New Jersey

Johnson, William S. (1990), Executive Director, Division of Undergraduate Academic Services; B.A., Washington State University; M.S., Iowa State University; Ph.D., University of Southern California

Johnston, Hubert (1986), Clinical Associate Professional of Social Work; B.S., Cheyney State College; M.A., Central Michigan University; Ph.D., Cornell University

Jones, Austin E. (1968), Professor Emeritus of Psychology; B.A., University of Illinois; M.S., Purdue University; Ph.D., University of Rochester

Jones, Don (1996), Associate Professor of Mathematics and Statistics; B.S., M.S., Georgia Institute of Technology; Ph.D., University of California, Irvine

Jones, Elizabeth E. K. (1996), Lecturer of Mathematics and Statistics; B.S., M.A., University of Texas; Ph.D., Arizona State University

Jones, Jennifer (1999), Adjunct Professor of Anthropology; B.A., State University of New York, Binghamton; Ph.D., Arizona State University

Jones, John (1990), Associate Professor of Mathematics and Statistics; Associate Chair, Undergraduate Studies; A.B., University of California, Berkeley; Ph.D., Harvard University

Jones, Marion K. (1970), Professor Emerita of Dance; B.A., Wayne State University; M.A., Arizona State University

Jones, Owen D. (1994), Professor of Law; B.A., Amherst College; J.D., Yale University

Jones, Ruth S. (1981), Professor of Political Science; Executive Assistant for University Programs; B.S., Indiana State University; M.A., Ph.D., Georgetown University

Jonsson, Hjorleifur (1999), Assistant Professor of Anthropology; B.A., University of Iceland (Iceland); M.A., University of Iowa; M.A., Ph.D., Cornell University

Joo, Youngjoong (2001), Assistant Professor of Electrical Engineering; B.S., M.S., Korea University (South Korea); Ph.D., Georgia Institute of Technology

Jordan, K. Forbis (1987), Professor Emeritus of Educational Administration and Supervision; A.B., M.A., Western Kentucky State College; Ed.D., Indiana University

Joshi, Lokesh (2000), Assistant Research Professor of Plant Biology; B.S., M.S., University of Rajasthan (India); Ph.D., University of Bath (United Kingdom)

Joyal, Elaine (1998), Adjunct Professor of Anthropology; B.A., Antioch College; M.S., Oregon State University; Ph.D., Arizona State University

Juergens, Jennifer L., (2001), Assistant Professor of Finance; B.S., Ph.D., The Pennsylvania State University

Julian, Marti F. (2001), Assistant Professor of Educational Technology; B.S., Northern Arizona University; M.Ed., Ph.D., University of Virginia

Jurik, Nancy (1981), Professor of Justice Studies; B.A., M.A., Southern Methodist University; Ph.D., University of California, Santa Barbara

Justus, Jerry T. (1968), Professor Emeritus of Biology; B.A., Franklin College; M.A., Ph.D., Indiana University, Bloomington

Juvet, Richard S. Jr. (1970), Professor Emeritus of Chemistry and Biochemistry; B.S., Ph.D., University of California, Los Angeles

K

Kadell, Kevin (1981), Professor of Mathematics and Statistics; B.A., California State University, Sacramento; M.A., University of Maryland; Ph.D., Pennsylvania State University

Kader, David (1979), Professor of Law; B.A., California State University, Fresno; J.D., University of Washington; LL.M., University of London (United Kingdom)

Kagy, Virginia L. (1947), Professor Emerita of Family and Human Development; B.A., Drake University; M.S., Iowa State University; Ph.D., Johns Hopkins University

Kahn, B. Winston (1966), Associate Professor of History; B.A., National Taiwan University (Taiwan); M.A., University of Minnesota, Twin Cities; Ph.D., University of Pennsylvania

Kahn, Kim (1989), Professor of Political Science; A.B., M.A., Ph.D., University of Michigan

Kaida, Tamarra (1980), Professor of Art; B.A., Goddard College; M.F.A., State University of New York, Buffalo

Kajikawa, William M. (1937), Professor Emeritus of Physical Education; B.A., M.A., Arizona State University

Kaliszewski, Steven (1998), Assistant Professor of Mathematics and Statistics; B.A., Saint Olaf College; M.A., Ph.D., Dartmouth College

Kaloush, Kamil E. (2001), Assistant Professor of Civil and Environmental Engineering; B.S., M.S., Ohio State University; Ph.D., Arizona State University

Kambhampati, Subbarao (1991), Professor of Computer Science and Engineering; B.Tech., Indian Institute of Technology (India); M.S., Ph.D., University of Maryland, College Park

Kamins, Martin P. (1970), Professor Emeritus of Curriculum and Instruction; B.Ed., University of Miami; M.S., Florida State University; Ed.D., Wayne State University

Kaminsky, Elijah Ben-Zion (1962), Professor Emeritus of Political Science; A.B., A.M., Ph.D., Harvard University

Kaminsky, Selina K. (1988), Librarian Emerita; B.Ed., University of Miami; M.A.L.S., University of Denver

Kaplan, Catherine (2001), Assistant Professor of History; B.A., Amherst College; M.A., Ph.D., University of Michigan

Kaplan, Robert G. (1984), Professor of Dance; B.M.E., University of Hartford; M.M., Arizona State University

Kaplan, Steven (1981), Professor of Accountancy and Information Management; B.S., Arizona State University; M.A.S., Ph.D., University of Illinois

Karady, George (1986), Professor of Electrical Engineering; Salt River Project Chair; Diploma, Technical University, Budapest (Hungary); Candidate of Technical Sciences, Hungarian Academy of Science (Hungary); Ph.D., Budapest University for Technical Sciences (Hungary)

Karam, Lina (1995), Associate Professor of Electrical Engineering; B.E., American University of Beirut (Lebanon); M.S., Ph.D., Georgia Institute of Technology

Karcher, Timothy (1989), Associate Research Professional, Center for Solid State Science; B.Sc., M.Sc., University of Wisconsin, Milwaukee

Karjala, Dennis S. (1978), Professor of Law; B.S.E., Princeton University; M.S., Ph.D., University of Illinois; J.D., University of California, Berkeley

Karnes, Thomas L. (1968), Professor Emeritus of History; A.B., Colorado University; A.M., Ph.D., Stanford University

Karoly, Paul (1982), Professor of Psychology; B.A., City College of New York; Ph.D., University of Rochester

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Kashiwagi, Dean T. (1992), Associate Professor of Construction; B.S., University of Hawaii, Manoa; M.S., Ph.D., Arizona State University

Kastenbaum, Beatrice (1982), Clinical Associate Professor of Nursing; B.S.N., University of Michigan; M.S.N., Wayne State University

Kastenbaum, Robert J. (1981), Professor Emeritus of Gerontology and Communication; B.A., Long Beach State College; Ph.D., University of Southern California

Katz, Richard C. (1990), Adjunct Professor of Speech and Hearing Science; B.A., M.A., University of Massachusetts; Ph.D., University of Florida

Katzman, Elaine Menter (1983), Professor Emerita of Nursing; B.S., M.S., Ph.D., Syracuse University

Kaufman, Herbert M. (1973), Professor of Finance; Chair, Department of Finance; B.A., State University of New York, Binghamton; Ph.D., Pennsylvania State University

Kaufman, Irving (1965), Professor Emeritus of Electrical Engineering; B.E., Vanderbilt University; M.S., Ph.D., University of Illinois

Kaufmann, William B. (1968), Professor of Physics and Astronomy; A.B., M.A., Ph.D., University of California, Berkeley

Kawski, Matthias (1988), Professor of Mathematics and Statistics; Ph.D., University of Colorado



Kaye, David H.
(1976)
Regents' Professor of Law; B.S.,
Massachusetts Institute of Technology;
M.A., Harvard University; J.D., Yale
University

Kazilek, Charles J. (1985), Senior Research Professional of Biology; B.F.A., M.N.S., Arizona State University

Kazmier, Leonard J. (1965), Professor Emeritus of Economics; B.A., M.A., Wayne State University; Ph.D., Ohio State University

Kearney, James R. III (1968), Professor Emeritus of History; B.A., Pomona College; M.A., Washington University; Ph.D., University of Wisconsin, Madison

Keating, Thomas (1972), Associate Professor of Political Science; B.A., M.A., California State University, Sacramento; M.P.A., Ph.D., Indiana University

Keats, Barbara W. (1984), Associate Professor of Management; B.A., Louisiana Technical University; M.S., Northeast Louisiana University; Ph.D., Oklahoma State University

Keats, J. Bert (1984), Professor Emeritus of Industrial Engineering; B.S.I.E., Lehigh University; M.S., Ph.D., Florida State University; Ph.D., Oklahoma State University

Keefer, Donald L. (1987), Associate Professor of Supply Chain Management; B.S., Carnegie-Mellon University; M.S., Stanford University; M.S., Ph.D., University of Michigan

Kehl, Delmar G. (1965), Professor of English; B.A., Bob Jones University; M.S., University of Wisconsin, Madison; Ph.D., University of Southern California

Keim, Gerald (2001), Clinical Professor of Executive Education; B.S., University of Delaware; M.A., Ph.D., Virginia Polytechnic Institute and State University

Keim, Robert T. (1979), Associate Professor of Computer Information Systems; B.S., M.B.A., Ph.D., University of Pittsburgh

Keith, Marlow F. (1946), Professor Emeritus of Technology; B.A., M.A., Arizona State University

Keith, Susan (1967), Assistant Professor of Journalism and Mass Communication; B.S., University of Montevallo; M.A., University of South Florida; Ph.D., University of North Carolina

Keith, Verna M. (1990), Associate Professor of Sociology; Chair, Department of Sociology; B.S., University of Central Arkansas; M.A., Ph.D., University of Kentucky



Keller, Gary D.
(1986)
Regents' Professor of Spanish; Director, Hispanic
Research Center; B.A., University of the Americas
(Mexico); M.A., New School for Social Research;
M.A., Ph.D., Columbia University

Keller, Thomas (1980), Associate Professor of Management; B.Ed., M.Ed., Ed.Spec., Ed.D., University of Toledo

Kellgren, Gary (2000), Lecturer of Mathematics and Statistics; B.S., Allegheny College; M.S., Southern Illinois University

Kelly, John B. (1962), Professor Emeritus of Mathematics and Statistics; B.A., Columbia University; Ph.D., Massachusetts Institute of Technology

Kelly, Richard W. (1965), Professor Emeritus of Electrical Engineering; B.S.E., M.S.E., Ph.D., University of Iowa

Kelly, Rob Roy (1983), Faculty Associate of Design; Professor Emeritus of Art; B.F.A., Minneapolis School of Art; M.F.A., Yale University

Kennedy, Thomas D. (1974), Professor Emeritus of Justice Studies; B.A., Tulane University; M.A., Ph.D., Louisiana State University, Baton Rouge

Kenney, Janet W. (1988), Professor Emerita of Nursing; B.S., Alfred University; M.S., Boston University; Ph.D., State University of New York, Buffalo

Kenney, Patrick (1986), Professor of Political Science; B.A., M.A.P.A., Ph.D., University of Iowa

Kerrick, Douglas T. (1980), Professor of Psychology; B.A., Dowling College; M.A., Ph.D., Arizona State University

Kerr, Barbara A. (1990), Professor of Counselor Education and Counseling Psychology; A.B., University of Missouri; M.A., Ohio State University; Ph.D., University of Missouri

Kettner, Peter M. (1979), Professor of Social Work; B.A., Valparaiso University; M.S.W., Washington University; D.S.W., University of Southern California

Keuter, Clifford D. (1988), Professor of Dance

Kevene, Clement J. (1956), Professor Emeritus of Physics and Astronomy; B.S., Ph.D., Iowa State University

Khoo, Siek-Toon (1997), Assistant Professor of Psychology; B.Sc., University of Canterbury (New Zealand); M.Ed.St., Monash University (Australia); Ph.D., University of California, Los Angeles

Kiaei, Sayfe (2001), Professor of Electrical Engineering; B.S.E.E., M.S., Ph.D., Washington State University

Kidd, Pamela (2000), Professor of Nursing; Associate Dean for Graduate Programs and Research; B.S.N., University of Kentucky; M.S.N., University of Cincinnati; Ph.D., University of Arizona

Kierstead, Henry A. (1988), Professor of Mathematics and Statistics; B.A., M.A., Ph.D., University of California, San Diego

Kiesow, Milton A. (1957), Professor Emeritus of Education; B.S., University of Wisconsin; M.A., Ph.D., University of Nebraska, Lincoln

Kigin, Denis J. (1958–65; 1967), Professor Emeritus of Technology; Dean Emeritus, Continuing Education and Summer Sessions; B.S., Mankato State University; M.S., University of Wisconsin, Stout; Ed.D., University of Missouri

Kihl, Mary (1996), Professor of Planning and Landscape Architecture; Associate Dean, College of Architecture and Environmental Design; Director, Herberger Center for Design Excellence; A.B., Juniata College; M.U.R.P., University of Pittsburgh; M.A., University of Michigan; Ph.D., Pennsylvania State University

Killeen, Mary (1982–84; 1986), Associate Professor of Nursing; Associate Dean for Undergraduate Programs and Extended Education, College of Nursing; B.S.N., M.S., Arizona State University; Ph.D., University of Texas, Austin

Killeen, Peter R. (1968), Professor of Psychology; B.S., Michigan State University; Ph.D., Harvard University

Kim, Dongrin (2001), Lecturer of Mathematics and Statistics; B.S.E.E., University of California, San Diego; M.S.E.E., University of California, Los Angeles; M.A., California State University, Los Angeles; M.A., Ph.D., University of Southern California

Kim, Bruce (2000), Associate Professor of Electrical Engineering; B.S., University of California, Irvine; M.S., University of Arizona; Ph.D., Georgia Institute of Technology

Kim, Joochul (1980), Associate Professor of Planning and Landscape Architecture; B.A., University of California, Berkeley; M.U.P., Ph.D., University of Michigan

Kimball, Bruce A. (1988), Adjunct Professor of Plant Biology; B.S., University of Minnesota; M.S., Iowa State University; Ph.D., Cornell University

Kimbel, William H. (1997), Associate Professor of Anthropology; Science Director, Institute of Human Origins; B.A., Case Western Reserve University; Ph.D., Kent State University

Kimler, Stephen J. (1967), Professor Emeritus of Education; B.Ed., Milwaukee State Teachers College; M.Ed., Marquette University; Ed.D., Arizona State University

King, Tracy (1998), Faculty Associate of Nursing; B.S.N., M.S., Arizona State University

Kingston, Jerry L. (1969), Professor of Economics; ICA Faculty Representative; B.A.E., Wayne State College; M.S., Colorado State University; Ph.D., Pennsylvania State University

Kinicki, Angelo J. (1982), Professor of Management; B.B.A., M.B.A., D.B.A., Kent State University

Kinnier, Richard (1982), Professor of Counseling Psychology and Counselor Education; B.A., Boston College; Ed.M., Columbia University; Ph.D., Stanford University

Kintigh, Keith W. (1987), Professor of Anthropology; A.B., M.S., Stanford University; Ph.D., University of Michigan

Kinzig, Ann P. (1998), Assistant Professor of Biology; B.S., University of Illinois, Urbana-Champaign; M.S., Ph.D., University of California, Berkeley

Kirk, Dwayne (2000), Adjunct Professor of Plant Biology; B.S., University of Queensland (Australia)

Kirkman-Liff, Bradford L. (1981), Professor of Health Administration and Policy; B.S., M.S., Carnegie Mellon University; Dr.P.H., University of North Carolina, Chapel Hill

Kirkwood, Craig W. (1983), Professor of Supply Chain Management; S.B., S.M., E.E., Ph.D., Massachusetts Institute of Technology

Kisielewski, Robert V. (1978), Professor Emeritus of Technology; B.S.M.E., M.S.M.E., University of Wisconsin, Madison

Klann, Margaret L. (1945), Professor Emerita of Physical Education; B.S., University of Illinois; M.A., University of Northern Colorado

Klein, James D. (1988), Professor of Educational Technology; B.A., Florida Atlantic University; M.S., Ph.D., Florida State University

Kleinfeld, Gerald R. (1962), Professor of History; B.A., New York University; M.A., University of Michigan; Ph.D., New York University



Klett, Mark C.
(1982)

Regents' Professor of Art; B.S., Saint Lawrence University; M.F.A., State University of New York, Buffalo

Kliwer-Britton, Darleen (1975), Professor of Music; B.M.E., Bethany College; M.M., Wichita State University

Klock, John W. (1960), Professor Emeritus of Civil Engineering; B.E., University of Southern California; M.S., Ph.D., University of California, Berkeley

Klopatek, Jeffrey M. (1981), Professor of Plant Biology; B.S., M.S., University of Wisconsin, Milwaukee; Ph.D., Cornell University

Knapp, Margaret M. (1990), Professor of Theatre; Associate Dean for Research and Administration, Herberger College of Fine Arts; B.A., LeMoyné College; M.A., Ph.D., City University of New York

Knaupp, Jonathan E. (1970), Professor Emeritus of Elementary Education; B.S., Oregon State University; M.A., Ph.D., University of Illinois

Knauth, L. Paul (1979), Professor of Geological Sciences; B.A., University of Chicago; Ph.D., California Institute of Technology

Knight, Donald O. (1981), Professor Emeritus of Industrial Engineering; B.E.E., Marquette University; M.S.E., Ph.D., Arizona State University

Knight, George P. (1986), Professor of Psychology; B.A., Macalester College; M.A., Ph.D., University of California, Riverside

Knight, John Costain (1965–68; 1997), Associate Research Professor, Cancer Research Institute; B.Sc., Ph.D., University of Liverpool (United Kingdom)

Knipping, Uwe Fred (1988), Associate Research Professional of Physics and Astronomy; B.Sc., University of Cologne (Germany)

Knowlton, John F. (1964), Professor Emeritus of Spanish; B.A., Lewis and Clark College; M.A., Ph.D., University of Oregon

Knox, Robert L. (1963), Professor Emeritus of Economics; B.S., M.S., Oklahoma State University; Ph.D., University of North Carolina

Knudsen, Frances S. (1964), Professor Emerita of Nursing; B.S., University of Arizona; M.S., University of Colorado; Ph.D., Arizona State University

Knutson, Kraig (1997), Assistant Professor of Construction; B.S., M.S., Ph.D., Arizona State University

Knutson-Woods, Teri (1997), Academic Professional of Social Work; B.A., Grand Canyon University; M.S.W., Arizona State University

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Kobayashi, Yoshihiro** (2001), Assistant Professor of Architecture; B.Arch., M.Arch., Waseda University (Japan); Ph.D., University of California, Los Angeles
- Kobes, Bernard W.** (1986), Associate Professor of Philosophy; B.A., Calvin College; M.A., Ph.D., University of California, Los Angeles
- Koblitz, Ann Hibner** (1988), Professor of Women's Studies; A.B., Princeton University; Ph.D., Boston University
- Kochenderfer Ladd, Becky** (2001), Assistant Professor of Educational Psychology; B.A., San Diego State University; M.S., Ph.D., University of Illinois, Urbana-Champaign
- Koeman, James B.** (1984), Adjunct Professor of Bioengineering; B.S., University of Minnesota; M.S., Ph.D., Case Western Reserve University
- Koerner, Kurt J.** (1993), Faculty Associate of Construction; B.S., U.S. Air Force Academy; M.S., Golden Gate University
- Koka, Balaji** (1999), Assistant Professor of Management; B.E., Madurai Kamaraj University (India); M.B.A., Indian Institute of Management, Calcutta (India); Ph.D., University of Pittsburgh
- Kolossa, Katalin** (1994), Senior Lecturer of Mathematics and Statistics; B.A., Eötvös University (Hungary); M.A., Ph.D., Arizona State University
- Kommenich, Pauline** (1984), Associate Professor of Nursing; Chair, Division of Community Health/Psychosocial Nursing Systems; B.S., Stanford University; M.N., University of Washington; M.A., Ph.D., University of Arizona
- Konjevod, Goran** (2000), Assistant Professor of Computer Science and Engineering; B.Sc., University of Zagreb (Croatia); M.Sc., Ph.D., Carnegie Mellon University
- Konomos, Philip J.** (1991), Associate Learning Research Specialist, Library Instruction, Systems, and Technology; B.S., M.Ed., Arizona State University
- Koonce, Frank W.** (1978), Professor of Music; B.M., North Carolina School of the Arts; M.M., Southern Methodist University
- Koopmans, Rachel** (2001), Assistant Professor of History; B.A., Calvin College; M.A., Northwestern University; M.A., Ph.D., University of Notre Dame
- Kopta, Anne Elgar** (1999), Associate Professor of Music
- Kortman, Sharon A.** (1998), Lecturer of Curriculum and Instruction; B.A., M.Ed., Ed.D., Arizona State University
- Koshinsky, Deborah H.** (2000), Associate Librarian; Head, Architecture and Environmental Design Library; B.A., Ohio State University; M.L.I.S., Simmons College
- Koss-Chioino, Joan D.** (1992), Professor of Anthropology; B.F.A., Temple University; M.A., Ph.D., University of Pennsylvania
- Kostelich, Eric** (1989), Professor of Mathematics and Statistics; B.S., University of North Carolina; M.S., Ph.D., University of Maryland, College Park
- Kouvetakis, John** (1992), Associate Professor of Chemistry and Biochemistry; B.S., Ph.D., University of California, Berkeley
- Kozacik, Dorothy Piercey** (1968), Professor Emerita of Education; B.A., College of St. Francis; M.A., Arizona State University; Ph.D., University of Arizona
- Kozicki, Michael** (1986), Professor of Electrical Engineering; Director, Center for Solid State Electronics Research; B.S., Ph.D., University of Edinburgh (United Kingdom)
- Krahenbuhl, Gary S.** (1973), Professor of Exercise Science and Physical Education; Senior Vice President; B.S., M.S., Northern Illinois University; Ed.D., University of Northern Colorado
- Krajcinovic, Dusan** (1989), Professor of Engineering; B.Sc., M.Sc., University of Belgrade (Yugoslavia); Ph.D., Northwestern University
- Krause, Daniel R.** (2000), Assistant Professor of Supply Chain Management; B.A., Fort Lewis College; M.B.A., Ph.D., Arizona State University
- Krause, Stephen J.** (1981), Professor of Materials Science and Engineering; Associate Chair for Materials Science and Engineering; B.S., Northwestern University; M.S., Illinois Institute of Technology; Ph.D., University of Michigan
- Kreitner, Robert J. III** (1975), Professor Emeritus of Management; B.S., M.B.A., University of Nebraska, Omaha; Ph.D., University of Nebraska, Lincoln
- Krinsley, David** (1976), Professor Emeritus of Geological Sciences; Ph.B., S.B., S.M., Ph.D., University of Chicago
- Kroeger, Michael** (1997), Faculty Associate of Design; M.F.A., Rhode Island School of Design
- Kroelinger, Michael D.** (1980), Professor of Design; B.S., University of Alabama; M.S., Ph.D., University of Tennessee, Knoxville
- Kroloff, Reed A.** (1987), Associate Professor of Architecture; B.A., Yale University; M.Arch., University of Texas, Austin
- Kronenfeld, Jennie J.** (1990), Professor of Sociology; B.A., University of North Carolina, Chapel Hill; M.A., Ph.D., Brown University
- Krueger, Janelle** (1984), Professor Emerita of Nursing; Dean Emerita, College of Nursing; B.S., M.S., Ph.D., University of Colorado
- Krus, David J.** (1975), Professor of Psychology in Education; B.A., M.A., Charles University; Ph.D., University of Minnesota, Twin Cities
- Krutz, Glen** (1999), Assistant Professor of Political Science; B.A., M.P.A., University of Nevada; Ph.D., Texas A&M University
- Krzys, Katherine J.** (1990), Associate Archivist, Special Collections; B.A., California State University, Hayward; M.F.A., Arizona State University
- Kuang, Yang** (1988), Professor of Mathematics and Statistics; B.S., University of Science and Technology (China); Ph.D., University of Alberta (Canada)
- Kuby, Lauren H.** (1995), Academic Associate, Communications Manager; B.A., University of Chicago; M.A., Arizona State University
- Kuby, Michael** (1988), Associate Professor of Geography; B.A., University of Chicago; Ph.D., Boston University
- Kuester, James L.** (1969), Professor Emeritus of Chemical Engineering; B.S., University of Texas, Austin; M.E., Ph.D., Texas A&M University
- Kugelmass, Jack** (1998), Professor of Interdisciplinary Humanities; B.A., McGill University (Canada); M.A., Ph.D., New School for Social Research
- Kuiper, Hendrik J.** (1971), Professor of Mathematics and Statistics; B.S., University of Wisconsin, Milwaukee; M.S., M.A., Ph.D., University of Wisconsin, Madison
- Kulahci, Murat** (2002), Assistant Professor of Industrial Engineering; B.S., Bogazici University (Turkey); M.E., Illinois Institute of Technology; M.S., Ph.D., University of Wisconsin, Madison



Kulhavy, Raymond W. (1971)
Regents' Professor of Educational Psychology;
B.A., M.A., California State College, San Diego;
Ph.D., University of Illinois

Kulik, Carol (1997), Professor of Management; B.S., Ph.D., University of Illinois, Urbana-Champaign

Kulis, Stephen (1984), Professor of Sociology; B.A., George Washington University; M.A., Ph.D., Columbia University

Kulkarni, Uday R. (1988), Associate Professor of Computer Information Systems; B.Tech., Indian Institute of Technology (India); M.B.A., Indian Institute of Management, Calcutta (India); Ph.D., University of Wisconsin, Milwaukee

Kumar, Ajith (1991), Professor of Marketing; B.S., Indian Institute of Technology (India); Postgraduate Diploma, Indian Institute of Management (India); Ph.D., University of Massachusetts

Kumar, Sudhir (1998), Assistant Professor of Biology; B.S., M.S., Birla Institute of Technology and Science (India); Ph.D., Pennsylvania State University

Kuo, Chen-Yuan (1986), Associate Professor of Engineering; B.S., National Taiwan University (Taiwan); M.S., Northwestern University; Ph.D., University of California, Berkeley

Kupper, Eugene (1996), Associate Professor of Architecture; B.Arch., University of California, Berkeley; M.Arch., Yale University

Kurtz, Lynn C. (1967), Associate Professor of Mathematics and Statistics; B.S., South Dakota School of Mines and Technology; M.S., Ph.D., University of Utah

Kyselka, Christine K. (1990), Associate Administrative Professional, College of Extended Education; Assistant Director, Extended Campus Programs, College of Extended Education; B.S., M.P.A., Arizona State University

L

La Valley, Mary (2000), Faculty Associate of Nursing; B.A., Rhode Island College; M.S., Northeastern University

Laananen, David (1983), Professor of Mechanical and Aerospace Engineering; Vice Chair for Aerospace Engineering; B.S., Worcester Polytechnic Institute; M.S., Ph.D., Northeastern University

Ladd, Gary W. (2001), Professor of Family and Human Development; B.A., Grove City College; M.S., Alfred University; Ed.D., University of Rochester

Laetz, Hans G. (1964), Professor Emeritus of German; B.A., University of California, Berkeley; M.A., Ph.D., Stanford University

LaFaro, Lydia E. (1988), Librarian, Hayden Reference Services; B.S., Georgetown University; M.L.S., Emory University

Lafford, Barbara (1980), Associate Professor of Spanish; Associate Dean, College of Extended Education; B.A., Middlebury College; M.A., Ph.D., Cornell University

Lafford, Peter A. (1989), Associate Research Professional of Languages and Literatures; Director, Language Computing Laboratory; B.A., Cornell University; M.A., Arizona State University; M.A., Middlebury College

Lage, Chiara (1998), Lecturer of Italian; G.A. Farina, Teacher's College, Vicenza (Italy); Laurea, University of Study of Urbino (Italy)

Lai, Richard T. (1973), Professor of Planning and Landscape Architecture; A.B., M.F.A., Princeton University; Ph.D., University of Pennsylvania

Lai, Ying-Cheng (1999), Professor of Mathematics and Statistics and Electrical Engineering; B.S., M.S., Zhejiang University (China); Ph.D., University of Maryland, College Park

Lake, Robert L. (1958), Professor Emeritus of Mathematics and Statistics; B.S., South Dakota School of Mines and Technology; M.A., Arizona State University

Lamorey, Suzanne G. (1998), Assistant Professor of Curriculum and Instruction; B.A., University of California, Berkeley; M.S., Arizona State University; Ph.D., University of Oregon

Lan, Zhiyong (1991), Associate Professor of Public Affairs; B.A., Nanjing University (China); M.P.A. North Carolina State University, Raleigh; Ph.D., Syracuse University

Landeira, Ricardo L. (1962), Professor Emeritus of Spanish; Bachiller Universitario, University of Santiago (Spain); Maestro Nacional, Normal School of Santiago (Spain); Ph.D., University of Colorado



Landers, Daniel M. (1981)
Regents' Professor of Exercise Science and Physical Education; B.A., San Jose State College; M.S., Ph.D., University of Illinois

Landers, Donna M. (1988), Senior Lecturer of Exercise Science and Physical Education; Undergraduate Advisor; B.S., State University of New York, Brockport; M.S., University of Washington

Landrum, Leslie R. (1986), Herbarium Curator of Plant Biology; B.S., Syracuse University; M.S., Ph.D., University of Michigan

Landschoot, Thomas (2001), Assistant Professor of Music; M.M., Conservatory of Music, Antwerp (Belgium); M.M., University of Michigan; Artist Diploma, Indiana University; Artist Diploma, Conservatory of Music, Maastricht (Netherlands)

Lane, Peter (1998), Assistant Professor of Management; B.S., University of New Hampshire; M.B.A., University of Massachusetts; Ph.D., University of Connecticut

Laner, Mary R. (1976), Professor Emerita of Sociology; A.B., University of Chicago; M.A., University of New Mexico; Ph.D., Virginia Polytechnic Institute and State University

Langdon, Debra Seaman (2000), Senior Lecturer of Supply Chain Management; Recruitment Director; B.A., Loretto Heights College; M.B.A., University of Denver

Langland, Jeff (1995), Assistant Research Professor of Microbiology; B.S., Ph.D., Arizona State University

Lanyon, Richard I. (1975), Professor of Psychology; B.E., University of Adelaide (Australia); M.A., Ph.D., University of Iowa

Larimer, John W. (1969), Professor of Geological Sciences; B.A., M.S., Ph.D., Lehigh University

Larsen, Larissa (2000), Assistant Professor of Planning and Landscape Architecture; B.L.A., M.L.A., University of Guelph (Canada); Ph.D., University of Illinois

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Larson, Nancy C.** (1999), Assistant Professor of Social Work; B.A. Human Services, Western Washington University; M.S.W., Ph.D., University of Washington
- Larson-Bennett, Donna Rae** (1972), Law Librarian Emerita; B.A., M.A.L.S., University of Michigan
- Lastovicka, John L.** (1992), Professor of Marketing; B.S., M.S., Ph.D., University of Illinois
- Lattouf, Mirna** (2001), Lecturer, Bachelor of Interdisciplinary Studies Program; 401 Program Coordinator, Division of Undergraduate Academic Services; B.A., Rutgers University; M.A., New York University; Ph.D., University of Arizona
- Laubichler, Manfred** (2001), Assistant Professor of Biology; M.Sc., University of Vienna (Austria); M.Phil., Yale University; M.A., Princeton University; Ph.D., Yale University; Ph.D., Princeton University
- Lauderdale, Pat** (1981), Professor of Justice Studies; B.A., University of Oklahoma; M.A., University of Texas, Austin; M.A., Ph.D., Stanford University
- Lavrin, Asuncion** (1995), Professor of History; B.A., University of Havana; M.A., Radcliffe College; Ph.D., Harvard University
- Lawson, Anton E.** (1977), Professor of Biology; B.S., University of Arizona; M.A., University of Oregon; Ph.D., University of Oklahoma
- Le, Thuy-Kim Pham** (1997), Instructor of Vietnamese; B.A., Saigon University (Vietnam); B.A., M.Ed., Arizona State University
- Leathers, Chester R.** (1957), Professor Emeritus of Microbiology; B.S., Eastern Illinois University; M.S., Ph.D., University of Michigan
- Lebed, Richard F.** (2000), Assistant Professor of Physics and Astronomy; B.S., Michigan State University; M.A., Ph.D., University of California, Berkeley
- Leclerc, Denis** (1994), Assistant Professor of Recreation Management and Tourism; Deug., M.S., University of Upper Normandy (France); M.S., Ph.D., Arizona State University
- LeCroy, Craig** (1984), Professor of Social Work; B.S.W., San Jose State University; M.S.W., Western Michigan University; Ph.D., University of Wisconsin
- Lee, Deanna** (2001), Assistant Professor of Accountancy and Information Management; B.S., University of Pennsylvania; Ph.D., University of Illinois
- Lee, James J.** (1995), Adjunct Faculty of Microbiology; B.S., State University of New York, Stony Brook; Ph.D., California Institute of Technology
- Lee, Nancy A.** (1995), Adjunct Faculty of Microbiology; B.S., Memphis State University; Ph.D., Cornell University
- Lee, Tae-woo** (1993), Associate Professor of Mechanical and Aerospace Engineering; B.S., Ohio State University; M.S.E., Ph.D., University of Michigan
- Lee, Yann-Hang** (2000), Professor of Computer Science and Engineering; B.S., National Cheng Kung University (Taiwan); M.S., Rensselaer Polytechnic Institute; Ph.D., University of Michigan
- Lefevre, Mary Anne** (1990), Clinical Assistant Professor of Clinical Laboratory Sciences; B.S., Arizona State University; M.A., Central Michigan University
- Lehman, James P.** (1985), Associate Research Professional of Chemistry and Biochemistry; B.S., M.S., Miami University; Ph.D., University of Cincinnati
- Lehman, Peter** (1999), Professor of Interdisciplinary Humanities; B.S., M.A., Ph.D., University of Wisconsin, Madison
- Leibold, Anne M.** (1977), Librarian Emerita; M.A., University of Paris (France)
- Leigh, Frederic A.** (1979), Senior Administrative Professional and Clinical Professor of Journalism and Mass Communication; B.A., University of South Dakota; M.A., University of Iowa; Ed.D., Arizona State University
- Leighninger, Leslie** (2000), Professor of Social Work; Director, School of Social Work; B.A., Oberlin College; M.S.W., Syracuse University; D.S.W., University of California, Berkeley
- Leinenweber, Kurt** (1994), Assistant Research Professional of Chemistry and Biochemistry; B.S., Brown University; Ph.D., Princeton University
- Lemery, Kathryn** (2001), Assistant Professor of Psychology; B.A., University of Oregon; M.S., Ph.D., University of Wisconsin, Madison
- Leindle Janet** (2001), Faculty Associate of Nursing; B.S., College of St. Scholastica; M.S.N., University of Minnesota
- Leintz, Richard G.** (1985), Associate Professor of Journalism and Mass Communication; A.B., University of North Alabama; M.A., Southern Illinois University, Carbondale; Ph.D., University of Iowa
- Leon, Luis Daniel** (1999), Assistant Professor of Religious Studies; A.B., University of California, Berkeley; M.T.S., Harvard University; Ph.D., University of California, Santa Barbara
- Leonard, Donald J.** (1974), Associate Professor of Management Communication; B.S., M.B.A., Nicholls State University; Ph.D., Louisiana State University
- Leonard, Philip A.** (1968), Professor of Mathematics and Statistics; A.B., Boston College; M.A., Ph.D., Pennsylvania State University
- Leong, Karen** (1999), Assistant Professor of Women's Studies; A.B., M.A., Ph.D., University of California, Berkeley
- Lersch, Judy** (1999), Faculty Associate of Nursing; B.S.N., University of Arizona; M.Ed., Northern Arizona University; M.S., Arizona State University
- Lerum, Vidar** (2000), Assistant Professor of Architecture; B.Arch., Norwegian Institute of Technology, Trondheim (Norway); M.S., Arizona State University; Ph.D., Norwegian University of Science and Technology, Trondheim (Norway)
- Leshin, Laurie** (1998), Associate Professor of Geological Sciences; B.S., Arizona State University; M.S., Ph.D., California Institute of Technology
- Leshowitz, Barry H.** (1970), Associate Professor of Psychology; B.S., M.A., Brooklyn College; Ph.D., City University of New York
- Leshy, John D.** (1980), Professor of Law; A.B., J.D., Harvard University
- Lessard, Elizabeth C.** (1969), Professor Emerita of Dance; B.S., Georgia College; M.A., Ph.D., Texas Woman's University
- Lester, Neal** (1997), Professor of English; B.A., West Georgia College; M.A., Ph.D., Vanderbilt University
- Levan, Frederick D.** (1965), Professor Emeritus of Educational Administration and Supervision; B.S., M.Ed., Pennsylvania State University; Ed.D., Oklahoma State University
- Levine, Gustav** (1967), Professor Emeritus of Psychology; B.A., M.A., College of the City of New York; Ph.D., Columbia University
- Lewis, Charles F.** (1963), Research Specialist Emeritus, Center for Meteorite Studies; B.A., Adams State College
- Lewis, William E.** (1965), Professor of Computer Science and Engineering; Vice Provost for Information Technology; B.S.E., Johns Hopkins University; M.S., Ph.D., Northwestern University

Leyba, Raul L. (1970), Professor Emeritus of Social Work; B.A., Western New Mexico University; M.S.W., University of Denver

Li, Wei (2001), Assistant Professor of Asian Pacific American Studies and Geography; B.S., Beijing Normal College (China); M.S., Peking University (China); Ph.D., University of Southern California

Liddell, Paul A. (1990), Assistant Research Professional of Chemistry and Biochemistry; B.Sc., Massey University (New Zealand); Ph.D., Arizona State University

Lightfoot, Marjorie J. (1964), Professor of English; B.A., Brown University; M.A., Ph.D., Northwestern University



Lin, Sheng H.
(1965)
Regents' Professor Emeritus of Chemistry and Biochemistry; B.S., M.S., National Taiwan University (Taiwan); Ph.D., University of Utah

Lin, Su (1997), Associate Research Professional of Chemistry and Biochemistry; B.A., Beijing Normal University, (China); Ph.D., University of Rochester

Lind, Amy (1997), Assistant Professor of Women's Studies; B.A., University of California, Santa Cruz; M.R.P., Ph.D., Cornell University

Lindauer, Owen (1989), Adjunct Professor of Anthropology; B.A., State University of New York, Binghamton; M.A., Ph.D., Arizona State University

Linder, Darwyn E. (1972), Professor of Psychology; Chair, Department of Psychology; B.A., Macalester College; Ph.D., University of Minnesota, Twin Cities

Linderman, Earl W. (1966), Professor Emeritus of Art; B.S., State University of New York, Buffalo; M.Ed., Ed.D., Pennsylvania State University

Lindholm Lane, Katherine (2000), Assistant Professor of Dance; B.S., Eastern Michigan University; M.F.A., Arizona State University

Lindly, John M. (1998), Adjunct Professor of Anthropology; B.A., M.A., Ph.D., Arizona State University

Lindsay, Stuart M. (1978), Professor of Physics and Astronomy; B.Sc., Ph.D., University of Manchester (United Kingdom)

Lineberry, Heather S. (1990), Senior Curator, University Art Museum; Associate Museum Professional; B.A., M.A., University of Texas, Austin

Lindquist, Barbara (2001), Lecturer, Division of Undergraduate Academic Services; B.S.W., M.S.W., M.A., Ph.D., University of Wisconsin, Milwaukee

Lingas, Alexander (2001), Assistant Professor of Music; B.A., Portland State University; Ph.D., University of British Columbia (Canada)

Liskovec, Richard F. (1958), Professor Emeritus of Mathematics and Statistics; B.S., M.A., Kent State University

Liss, Julie M. (1994), Associate Professor of Speech and Hearing Science; B.A., University of Wisconsin, Madison; M.A., University of Denver; Ph.D., University of Wisconsin, Madison

Littlewood, Mary L. (1965), Professor Emerita of Health and Physical Education; B.S., Miami University; M.S., University of Colorado

Liu, C.H. (1965), Professor Emeritus of Chemistry and Biochemistry; B.A., Ph.D., University of Illinois

Liu, Danny D. (1982), Professor of Engineering; B.S., National Taiwan University (Taiwan); M.S., Georgia Institute of Technology; Ph.D., University of Southampton (United Kingdom)

Liu, Huan (2000), Associate Professor of Computer Science and Engineering; B.Eng., Shanghai Jiao Tong University (China); M.Sc., Ph.D., University of Southern California

Liu, Marjory Bon-Ray (1973), Professor Emerita of Philosophy; B.M., Alverno College; M.M., University of Southern California; C.Phil., Ph.D., University of California, Los Angeles

Liu, Xianchen (2001), Assistant Professor of Family and Human Development; B.A., M.S., Shandong University (China); Ph.D., University of Tokyo (Japan)

Liu, Zhenquan (2000), Senior Research Specialist, Center for Solid State Science; B.Sc., M.Sc., Peking University (China); Ph.D., University of Sydney (Australia)

Lo, Edisanter (1990), Associate Research Professional of Geological Sciences; B.S., Louisiana Technology Institute; M.S., University of Arkansas, Ph.D., Arizona State University

LoBrutto, Russell (1991), Associate Research Scientist of Plant Biology; B.A., Cornell University; Ph.D., State University of New York, Buffalo

Lock, Ethan (1981), Associate Professor of Legal and Ethical Studies; B.A., University of California, Berkeley; M.B.A., Arizona State University; J.D., University of North Carolina, Chapel Hill

Lockwood, Charles (2000), Assistant Professor of Anthropology; B.S., Duke University; Ph.D., University of Witwatersrand, Johannesburg (South Africa)

Lockwood, Ralph G. (1972), Professor of Music; B.M., Baldwin-Wallace College; M.M., New England Conservatory of Music

Logan, Earl Jr. (1963), Professor Emeritus of Mechanical and Aerospace Engineering; B.S., M.A., Arizona State University; B.S.M.E., M.S.M.E., Texas A&M University; Ph.D., Purdue University

Lohr, Dennis E. (1979), Professor of Chemistry and Biochemistry; B.S., Beloit College; Ph.D., University of North Carolina, Chapel Hill

Lohr, Sharon (1990), Professor of Mathematics and Statistics; B.S., Calvin College; Ph.D., University of Wisconsin, Madison

Lombardi, Eugene P. (1957), Professor Emeritus of Music; B.Mus.Ed., Westminster College; M.A., Columbia University; Ed.S., George Peabody College; D.M., Westminster College

Long, Carol O. (1989), Assistant Professor of Nursing; B.S.N., Marquette University; M.S., University of Michigan; Ph.D., Arizona State University

Longley, Kyle (1995), Associate Professor of History; B.A., Angelo State University; M.A., Texas Technological; Ph.D., University of Kentucky

Loope, R. Nicholas (1990), Associate Professor of Architecture; B.Arch., University of Maryland, College Park; M.Arch., Yale University; P.M.D., Harvard University

Lopez, Juan (1998), Associate Professor of Mathematics and Statistics; B.Sc., Ph.D., Monash University (Australia)

Lopez, Vera (2001), Assistant Professor of Justice Studies; B.A., M.A., Ph.D., University of Texas, Austin

Lorson, Christian (2000), Assistant Professor of Biology; B.A., Colorado College; Ph.D., University of Missouri Medical School

Losse, Deborah N. (1973), Professor of French; Chair, Department of Languages and Literatures; B.A., Connecticut College; M.A., Ph.D., University of North Carolina, Chapel Hill

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Lougeay, Ray** (1993), Adjunct Professor of Geography; B.A., Rutgers, The State University of New Jersey; M.S., Ph.D., University of Michigan
- Lounsbury, John F.** (1969), Professor Emeritus of Geography; B.S., M.S., University of Illinois; Ph.D., Northwestern University
- Loveless, Richard L.** (1991), Professor Emeritus of Art; M.Ed., Pennsylvania State University
- Low, Stuart A.** (1979), Professor of Economics; B.S., M.S., Ph.D., University of Illinois
- Lowe, John W.** (1956), Professor Emeritus of Economics; B.S., Arizona State University; M.S., University of Wisconsin, Madison; Ph.D., University of Florida
- Lowe, Robert W.** (1966), Professor Emeritus of Romance Languages; M.A., Columbia University; Doctorat, University of Paris (France)
- Lowenthal, Gary T.** (1976), Professor of Law; A.B., Harvard College; J.D., University of Chicago
- Lu, Pao** (1964), Professor Emeritus of Physics and Astronomy; B.S., National Taiwan University (Taiwan); M.S., National Tsing Hua University (Taiwan); Ph.D., Iowa State University
- Luchsinger, Wayne W.** (1966), Professor Emeritus of Chemistry and Biochemistry; B.S., M.S., Ph.D., University of Minnesota, Twin Cities
- Luckingham, Bradford F.** (1971), Professor Emeritus of History; B.S., Northern Arizona University; M.A., University of Missouri, Columbia; Ph.D., University of California, Davis
- Ludemann, Ruth S.** (1984), Professor Emerita of Nursing; B.S.N., Columbia University; M.S.N., Wayne State University; Ph.D., Arizona State University
- Luderer, Gottfried W.R.** (1990), Professor Emeritus of Electrical Engineering; M.S.E.E., Ph.D., Technical University Braunschweig (Germany)
- Ludlow, Elizabeth A.** (1972), Professor Emerita of Nursing; B.S.N., University of New Mexico; M.S., Arizona State University
- Ludwig, Ann** (1979), Professor of Dance; B.S., North Dakota State University; M.S., University of Kansas
- Luecken, Linda J.** (2000), Assistant Professor of Psychology; B.S., Ohio State University; M.A., University of North Carolina; Ph.D., Duke University
- Luenow, Paul F. Jr.** (1958), Professor Emeritus of Foreign Languages; B.A., M.A., University of Washington; Ph.D., University of New Mexico
- Luey, Beth** (1980), Senior Instructional Professional of History; Director, Scholarly Publishing; B.A., Radcliffe College; A.M., Harvard University
- Lujan, Carol C.** (1987), Associate Professor of Justice Studies; Director, American Indian Studies Program; B.A., M.A.P.A., Ph.D., University of New Mexico
- Lukas, Ronald J.** (1999), Adjunct Professor of Chemistry and Biochemistry; B.S., State University of New York, College of Cortland; Ph.D., State University of New York, Downstate Medical Center
- Lund, Giuliana** (1997), Assistant Professor of Interdisciplinary Humanities; B.A., Stanford University; M.A., Ph.D., University of Pennsylvania
- Lundgren, Harry R.** (1962), Professor Emeritus of Civil and Environmental Engineering; B.S.C.E., Purdue University; M.S., Arizona State University; Ph.D., Oklahoma State University
- Lundin, Robert F.** (1962), Professor Emeritus of Geological Sciences; B.A., Augustana College; M.S., Ph.D., University of Illinois
- Lussier, Mark S.** (1994), Associate Professor of English; B.A., University of Saint Thomas; M.A., Ph.D., Texas A&M University
- Lutyk, Carol** (2002), Assistant Professor of Journalism and Mass Communication; B.A., Smith College; M.A., George Washington University
- Lyman, Jeffrey** (1996), Associate Professor of Music; B.Mus., Temple University; M.Mus., D.Mus., University of Michigan
- Lynch, David H.** (1976), Associate Professor of Management Communication; B.S., University of Illinois; M.S., Ed.D., Northern Illinois University
- Lynch, Jacquelyn** (2001), Lecturer of the Barrett Honors College; B.A., Kalamazoo College; M.A., Harvard University; Ph.D., Arizona State University
- Lynch, John M.** (1994), Lecturer of the Barrett Honors College; Director, Office of National Scholarship Advisement; B.Sc., Ph.D., University College, Dublin (Ireland)
- Lynk, Myles** (2000), Professor of Law; Kiewit Foundation Professor of the Legal Profession; A.B., J.D., Harvard University
- Lyons, Lucy** (1999), Assistant Librarian; B.A., San Diego State University, San Diego; M.A., Ohio State University; M.S., Pratt Institute
- Lytle, Robert G.** (1972), Professor Emeritus of Agribusiness and Resource Management; B.S., Western Kentucky University; M.S., Arizona State University
- Lyubchenko, Yuri** (1991), Assistant Research Scientist of Biology; M.S., Ph.D., Moscow Institute of Physics and Technology (Russia)

M

- Maccracken, Harriet** (1995), Senior Lecturer of Accountancy and Information Management; B.S., Ohio State University; M.A., Arizona State University
- MacEachron, Ann** (1984), Professor of Social Work; B.A., Cornell University; M.S.W., University of Pittsburgh; Ph.D., Cornell University
- Macey, Donna J.** (1994), Clinical Associate Professor of Educational Administration and Supervision; Internship Coordinator, Educational Administration and Supervision; B.A., DePaul University; M.A., St. John's College; M.A., M.S.T., University of Chicago; Ph.D., Northwestern University
- MacKinnon, David** (1990), Professor of Psychology; B.A., Harvard University; M.A., Ph.D., University of California, Los Angeles
- MacKinnon, Stephen R.** (1971), Professor of History; B.A., M.A., Yale University; Ph.D., University of California, Davis
- Mackulak, Gerald T.** (1980), Associate Professor of Industrial Engineering; Executive Associate Chair, Department of Industrial Engineering; B.S.I.E., M.S.I.E., Ph.D., Purdue University
- MacSwan, Jeff** (1998), Assistant Professor of Curriculum and Instruction; B.A., M.A., California State University, Long Beach; Ph.D., University of California, Los Angeles
- Madden, Dennis D.** (1990), Archivist Emeritus; B.A., Wright State University; M.A., Colorado State University
- Madden-Derdich, Debra** (1994), Assistant Professor of Family and Human Development; B.A., Washington and Jefferson College; M.A., Hollins College; Ph.D., Virginia Polytechnic Institute and State University
- Maddox, Robert A.** (1993), Adjunct Professor of Geography; B.S., Texas A&M University; M.S., Ph.D., Colorado State University

Maddy, Kenneth H. (1980), Professor Emeritus of Agribusiness and Resource Management; B.S., Pennsylvania State University; M.S., University of Wisconsin, Madison; Ph.D., Pennsylvania State University

Magaña, Lisa (1997), Assistant Professor of Chicana and Chicano Studies; B.A., California Polytechnic University; M.A., Ph.D., Claremont Graduate School

Magenta, Muriel (1969), Professor of Art; B.A., Queens College; M.A., M.F.A., Ph.D., Arizona State University

Magers, William D. (1971), Professor Emeritus of Music; B.A., University of California, Santa Barbara; M.M., D.M.A., University of Southern California

Magill, Harry (1984), Professor Emeritus of Accountancy and Information Management; B.S., Miami University; M.S., University of Illinois

Mahajan, Subhash (1997), Professor of Chemical and Materials Engineering; Chair, Department of Chemical and Materials Engineering; B.S., Punjab University (India); B.E., Metallurgy Indian Institute of Science (India); Ph.D., University of California, Berkeley

Mahalov, Alex S. (1991), Associate Professor of Mathematics and Statistics; M.S., Leningrad University (Russia); Ph.D., Cornell University

Mahoney, Dhira B. (1989), Associate Professor of English; B.A., M.A., University of Oxford (United Kingdom); Ph.D., University of California, Santa Barbara



Maienschein, Jane
(1981)
Regents' Professor of Philosophy and Biology; B.A., Yale University; M.A., Ph.D., Indiana University, Bloomington

Maisel, James (1985), Professor Emeritus of Electronics and Computer Engineering Technology; B.Eng.Sci., B.E.E., Fenn College; M.S.E.E., Ohio State University

Major, Roy C. (1992), Professor of English; B.A., University of Akron; M.A., University of Arizona; M.A., Ph.D., Ohio State University

Malloch, Kathy (1999), Faculty Associate of Nursing; B.S.N., Wayne State University; M.B.A., Oakland University; Ph.D., University of Colorado

Malone, Charles F. (1966), Professor Emeritus of Curriculum and Instruction; B.S., Emporia State University; M.Ed., Ed.D., University of Kansas

Maltz, Arnold B. (1997), Associate Professor of Supply Chain Management; B.S., Trinity College, Hartford; M.A., University of California, Santa Barbara; M.S., Northwestern University; Ph.D., Ohio State University

Mamlouk, Michael S. (1984), Professor of Civil and Environmental Engineering; B.S.C.E., Cairo University (Egypt); M.S.C.E., Ph.D., Purdue University

Manchester, Laurie (2000), Assistant Professor of History; B.A., Wellesley College; M.A., M.Phil., Ph.D., Columbia University

Mandel, Naomi (2000), Assistant Professor of Marketing; A.B., Dartmouth College; M.B.A., Arizona State University; M.I.M., American Graduate School of International Management; Ph.D., University of Pennsylvania

Manelli, Alejandro (1997), Professor of Economics; Licenciatura, National University of Buenos Aires (Argentina); M.A., Ph.D., University of California, Berkeley

Manera, Elizabeth S. (1967), Professor Emerita of Curriculum and Instruction; B.S., M.A., Towson State College; Ed.D., Arizona State University

Mangini, Margaret A. (1990), Director, Bureau of Educational Research and Services (BERS); Director, Arizona Educational Information Systems (AEIS); B.S., M.Ed., Edinboro State College; Ed.D., Arizona State University

Mankin, Lawrence D. (1973), Professor of Public Affairs; B.B.A., City College; M.A., Ph.D., University of Illinois

Manuelito, Kathryn (2001), Assistant Professor for Teacher Education ESL/Bilingual; B.A., M.A., University of New Mexico, Albuquerque; Ph.D., Arizona State University

Marc, Stephen Smith (1998), Professor of Art; B.A., Pomona College; M.F.A., Temple University

Marchant, Gary E. (1999), Associate Professor of Law; Executive Director, Center for the Study of Law, Science, and Technology; B.Sc., University of British Columbia; M.P.P., J.D., Harvard University; Ph.D., University of British Columbia

Marean, Curtis W. (2001), Professor of Anthropology; Research Associate, Institute of Human Origins; B.A., Pennsylvania State University; M.A., Ph.D., University of California, Berkeley

Margolis, Eric (1995), Associate Professor of Educational Leadership and Policy Studies; Academic Program Coordinator, Social and Philosophical Foundations of Education; B.A., State University of New York at New Paltz; Ph.D., University of Colorado, Boulder

Marin, Christine N. (1985), Associate Archivist, Archives and Manuscripts; B.A., M.A., Arizona State University

Maris, Mariana (2000), Lecturer of Mathematics and Statistics; B.S., M.A., Arizona State University

Markiw, Michael (1990), Associate Librarian, Technical Services Department; B.A., University of Alberta; M.L.S., University of Western Ontario

Marohnic, Charles S. (1981), Professor of Music; Director, Jazz Studies; B.A., M.M., University of Miami

Marrero, Robert (1998), Adjunct Faculty of Microbiology; B.S., City College of New York; Ph.D., University of Maryland, Baltimore

Marshall, Kimberly (1998), Associate Professor of Music; Associate Director, of Graduate Studies, School of Music; B.A., University of North Carolina, Chapel Hill; D.Phil., University College, Oxford (United Kingdom)

Marsiglia, Flavio F. (1994), Associate Professor of Social Work; B.Law, S.S., M.S.W., University of the Republic (Uruguay); Ph.D., Case Western Reserve University

Martin, Carol L. (1988), Professor of Family and Human Development; B.A., University of Georgia; M.S., Rutgers, The State University of New Jersey; Ph.D., University of Georgia

Martin, Chris A. (1990), Associate Professor of Plant Biology; B.S., California Polytechnic State University and University of Southern California; M.S., Auburn University; Ph.D., University of Florida

Martin, J. Spencer (2000), Assistant Professor of Finance; B.S., M.B.A., University of Texas, Austin; A.M., Ph.D., University of Pennsylvania

Martin, John F. Jr. (1966), Professor of Anthropology; B.A., Beloit College; M.A., Ph.D., University of Chicago

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Martin, Judith N. (1990), Professor of Communication; B.A., Eastern Mennonite College; M.A., Ph.D., Pennsylvania State University

Martin, Linda J. (1980), Professor Emerita of Finance; B.A., University of Louisville; M.S., University of Kansas; M.B.A., D.B.A., Louisiana Technological University

Martin, Philip E. (1983), Professor of Exercise Science and Physical Education; Chair, Department of Exercise Science and Physical Education; B.S., M.S., University of Illinois; Ph.D., Pennsylvania State University

Martin, Scott (2000), Lecturer of Mathematics and Statistics; B.S., University of Nebraska, Lincoln; M.A., University of Illinois, Springfield

Martinez, Jacqueline M. (2000), Assistant Professor of Communication; B.A., California State University, Northridge; M.S., Ph.D., Southern Illinois University

Martinez, Jeanne L. (2000), Lecturer of Spanish; B.A., Indiana University, South Bend; M.A.T., Indiana University, Bloomington

Martínez, Quino E. (1957), Professor Emeritus of Foreign Languages; B.S., New Mexico Western College; M.A., George Peabody College; Ph.D., University of North Carolina, Chapel Hill

Martinez-Brawley, Emilia E. (1992), Professor of Social Work; B.A., National University of Tucumán (Argentina); M.S.S., Bryn Mawr College; Ed.D., Temple University

Marzke, Mary W. (1978), Professor of Anthropology; B.A., University of California; M.A., Columbia University; Ph.D., University of California, Berkeley

Marzke, Robert F. (1969), Associate Professor of Physics and Astronomy; A.B., Princeton University; Ph.D., Columbia University

Mason, Bruce B. (1960), Professor Emeritus of Political Science; B.S., North Texas State College; M.A., Texas Christian University; Ph.D., University of Texas, Austin

Mason, Marshall W. (1994), Professor of Theater; B.S., Northwestern University

Mass, Diana (1974), Clinical Professor of Clinical Laboratory Sciences; B.S., University of Texas, Austin; M.S., Central Michigan University

Massia, Stephen (1998), Associate Professor of Bioengineering; B.S., Southwestern University; Ph.D., University of Texas

Matera, Frances R. (1989), Associate Professor of Journalism and Mass Communication; B.S., Florida International University; M.A., Goddard College; Ph.D., University of Miami

Matheson, Alan A. (1967), Professor of Law; B.A., M.S., J.D., University of Utah

Mathy, Pamela A. (1998), Clinical Professor of Speech and Hearing Science; Director, Clinical Services; B.A., University of Massachusetts; M.A., Washington State University; Ph.D., University of Wisconsin, Madison

Matt, Kathleen S. (1987), Professor of Exercise Science and Physical Education; B.A., M.S., University of Delaware; Ph.D., University of Washington

Matt, Pamela (1980), Associate Professor of Dance; B.A., University of Washington; M.A., University of Illinois

Maatta, Robert (1996), Human Resources Assistant, Department of Military Science; B.S., Lake Superior State University

Matthews, James B. (1989), Professor Emeritus of Aeronautical Management Technology; B.S., Rose-Hulman Institute of Technology; M.S., Massachusetts Institute of Technology; Ph.D., University of Arizona

Matthias, Judson S. (1967), Professor Emeritus of Civil and Environmental Engineering; B.S., United States Military Academy; M.S., Oregon State University; Ph.D., Purdue University

Mattox, John H. (1995), Adjunct Professor of Biology; B.A., M.D., University of Colorado

Mattson, Susan (1993), Professor of Nursing; B.S., M.A., M.S., California State University, Los Angeles; Ph.D., Claremont Graduate University

Matyushov, Dimitry (2000), Assistant Professor of Chemistry and Biochemistry; B.S., Moscow Institute of Physics and Technology (Russia); Ph.D., Vienna University of Technology (Austria)

Maxwell, Katherine Davis (1996), Faculty Associate of Nursing; B.S., University of Utah; M.S., Arizona State University

Maxwell, Kathryn (1988), Professor of Art; B.A., Northwestern University; M.F.A., University of Wisconsin, Madison

May, Judy (1986), Associate Professor of Music; M.M., The Juilliard School



Mayer, James W.
(1992)

Regents' Professor of Chemical and Materials Engineering and Solid State Science; B.S., Ph.D., Purdue University

Mayer, Lawrence S. (1983), Professor of Statistics; B.S., M.S., Ohio State University; M.D., Associated Medical Schools of the Caribbean; Ph.D., Ohio State University

Mayer, Michael (1978), Associate Professor of Communication; B.A., M.A., University of Wyoming; Ph.D., University of Kansas

Mays, Larry W. (1989), Professor of Civil and Environmental Engineering; B.S., M.S., University of Missouri, Rolla; Ph.D., University of Illinois

McBeath, Michael K. (1998), Assistant Professor of Psychology; B.A., Brown University; M.S., University of California, Santa Barbara; Ph.D., Stanford University

McBride, Ingrid (2001), Clinical Assistant Professor; B.S., M.S., Arizona State University

McBrien, Edward F. (1986), Professor Emeritus of Electronic and Computer Engineering Technology; B.S.E., Fenn College; M.S.E.E., Cleveland State University

McCabe, Barbara (1997), Assistant Professor of Public Affairs; B.A., M.P.A., Florida Atlantic University; Ph.D., Florida State University

McCarter, Joan H. (1961), Associate Professor of Mathematics and Statistics; B.S., M.A., University of Arizona

McCarthy, Marianne (1994), Associate Professor of Nursing; B.S.N., Mount Saint Mary College; M.S.N., Seton Hall University; Ph.D., University of California, San Francisco

McCartney, Martha R. (1989), Senior Research Scientist, Center for Solid State Science; B.S., The Evergreen State College; Ph.D., Arizona State University

McCormack, Brian (2000), Lecturer, Division of Undergraduate Academic Services; Academic Coordinator, Bachelor of Interdisciplinary Studies Program; B.A., B.S., University of Nebraska, Omaha; B.A., Australian National University (Australia); M.A., Ph.D., Arizona State University

McCoy, Janetta Mitchell (1999), Assistant Professor of Design; B.L.S., St. Edwards University; M.S., Cornell University; Ph.D., University of Wisconsin, Milwaukee

- McCoy, Kathleen M.** (1976), Associate Professor of Curriculum and Instruction; B.S., University of Portland; M.S., Portland State University; Ph.D., University of Oregon
- McCoy, Ron** (1995), Professor of Architecture; Director, School of Architecture; B.S., University of Southern California; M.Arch., Princeton University
- McCready, Richard R.** (1960), Professor Emeritus of Accountancy and Information Management; B.S., Valley City State Teachers College; M.A., Ed.D., University of Northern Colorado
- McDermott, Lauren** (1990), Associate Professor of Design; B.F.A., M.F.A., Rochester Institute of Technology
- McDonald, Arlys** (1970), Librarian Emeritus; B.Mus., St. Mary of the Plains College; M.Mus., University of Illinois
- McDonald, John N.** (1969), Professor of Mathematics and Statistics; A.B., King's College; M.S., Ph.D., Rutgers, The State University of New Jersey
- McDonald, Kelly M.** (2000), Assistant Instructional Professional of Communication; Director of Forensics; B.A., Pacific Lutheran University; M.A., Ph.D., University of Kansas
- McDonough, Peter** (1990), Professor of Political Science; B.S., Saint Louis University; Ph.D., University of Michigan
- McDowell, John M.** (1978), Professor of Economics; B.S., M.S., Ph.D., University of California, Los Angeles
- McEwen, Douglas R.** (1969), Professor Emeritus of Music; B.S., Bowling Green State University; M.M., Indiana University; Ed.D., University of Northern Colorado
- McFarland, Elaine H.** (1973), Professor Emerita of Health Science; B.A., Marietta College; M.N., Case Western Reserve University
- McGaughey, Robert W.** (1971), Professor of Biology; Director, Interdisciplinary Committee for Molecular and Cellular Biology; B.A., Augustana College; M.A., University of Colorado; Ph.D., Boston University
- McGaw, Dickinson L.** (1968), Professor Emeritus of Public Affairs; B.A., M.A., Ph.D., Indiana University, Bloomington
- McGehee, Shelley** (1985), Librarian Emerita; B.Mus., Converse College; M.Mus., M.L.S., University of Alabama
- McGowan, Patrick J.** (1979), Professor of Political Science; B.A., University of the South; M.A., Johns Hopkins University; Ph.D., Northwestern University
- McGowan, Thomas M.** (1988), Professor of Curriculum and Instruction; B.A., Boston University; M.A., Ph.D., University of Nebraska, Lincoln
- McGrath, G.D.** (1950), Professor Emeritus of Education; Dean Emeritus, College of Education; A.B., Findlay College; M.A., University of Michigan; Ph.D., University of Colorado
- McGrath, Jacqueline** (1999), Assistant Professor of Nursing; B.S.N., University of Akron; M.S.N., Kent State University; Ph.D., University of Pennsylvania
- McGregor, Joan L.** (1989), Associate Professor of Philosophy; B.A., University of California, Davis; M.A., Ph.D., University of Arizona
- McHugh, Kevin E.** (1985), Associate Professor of Geography; B.S., Pennsylvania State University; M.A., Arizona State University; Ph.D., University of Illinois, Urbana-Champaign
- McIsaac, Marina Stock** (1980), Professor Emerita of Educational Technology; B.A., Pomona College; M.A., Ph.D., University of Wisconsin, Madison
- McIver, Beverly** (1996), Assistant Professor of Art; B.A., North Carolina Central University; M.F.A., University of Pennsylvania
- McKelvy, Michael J.** (1976), Senior Research Scientist, Center for Solid State Science; B.S., University of California, Berkeley; M.S., Ph.D., Arizona State University
- McKenzie, Patrick Bruce** (1970), Professor Emeritus of Accountancy and Information Management; B.S., M.S., Kansas State University; Ph.D., Michigan State University
- McLaughlin, Ilene** (1995), Assistant Librarian, Hayden Reference Services; B.A., Lake Forest College; M.L.S., Simmons College
- McLin, Katherine** (1997), Assistant Professor of Music; B.M., Oberlin College Conservatory, Ohio; M.M., Indiana University, Bloomington; D.M.A., University of Michigan, Ann Arbor
- McMahon, Jeff** (2001), Senior Lecturer of Theatre; B.A., State University of New York; M.F.A., Columbia University
- McManus, Elizabeth B.** (2000), Lecturer of the Barrett Honors College; B.A., M.A., Ph.D., University of Virginia
- McMillan, Paul F.** (1983), Professor Emeritus of Chemistry and Biochemistry; B.Sc., University of Edinburgh (United Kingdom); Ph.D., Arizona State University
- McMillen, Phyllis** (2000), Faculty Associate of Nursing; B.S.N., Union College, Lincoln; M.S.N., University of Nebraska Medical Center
- McNally, T.M.** (1999), Associate Professor of English; B.A., Rockford College; M.F.A., Arizona State University
- McNamara, Ann** (1997), Faculty Associate of Nursing; B.S.N., Worcester State College; M.S., Arizona State University; Ph.D., University of Arizona
- McNeil, Elizabeth A.** (1998), Academic Associate of English; Academic Advisor; B.A., California State University, Chico; M.F.A., Arizona State University
- McNeill, Barry W.** (1976), Assistant Professor of Engineering; Vice Chair for Mechanical Engineering; B.S., M.S., Ph.D., Stanford University
- McPhee, Robert D.** (1998), Professor of Communication; B.A., M.A., Ph.D., Michigan State University
- McPheters, Lee R.** (1976), Professor of Economics; Director, Bank One Economic Outlook Center; Associate Dean for Executive and Professional Programs, College of Business; A.B., San Francisco State University; Ph.D., Virginia Polytechnic Institute and State University
- McSheffrey, Gerald R.** (1982), Professor Emeritus of Architecture; Dipl.Arch., University College, London (United Kingdom); Dipl.C.D., Edinburgh University (United Kingdom)
- McSherry, Laurel** (1991), Associate Professor of Planning and Landscape Architecture; B.S.L.A., Rutgers, The State University of New Jersey; M.L.A.II., Harvard University
- McTaggart, W. Donald** (1971), Professor Emeritus of Geography; M.A., University of St. Andrews (United Kingdom); Ph.D., Australian National University (Australia)
- McWhirter, J. Jeffries** (1970), Professor of Counseling Psychology and Counselor Education; B.A., Saint Martin's College; M.Ed., Oregon State University; M.Ed., Ph.D., University of Oregon
- Mehall, Gregory Lawrence** (1992), Associate Research Professional of Geological Sciences; M.S., Stanford University
- Meir, Baruch I.** (2000), Assistant Professor of Music; B.Mus., M.Mus., Tel Aviv University (Israel); D.M.A., Arizona State University
- Meissinger, Ellen Murray** (1986), Professor of Art; B.F.A., M.F.A., University of North Carolina, Greensboro

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Melichar, Dudley W. (1974), Professor Emeritus of Justice Studies; B.S., M.S., South Dakota State University; Ed.D., Arizona State University

Melnick, Robert (1987), Senior Research Scientist for Public Affairs; Director, Morrison Institute for Public Policy; B.A., Dartmouth College; M.A., Ph.D., Arizona State University

Melvin, Michael (1980), Professor of Economics; B.B.A., University of Houston; M.A., San Diego State University; Ph.D., University of California, Los Angeles

Méndez, José A. (1980), Professor of Economics; B.A., M.A., University of Texas, Austin; M.A., Ph.D., Southern Methodist University

Menéndez, José (1987), Professor of Physics and Astronomy; Licenciado en Física, Balseiro Institute (Argentina); Dr. rer. nat., Stuttgart University (Germany)

Mengeling, Kristina (1999), Assistant Law Librarian, Ross-Blakley Law Library; B.A., Northern Illinois University; M.L.S., Rosary College

Menjivar, Cecilia (1995), Associate Professor of Justice Studies; B.A., M.S., University of Southern California; Ph.D., University of California, Davis

Menke, Robert F. (1947), Professor Emeritus of Education; B.S., Oshkosh State College; M.A., Ph.D., Northwestern University

Merbs, Charles F. (1973), Professor of Anthropology; B.S., M.S., Ph.D., University of Wisconsin, Madison

Merrill, Bruce D. (1971), Professor of Journalism and Mass Communication; Director, Media Research Program; M.A., Brigham Young University; Ph.D., University of Michigan

Mesch, Claudia (2001), Professor of Art; B.A., Yale University, New Haven; M.A., University of California, Los Angeles; Ph.D., University of Chicago

Messman, Susan J. (2000), Assistant Professor of Communication; B.A., University of Missouri, Columbia; M.S., Illinois State University; Ph.D., Ohio University

Metcalf, V. Alonzo (1971), Professor Emeritus of International Studies; B.S., M.S., University of Arkansas; Ph.D., University of Missouri, Columbia

Metha, Arlene (1971), Professor Emerita of Counseling Psychology; B.A., Arizona State University; M.A., Ohio State University; Ph.D., University of Southern California

Metos, Thomas H. (1965), Professor Emeritus of Educational Administration and Supervision; B.S., M.S., Ph.D., University of Utah

Metz, John (1980), Professor of Music; B.A., M.M., Syracuse University; D.M.A., The Juilliard School

Meunier, John (1987), Professor of Architecture; B.Arch., University of Liverpool (United Kingdom); M.Arch., Harvard University; M.A., University of Cambridge (United Kingdom)



Meyerson, Lee
(1962)

Regents' Professor Emeritus of Psychology; A.B., Lafayette College; A.M., University of California, Los Angeles; Ph.D., Stanford University

Middleton, James Arthur (1998), Associate Professor of Curriculum and Instruction; B.A., California State University, Chico; M.S., Ph.D., University of Wisconsin, Madison

Mignolet, Marc P. (1987), Professor of Mechanical and Aerospace Engineering; B.S., University of Liege (Belgium); Ph.D., Rice University

Mikellides, Pavlos G. (2002), Assistant Professor of Mechanical and Aerospace Engineering; B.S., M.S., Ph.D., Ohio State University

Miller, Barbara K. (1976), Professor Emerita of Nursing; B.S.N., M.S.Ed., University of Akron; Ph.D., University of Texas, Austin

Miller, Donald S. (1981), Associate Professor of Computer Science and Engineering; B.S., Syracuse University; M.S., Ph.D., University of Southern California

Miller, Keith D. (1987), Associate Professor of English; B.A., Texas Christian University; M.A., State University of New York, Albany; Ph.D., Texas Christian University

Miller, Robert J. (1994), Adjunct Professor of Anthropology; B.A., M.A., Western Michigan University; Ph.D., Arizona State University

Miller, Rosanna (1974), Librarian Emerita; B.A., M.A., Arizona State University; M.L.S., University of Arizona

Miller, Susan A. (2001), Assistant Professor of American Indian Studies Program; B.A., M.A., University of Oklahoma; Ph.D., University of Nebraska, Lincoln

Miller, Terri (1997), Lecturer of Mathematics and Statistics; B.S., M.A., Arizona State University

Miller, Victor J. (1958), Professor Emeritus of Agribusiness and Resource Management; B.S., M.S., Ph.D., University of Illinois

Miller-Loessi, Karen A. (1984), Associate Professor of Sociology; B.A., University of California, Berkeley; M.A., Ph.D., Stanford University

Mills, Douglas T. (1993), Faculty Associate of Construction; B.S., Arizona State University

Millsap, Roger E. (1997), Professor of Psychology; B.S., University of Washington; M.A., Ph.D., University of California, Berkeley

Milner, Joe W. (1967), Professor Emeritus of Journalism and Mass Communication; B.A., East Texas State University; M.A., University of Oklahoma; Ed.D., University of Wyoming

Milun, Kathryn (2000), Assistant Professor of English and Justice Studies; B.A., M.A., Ph.D., University of Minnesota

Mings, Robert C. (1971), Professor Emeritus of Geography; B.S., M.A.T., Indiana University, Bloomington; Ph.D., Ohio State University

Minter, Marshall R. Jr. (1965), Professor Emeritus of Technology; B.S.M.E., Purdue University; M.S.M.E., University of Arizona

Mintz, Sandra L. (1986), Clinical Associate Professor of Speech and Hearing Science; B.A., Indiana University; M.S., University of Arizona

Misra, Rajeev (1991), Professor of Microbiology; B.S., Kanpur University (India); M.S., G.B. Pant University (India); Ph.D., Adelaide University (Australia)

Mitchell, Frederic F. (1961), Professor Emeritus of Education; B.A., M.A., University of Arizona; Ph.D., Columbia University

Mitchell, John (1990), Associate Research Professional of Dance; Director, Dance Multimedia Learning Center; B.M., Webster University, St. Louis; M.M., University of South Florida

Mitchell, Michael J. (1990), Associate Professor of Political Science; B.A., Fordham University; M.A., Ph.D., Indiana University, Bloomington

Mittelmann, Hans Detlef (1982), Professor of Mathematics and Statistics; M.A., University of Mainz (Germany); Ph.D., Habilitation, University of Darmstadt (Germany)

Mobasher, Barzin (1991), Associate Professor of Civil and Environmental Engineering; B.S., University of Wisconsin, Platteville; M.S., Northeastern University; Ph.D., Northwestern University

Moeckel, Cindy L. (1987), Associate Professor of Accountancy and Information Management; B.A., M.B.A., Miami University; Ph.D., University of North Carolina, Chapel Hill

Mogey, John M. (1987), Adjunct Professor of Sociology; B.A., M.A., D.Sc., Queen's University (United Kingdom)

Mokwa, Michael P. (1979), Professor of Marketing; Chair, Department of Marketing; B.B.A., M.B.A., Ph.D., University of Houston

Molnar, Alex (2001), Professor of Educational Leadership and Policy Studies; Director, Education Policy Studies Laboratory; B.A., North Park College; M.A., Northwestern University; Ph.D., University of Wisconsin, Milwaukee

Monczka, Robert M. (1999), Research Professor of Supply Chain Management; B.A., M.B.A., Ph.D., Michigan State University

Montenegro, Leonard Jose (1986), Senior Research Professional of Mechanical and Aerospace Engineering; B.S., State University of New York, Albany

Montero, Darrel (1979), Associate Professor of Social Work; B.A., California State University, Sacramento; M.A., Ph.D., University of California, Los Angeles

Montgomery, Douglas C. (1988), Professor of Industrial Engineering; B.S.I.E., M.S., Ph.D., Virginia Polytechnic Institute and State University

Montgomery, Eric (1997), Faculty Associate of Design; B.F.A., Arizona State University

Montiel, Miguel (1974), Professor of Chicana and Chicano Studies; Motorola Presidential Professor in Community Revitalization; B.S., University of Arizona; M.S.W., Arizona State University; D.S.W., University of California, Berkeley

Montoya, Janet (1999), Adjunct Professor of Anthropology; B.A., M.A., University of Houston, Clear Lake

Mooney, Elina (1988), Associate Professor of Dance

Moor, William C. (1968), Associate Professor of Industrial Engineering; B.S., M.S., Washington University; Ph.D., Northwestern University

Moore, Ana L. (1989), Professor of Chemistry and Biochemistry; B. of Pharmacy, National University of La Plata (Argentina); M.Sc., Federal University of Rio de Janeiro (Brazil); Ph.D., Texas Tech University



Moore, Carleton B. (1961)
Regents' Professor of Chemistry and Biochemistry and Geological Sciences; Director, Center for Meteorite Studies; B.S., Alfred University; Ph.D., California Institute of Technology

Moore, Christine (1999), Assistant Law Librarian; B.A., Claremont McKenna College; M.A., University of Arizona

Moore, Diane B. (1980), Librarian, Noble Science Reference Services; B.S., College of William and Mary; M.L.S., University of Wisconsin, Madison

Moore, Elsie Gloria Jean (1981), Associate Professor of Psychology in Education; Director, Division of Psychology in Education; B.A., Elmhurst College; M.A., Ph.D., University of Chicago

Moore, J. Douglas (1969), Associate Professor of Mathematics and Statistics; B.S., M.S., Idaho State University; Ph.D., Syracuse University

Moore, Michael (1982), Professor of Biology; B.A., Indiana University; M.S., Ph.D., University of Washington

Moore, Moses N. (1989), Associate Professor of Religious Studies; B.A., Eckerd College; M.Div., Yale University; M.Phil., Ph.D., Union Theological Seminary

Moore, Patricia (1984), Professor Emerita of Nursing; B.S.N., Loyola University, Chicago; M.S., Catholic University of America; M.P.H., Dr.P.H., Johns Hopkins University

Moore, Thomas A. (1976), Professor of Chemistry and Biochemistry; B.A., Ph.D., Texas Tech University

Moorhead, Gregory (1978), Associate Professor of Management; B.S.I.E., M.B.A., Ph.D., University of Houston

Moppett, Samantha A. (1999), Legal Writing Instructor; B.A., Bucknell University; J.D., Suffolk University Law School

Mor, Tsafirir (2000), Assistant Research Professor of Plant Biology; B.Sc., M.Sc., Ph.D., Hebrew University of Jerusalem (Israel)

Morgan, Don (2000), Associate Professor of Exercise Science and Physical Education; B.M.E., Northwestern University; M.S., University of Tennessee, Knoxville; Ph.D., Arizona State University

Morgan, Miriam J. (1965), Instructor Emerita of French; Licence-ès-Lettres, University of Paris (France); M.A., Arizona State University

Morgan, Owen W. (1968), Professor Emeritus of Family and Human Development; B.A., Grinnell College; M.A., University of Nebraska, Omaha; Ph.D., University of Nebraska, Lincoln

Morgan, Thais E. (1985), Associate Professor of English; B.A., Smith College; M.A., Ph.D., Brown University

Moroney, Robert M. (1981), Professor of Social Work; A.B., M.S.W., Boston College; M.P.H., Harvard University; Ph.D., Brandeis University

Morrell, Darryl (1988), Associate Professor of Electrical Engineering; B.S., M.S., Ph.D., Brigham Young University

Morris, Brenda C. (1994), Clinical Associate Professor of Nursing; B.S.N., M.S., University of Arizona; Ed.D., Arizona State University

Morris, Donald H. (1962), Professor Emeritus of Anthropology; B.A., Arizona State University; M.A., Ph.D., University of Arizona

Morrison, Kenneth M. (1983), Associate Professor of Religious Studies; B.A., Saint Dunstan's University; M.A., Ph.D., University of Maine

Moses, Michele (2000), Assistant Professor of Educational Leadership and Policy Studies; B.A., University of Virginia; M.Ed., University of Vermont; M.A., Ph.D., University of Colorado

Mossman, Kenneth L. (1990), Professor of Microbiology; Director, Radiation Safety Office; B.S., Wayne State University; M.Ed., University of Maryland, College Park; M.S., Ph.D., University of Tennessee, Knoxville

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Mou, Jong-I (1994), Associate Professor of Industrial Engineering; B.S., M.S., University of Wisconsin, Madison; Ph.D., Purdue University

Moulton, Gerald L. (1967), Professor Emeritus of Counselor Education; B.A., Hamline University; M.Ed., Ed.D., University of Oregon

Mower, Donald E. (1965), Professor Emeritus of Speech and Hearing Science; B.A., M.A., Florida State University; Ph.D., Arizona State University

Moyer, Joan E. (1971), Professor Emerita of Curriculum and Instruction; B.S., Kutztown State University; M.Ed., Pennsylvania State University; Ph.D., University of Maryland, College Park

Muccino, Julia Catherine (1997), Assistant Professor of Civil and Environmental Engineering; B.C.E., Villanova University; M.S., Ph.D., University of Notre Dame

Mueller-Alexander, Jeanette M. (1989), Librarian, Hayden Reference Services; B.A., Moorhead State University; M.L.S., Indiana University, Bloomington

Mulligan, Donald E. (1985), Professor of Construction; B.S.E., M.S.M.E., Arizona State University

Mulvihill, Josepha Anne (1983), Associate Librarian, Hayden Reference Services; B.S., University of Kansas; M.L.S., Emporia State University

Munk, Morton E. (1961), Professor of Chemistry and Biochemistry; B.S., Northwestern University; M.S., University of Miami; Ph.D., Wayne State University

Murdough, John M. (1993), Faculty Associate of Construction; B.S., M.B.A., Arizona State University

Murff, Scott (1998), Assistant Professor of Architecture; B.S.D., Clemson University; B.Arch., The Cooper Union

Murphy, Claudia (1996), Professor of Dance; Chair, Department of Dance; B.A., Western College; M.A., George Washington University



Murphy, Jeffrie G.
(1981)
Regents' Professor of Law and Philosophy; B.A., Johns Hopkins University; Ph.D., University of Rochester

Murphy, Juanita F. (1971), Professor Emerita of Nursing; Dean Emerita, College of Nursing; B.A., Oklahoma Baptist University; M.S., Ph.D., Case Western Reserve University

Murphy, Kurt R. (1986), Associate Librarian; Assistant Dean, University Libraries Personnel; B.S., M.L.S., University of Illinois; M.B.A., Arizona State University

Murranka, Patricia A. (1977), Professor Emerita of Management Communication; B.A., Trenton State College; M.A., Rider College; Ed.D., Utah State University

Murray, Kimberly (2000), Faculty Associate of Nursing; B.S., Boston University; M.S., Arizona State University

Murray, Roger N. (1968), Professor Emeritus of English; B.A., B.S., Moorhead State Teachers College; M.A., Stanford University; Ph.D., University of Iowa

Musacchio, Laura (1999), Assistant Professor of Planning and Landscape Architecture; B.L.A., M.L.A., State University of New York; Ph.D., Texas A&M University

Musheno, Michael C. (1977), Professor of Justice Studies and Public Affairs; B.A., Lycoming College; M.A., Ph.D., American University

Mushkatel, Alvin H. (1980), Professor of Planning and Landscape Architecture; B.A., Ohio State University; M.S., Ph.D., University of Oregon

Muthuswamy, Jitendran (2000), Assistant Professor of Bioengineering; B.Tech., Indian Institute of Technology (India); M.S., Ph.D., Rensselaer Polytechnic Institute

Myers, Quin (1985), Academic Associate, Division of Undergraduate Academic Services; Coordinator, Writing Across the Curriculum; B.S.Ed., Chadron State College; M.A., Arizona State University

Myhajlenko, Stefan (1986), Associate Research Scientist and Associate Director, Center for Solid State Electronics Research; Ph.D., University of Manchester, Victoria (United Kingdom)

Myler, Charles E. Jr. (1968), Professor Emeritus of Real Estate; B.B.A., Loyola University; M.B.A., Harvard University; Ph.D., University of Florida

N

Nagasawa, Richard H. (1969), Professor of Sociology; B.A., University of Hawaii, Manoa; M.A., Ph.D., University of Washington

Nagoshi, Craig (1989), Associate Professor of Psychology; B.A., M.A., Ph.D., University of Hawaii, Manoa

Nagy, Bethel (2000), Adjunct Professor of Anthropology; B.A., Arizona State University; M.A., University of Toronto (Canada); Ph.D., Arizona State University

Nagy, John D. (1999), Adjunct Professor of Biology; B.S., Eastern Michigan University; B.S., University of Michigan, Ann Arbor; Ph.D., Arizona State University

Nakagawa, Kathryn (1996), Assistant Professor of Psychology in Education; B.A., M.A., University of Notre Dame; Ph.D., Northwestern University

Nakamura, Mutsumi (2002), Lecturer of Computer Science and Engineering; B.S., M.S., University of Texas, El Paso

Nakayama, Thomas K. (1991), Professor of Communication; Director, Asian Pacific American Studies Program; A.B., Georgia State University; M.A., Ph.D., University of Iowa

Napoli, Maria (1996), Assistant Professor of Social Work; B.A., H.H. Lehman College; M.S.W., Ph.D., New York University

Nardari, Federico (1999), Assistant Professor of Finance; B.S., University of Bergamo (Italy); M.S.B.A., Ph.D., Washington University, St. Louis

Nardella, Francis A. (1992), Adjunct Professor of Bioengineering; A.B., West Virginia University; M.D., West Virginia University, School of Medicine

Nash, Leanne T. (1971), Professor of Anthropology; B.A., University of California, Davis; M.A., Ph.D., University of California, Berkeley

Nash, Thomas H. III (1971), Professor of Plant Biology; B.S., Duke University; M.S., Ph.D., Rutgers, The State University of New Jersey

Navabi, Faye (1997), Lecturer of Computer Science and Engineering; B.S., M.S., University of Southwestern Louisiana

Neal, Berna E. (1988), Librarian Emerita; B.A., M.L.S., Syracuse University

Nebeker, Helen E. (1958), Professor Emerita of English; B.A., M.A., Arizona State University

Neisewander, Janet L. (1991), Associate Professor of Psychology; B.S., Rockford College; M.S., Ph.D., University of Kentucky

Nelsen, Edward A. (1975), Professor of Education; Academic Program Leader, Educational Psychology; B.S., University of Wisconsin, Madison; Ph.D., Stanford University

Nelson, Ben A. (1995), Professor of Anthropology; B.A., M.A., Florida State University; Ph.D., Southern Illinois University

Nelson, G. Lynn (1973), Associate Professor of English; B.A., Kearney State College; Ph.D., University of Nebraska, Lincoln

Nelson, J. Russell (1981–89), Professor Emeritus of Finance; President Emeritus of the University; B.A., Pacific Union College; M.B.A., Ph.D., University of California, Los Angeles

Nelson, John C. (1967), Professor Emeritus of Curriculum and Instruction; B.S., M.A., Arizona State University; Ph.D., Vanderbilt University

Nelson, Kelly (1999), Lecturer, Division of Undergraduate Academic Services; B.A., Michigan State University; M.S., University of Southern Maine; Ph.D., Brandeis University

Nelson, Margaret (1995), Professor of Anthropology; B.A., Occidental College, Los Angeles; Ph.D., University of California, Santa Barbara

Nemeroff, Carol (1988), Associate Professor of Psychology; B.A., McGill University (Canada); M.A., Ph.D., University of Pennsylvania

Nemiro, Jay S. (1995), Adjunct Professor of Biology; B.A., Temple University; M.D., George Washington University School of Medicine

Nering, Evar D. (1960), Professor Emeritus of Mathematics and Statistics; B.A., Indiana University, Fort Wayne; M.A., Ph.D., Princeton University

Neuberg, Steven L. (1988), Professor of Psychology; A.B., Cornell University; M.S., Ph.D., Carnegie Mellon University

Neuer, Susanne (2000), Assistant Research Professor of Biology; B.S., Kiel University (Germany); M.S., University of Washington; Ph.D., Oregon State University

New, Frances Y. (1986), Librarian Emerita; B.S., Seattle Pacific University; M.L.S., University of Arizona

Newfeld, Stuart J. (1997), Assistant Professor of Biology; B.S., Hobart College; M.A., M.S., University of Hawaii; Ph.D., Emory University

Newman, Nathan (2000), Professor of Materials Engineering; B.S., University of Southern California; M.S., Ph.D., Stanford University

Newport, Mark (2001), Assistant Professor of Art; B.F.A., Kansas City Art Institute; M.F.A., Art School of the Art Institute of Chicago

Ney, James W. (1969), Professor Emeritus of English; B.A., M.A., Wheaton College; Ed.D., University of Michigan

Nichols, Ann W. (1970), Associate Professor of Social Work; A.B., Stanford University; M.S.W., D.S.W., Columbia University

Nichols Dock, Michelle (2000), Assistant Museum Professional; Curator of Education, University Art Museum; B.A., New Mexico State University; M.A., Arizona State University

Nichols, Renea D. (1995), Lecturer of Journalism and Mass Communication; B.A., Central Michigan University; M.M.C., Arizona State University

Nicolaenko, Basil (1989), Professor of Mathematics and Statistics; M.S., University of Paris (France); Ph.D., University of Michigan

Niederhelman, Melissa (1998), Assistant Professor of Design; B.F.A., University of Massachusetts, Dartmouth; M.F.A., Allgemeine Gewerbeschule Basel (Switzerland)

Nielsen, Michael J. (1969), Professor Emeritus of Design; B.P.D., North Carolina State University, Raleigh; M.A., Stanford University

Nielson, Gregory M. (1970), Professor of Computer Science and Engineering; B.S., M.S., Ph.D., University of Utah

Nigam, Bishan Perkash (1964), Professor Emeritus of Physics and Astronomy; B.S., M.S., University of Delhi (India); Ph.D., University of Rochester

Nikitin, Sergey (1994), Associate Professor of Mathematics and Statistics; M.S., Moscow State University; Ph.D., Academy of Science of Russia, Research Institute of System Studies

Nilsen, Alleen P. (1975), Professor of English; B.A., Brigham Young University; M.Ed., American University; Ph.D., University of Iowa

Nilsen, Don L.F. (1973), Professor of English; B.A., Brigham Young University; M.A., American University; Ph.D., University of Michigan

Northey, William T. (1959), Professor Emeritus of Microbiology; B.A., University of Minnesota, Twin Cities; M.A., Ph.D., University of Kansas

Notarianni, Diane M. (2001), Adjunct Professor of Anthropology; A.B., Franklin and Marshall College; M.A., Northern Arizona University; Ph.D., Arizona State University

Noreuil, Chad (2001), Legal Writing Instructor; B.A., J.D., University of Illinois, Urbana-Champaign

Norton, Janice (1998), Senior Lecturer of English; B.A., M.A., University of Tennessee, Knoxville; Ph.D., University of Iowa

Norton, Kay (1999), Senior Lecturer of Music; B.M.E., M.F.A., University of Georgia; Ph.D., University of Colorado

Norton, Scott (1973), Professor of Educational Leadership and Policy Studies; Academic Program Coordinator, Educational Administration and Supervision, On-Campus Programs; B.S., M.Ed., Ed.D., University of Nebraska, Lincoln

Nowlis, Stephen (1996), Associate Professor of Marketing; B.A., Stanford University; M.B.A., University of California, Berkeley; Ph.D., University of California, San Diego

Nunez, Diane E. (1995), Clinical Assistant Professor of Nursing; B.S.N., M.S., Arizona State University

O

O'Brien, Carmen A. (1959), Professor Emerita of Education; B.A., M.A., Arizona State University

O'Brien, Robin K. (1995), Lecturer of Speech and Hearing Science; B.A., Gallaudet University

O'Connor, Elinor J. (1970), Professor Emerita of Family and Human Development; B.S., St. Catharine College; M.S., University of Iowa

O'Day, Peggy A. (1994), Associate Professor of Geological Sciences; B.S., University of California, Davis; M.S., Cornell University; Ph.D., Stanford University

O'Dell, Michael A. (1980), Associate Professor of Accountancy and Information Management; B.S., M.B.A., University of California, Los Angeles; Ph.D., University of Texas, Austin; C.P.A., Colorado

O'Donnell, Ed (1999), Assistant Professor of Accountancy and Information Management; B.B.A., Texas A&M University; Ph.D., University of North Texas, Kingsville

O'Grady, Catherine (1991), Professor of Law; Director, Clinical Programs; B.A., University of Michigan; J.D., Arizona State University

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

O'Grady, E.P. (1977), Associate Professor of Computer Science and Engineering; B.S., St. Louis University; M.S., Ph.D., University of Arizona

O'Haver, Judy (1999), Faculty Associate of Nursing; B.S.N., Niagara University; M.S., Arizona State University

Ó hUallacháin, Breandán (1987), Professor of Geography; Chair, Department of Geography; B.A., National University of Ireland (Ireland); M.A., Indiana University, Bloomington; Ph.D., University of Illinois, Urbana-Champaign



O'Keefe, Michael
(1963)
Regents' Professor of Chemistry and Biochemistry; B.S., Ph.D., University of Bristol (United Kingdom)

O'Leary, Timothy J. (1978), Associate Professor of Computer Information Systems; B.S., Westminster College; M.B.A., D.B.A., Kent State University

O'Sullivan-Kachel, Peggy (1998), Director, Advanced Public Executive Program; B.S., Northern Arizona University; M.P.A., Arizona State University

Odenkirk, James E. (1967), Professor Emeritus of Exercise Science and Physical Education; B.S., M.A., Ohio State University; Ed.D., Columbia University

Odehahn, Stephen C. (1999), Assistant Research Scientist of Physics and Astronomy; B.S., University of Alabama; M.S., Ph.D., University of Texas, Austin

Odish, Faris (1997), Lecturer of Mathematics and Statistics; B.S., University of Baghdad (Iraq); M.A., Wayne State University

Oetting, Edward (1983), Librarian, Hayden Reference Services; B.A., University of Michigan; M.A., University of Illinois; M.S.L.S., Wayne State University

Oh, Young Kyun (1999), Instructor of Korean; B.A., Sogang University Graduate School (South Korea); M.A., University of Wisconsin, Madison

Ohmart, Robert D. (1970), Professor of Biology; B.S., M.S., New Mexico State University; Ph.D., University of Arizona

Ojala, William T. (1971), Professor Emeritus of English; B.S., M.A., University of Minnesota, Twin Cities; Ph.D., Florida State University

Okamoto, Scott K. (2000), Assistant Professor of Social Work; B.S., University of California, Los Angeles; M.S.W., San Jose State University; Ph.D., University of Hawaii, Manoa

Okun, Morris A. (1976), Professor of Psychology; Director, Gerontology Program; B.A., Brooklyn College; M.S., Ph.D., Pennsylvania State University

Oldani, Robert W. (1982), Professor of Music; B.A., University of Illinois; M.A., Ph.D., University of Michigan

Oldroyd, Mark, SFC (2000), Instructor of Military Science

Olivas, Louis (1979), Associate Professor of Management; Assistant Vice President for Academic Affairs; B.A., M.A., Ed.D., Arizona State University

Oliver, Robert S. (1963), Professor Emeritus of Architecture; B.A., M.A., University of California, Berkeley; M.F.A., Allende Institute (Mexico)

Olson, Clark D. (1984), Instructional Professional of Communication; B.A., Iowa State University; M.S., University of Utah; Ph.D., University of Minnesota, Twin Cities

Orchinik, Miles (1995), Associate Professor of Biology; B.A., San Francisco State University; Ph.D., Oregon State University

Orlich, Ileana (1996), Assistant Professor of Romanian; B.A., University of Bucharest (Romania); M.A., Ph.D., Arizona State University

Ormiston, Michael B. (1984), Professor of Economics; B.S., Michigan State University; M.A., Ph.D., Johns Hopkins University

Ossipov, Helene (1987), Associate Professor of French; B.A., City University of New York; M.A. (French Linguistics), M.A. (Russian Area Studies), Ph.D., Indiana University, Bloomington

Osterhoudt, Robert G. (1976), Professor Emeritus of Exercise Science and Physical Education; B.S., M.S., Pennsylvania State University; Ph.D., University of Illinois

Ostrom, Amy (1996), Assistant Professor of Marketing; B.A., Arizona State University; Ph.D., Northwestern University

Ostrom, Lonnie L. (1973), Professor of Marketing; Director, Development, Institutional Advancement; President, Arizona State University Foundation; B.B.A., University of Wisconsin; M.S., Southern Illinois University, Carbondale; Ph.D., University of Alabama

Ota Wang, Vivian (1998), Assistant Professor of Counseling Psychology and Counselor Education; B.A., Colorado College; M.S., University of Colorado; Ph.D., Columbia University

Ovando, Carlos Julio (2001), Professor of Curriculum and Instruction; Director, Division of Curriculum and Instruction; Associate Dean, Teacher Education; B.A., Goshen College; M.A., M.A.T., Ph.D., Indiana University

Owusu-Antwi, Emmanuel B. (1997), Assistant Professor of Civil and Environmental Engineering; B.S., University of Science and Technology (Ghana); M.S., University of Alberta (Canada); Ph.D., University of Texas, Austin

Ozel, Filiz (1995), Professor of Architecture; B.Arch., M.Arch., Middle East Technical University (Turkey); D.Arch., University of Michigan

P

Packer, Merle A. (1959), Professor Emerita of Physical Education; B.A., M.A., Arizona State University; Ed.D., University of Northern Colorado

Padilla, Peter A. (1997), Assistant Professor of Sociology; B.A., M.A., University of Northern Colorado; Ph.D., Arizona State University



Pagano, Caio
(1986)
Regents' Professor of Music; B.Laws, University of Sao Paulo (Brazil); D.M.A., Catholic University of America

Page, John B. (1969), Professor of Physics and Astronomy; B.S., Ph.D., University of Utah

Palais, Elliot S. (1959-62; 1966), Librarian Emeritus; B.A., Bowdoin College; A.M.L.S., University of Michigan

Palais, Joseph C. (1964), Professor of Electrical Engineering; B.S.E.E., University of Arizona; M.S.E., Ph.D., University of Michigan

Palmer, Michael B. (1998), Lecturer of Psychology; B.A., Arizona State University; M.A., Michigan State University; Ph.D., Arizona State University



Palumbo, Dennis J.
(1983)
Regents' Professor Emeritus of Justice Studies; M.A. (Social Science), M.A. (Political Science), Ph.D., University of Chicago

Pan, George (1995), Professor of Electrical Engineering; B.E., Peking Institute of Petroleum Technology (China); M.S., Ph.D., University of Kansas

Panchanathan, Sethuraman (1997), Professor of Computer Science and Engineering; B.Sc., University of Madras (India); M.Tech., Indian Institute of Technology, Madras (India); Ph.D., University of Ottawa (Canada)

Panchmatia, Bella (1998), Faculty Associate of Nursing; B.S.N., University of Alberta (Canada); M.S.N., University of Wisconsin, Madison

Pang, Patty (1999), Instructor of Chinese; B.A., Tamkang University (Taiwan); M.A., Arizona State University

Pangrazi, Robert P. (1973), Professor of Exercise Science and Physical Education; B.A., M.S., Ph.D., Washington State University

Panitch, Alyssa (1999), Assistant Professor of Bioengineering; B.S., Ph.D., University of Massachusetts

Pany, Kurt J. (1978), Professor of Accountancy and Information Management; B.S.B.A., University of Arizona; M.B.A., University of Minnesota, Twin Cities; Ph.D., University of Illinois; C.P.A., Arizona

Papandreou-Suppappola, Antonia (1999), Assistant Professor of Electrical Engineering; B.S., M.S., Ph.D., University of Rhode Island

Pardini, Louis J. (1967), Professor Emeritus of Technology; B.A., A.M., Idaho State University; Ed.D., University of Northern Colorado

Parker, Harold E. (1987), Senior Research Technologist, Engineering Computer Services

Park-Fuller, Linda M. (2000), Assistant Professor of Communication; B.A., University of North Dakota; M.A., University of Missouri, Columbia; Ph.D., University of Texas, Austin

Parkhe, Smita (2001), Assistant Librarian, Technical Services Department; B.S., University of Pune (India); M.L.S., Clarion University of Pennsylvania

Parkinson, Stanley R. (1971), Professor of Psychology; A.B., University of California, Berkeley; M.A., Ph.D., University of California, Davis

Parrish, H. Wayne (1967), Professor Emeritus of Curriculum and Instruction; A.B., San Diego State College; M.Ed., Ed.D., University of Oregon

Parrish, Mila (2000), Assistant Professor of Dance; B.F.A., University of Michigan; M.A., Columbia University

Pasqualetti, Martin J. (1977), Professor of Geography; B.A., University of California, Berkeley; M.A., Louisiana State University, Baton Rouge; Ph.D., University of California, Riverside

Pastin, H. Mark (1980), Professor Emeritus of Management; B.A., University of Pittsburg; A.M., Ph.D., Harvard University

Patel, Mookesh (1990), Associate Professor of Design; B.F.A., National Institute of Design (India); M.F.A., Rhode Island School of Design

Patten, Duncan T. (1965), Professor Emeritus of Plant Biology; A.B., Amherst College; M.S., University of Massachusetts, Amherst; Ph.D., Duke University

Patterson, Robert A. (1957), Professor Emeritus of Biology; B.S., University of Michigan; Ph.D., Ohio State University

Patterson, Shirley L. (1994), Professor Emerita of Social Work; B.A., North Texas State University; M.A., McCormick Theological Seminary; M.S.W., University of Kansas; Ph.D., University of Wisconsin, Madison

Paulsen, George E. (1959), Professor Emeritus of History; B.A., Hobart College; M.A., Rutgers, The State University of New Jersey; Ph.D., Ohio State University

Paz, Juan J. Jr. (1988), Associate Professor of Social Work; B.A., University of Texas, El Paso; M.S., University of Houston; D.S.W., Howard University

Peacock, Simon M. (1985), Professor of Geological Sciences; Chair, Department of Geological Sciences; B.S., M.S., Massachusetts Institute of Technology; Ph.D., University of California, Los Angeles

Pearce, Martha V. (1977), Professor Emerita of Technology; B.S., Columbia University; M.S., Boston University; Ed.D., Arizona State University

Pearson, David L. (1988), Research Professor of Biology; B.S., Pacific Lutheran University; M.S., Louisiana State University, Baton Rouge; Ph.D., University of Washington

Pearson, John N. (1981), Professor of Supply Chain Management; B.S., M.B.A., Florida Atlantic University; Ph.D., Georgia State University

Pearson, Nancy B. (1989), Research Specialist of Microbiology; B.A., Earlham College; M.S., Louisiana State University, Baton Rouge

Peccia, Jordan (2001), Assistant Professor of Civil and Environmental Engineering; B.S., M.S., Montana State University, Bozeman; Ph.D., University of Colorado, Boulder

Peck, Laura (2002), Assistant Professor of Public Affairs; B.A., Arizona State University; M.P.A., M.Phil., Ph.D., New York University

Peck, Robert E. (1984), Professor of Engineering; Chair, Department of Mechanical and Aerospace Engineering; B.S., University of California, Berkeley; M.S., Ph.D., University of California, Irvine

Pei, Ker-Wei (1986), Professor of Accountancy and Information Management; B.A., National Chung-Hsing University (Taiwan); M.A., Southern Illinois University, Carbondale; Ph.D., North Texas State University

Peña, Robert (1995), Associate Professor of Educational Leadership and Policy Studies; B.S., M.A., State University of New York, Buffalo; Ph.D., University of Wisconsin, Madison

Penley, Larry E. (1985), Professor of Management; Dean, College of Business; B.A., M.A., Wake Forest University; Ph.D., University of Georgia

Peralta, Pedro D. (1998), Assistant Professor of Engineering; B.S., Simón Bolívar University (Venezuela); M.S., Ph.D., University of Pennsylvania

Perrill, Norman K. (1966), Professor Emeritus of Communication; B.S., M.A., Northwestern University; Ph.D., University of Southern California

Perry, Curtis (1995), Associate Professor of English; B.A., Cornell University; M.A., Ph.D., Harvard University

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Perry, Patsy (1985), Professor of Nursing; B.S., Columbia Union College; M.S., University of Colorado; Ph.D., University of Michigan

Perry, R. Tod (1998), Assistant Professor of Finance; B.B.A., University of Notre Dame; J.D., University of Virginia; Ph.D., University of North Carolina, Chapel Hill

Perry, Ronald W. (1983), Professor of Public Affairs; B.Sc., M.A., Arizona State University; Ph.D., University of Washington

Pessler, Anthony J. (1994), Associate Professor of Art; B.F.A., M.A., St. Cloud State University; M.F.A., University of Wisconsin, Madison

Peterman, Gordon G. (1966), Professor Emeritus of Construction; B.S.C.E., University of Iowa

Peters, Kathleen A. (1967), Professor Emerita of Family and Human Development; B.S., M.S., Kansas State University

Petersen, Kenneth J. (2001), Assistant Professor of Supply Chain Management; B.S., University of Alabama; M.B.A., University of Akron; Ph.D., Michigan State University

Petersen, Michael (2001), Assistant Professor of Accountancy and Information Management; B.S., M.B.A., M.ACC., Brigham Young University; Ph.D., University of Iowa

Petersen, Michelle C. (1997), Lecturer of Spanish; B.A., Western Illinois University; M.A., University of Iowa

Peterson, John R. (1963), Professor Emeritus of Architecture; Graduate Coordinator of School of Architecture; B.A., Saint Olaf College; B.Arch., University of Minnesota, Twin Cities; M.Arch., Harvard University

Peterson, Ralph (1976), Professor Emeritus of Curriculum and Instruction; B.A., Eastern Washington State College; M.A., Ed.D., Columbia University

Peterson, Trygve (1994), Associate Professor of Music; B.M., New England Conservatory of Music; M.M., Yale University; D.M.A., The Juilliard School

Petrucci, Darren (1998), Assistant Professor of Architecture; B.S.D., Arizona State University; M.Arch., Harvard University



Pettit, G. Robert
(1964)
Regents' Professor of Chemistry and Biochemistry; Director, Cancer Research Institute; B.S., Washington State University; M.S., Ph.D., Wayne State University

Pettit, Robin K. (1997), Associate Research Professor, Cancer Research Institute; Adjunct Faculty of Microbiology; B.S., University of Arizona; M.S., Washington State University; Ph.D., University of Montana

Petuskey, William T. (1983), Professor of Chemistry and Biochemistry; B.S., University of Utah; Sc.D., Massachusetts Institute of Technology

Pflugfelder, Janice (1987), Faculty Associate of Nursing; B.S., St. Joseph College; M.S., Arizona State University

Pfuhl, Erdwin H. Jr. (1968), Professor Emeritus of Sociology; A.B., Whitman College; A.M., University of Idaho; Ph.D., Washington State University

Pheanis, David C. (1975), Associate Professor of Computer Science and Engineering; B.S., Case Institute of Technology; M.S., Ph.D., Arizona State University

Phelan, Patrick E. (1996), Associate Professor of Mechanical and Aerospace Engineering; B.S., Tulane University; M.S., Massachusetts Institute of Technology; Ph.D., University of California, Berkeley

Philippakis, Andrew S. (1967), Professor of Computer Information Systems; B.S., Gannon College; M.B.A., Ph.D., University of Wisconsin, Madison

Phillips, William W. (1958), Professor Emeritus of History; Ph.B., M.A., University of North Dakota; Ph.D., University of Missouri

Pian, Richard H.J. (1959), Professor Emeritus of Civil Engineering; B.S.C.E., Kung Shang University (China); M.S.E., Ph.D., Cornell University

Piburn, Michael D. (1989), Professor of Curriculum and Instruction; B.S., University of California, Davis; Ph.D., Princeton University

Pickens, Judith M. (1987–99; 2000), Assistant Professor of Nursing; B.S.N., Marymount College; M.S., University of Missouri; Ph.D., Arizona State University

Pickus, David (1999), Lecturer of the Barrett Honors College; B.A., Lawrence University; M.A., Ph.D., University of Chicago

Picraux, Thomas (2001), Professor of Materials Science and Engineering; Executive Director, Materials Science Program; B.S., University of Missouri, Columbia; M.S., Ph.D., California Institute of Technology

Pigg, Kathleen B. (1988), Associate Professor of Plant Biology; B.S., M.S., Ohio University; Ph.D., Ohio State University

Pijawka, K. David (1982), Professor of Planning and Landscape Architecture; Director, Ph.D. Program in Environmental Planning in Design; B.A., Brock University (Canada); M.A., Ph.D., Clark University

Pilafian, J. Samuel (1995), Professor of Music; B.M., University of Miami

Pile, James (1971), Professor of Art; B.F.A., M.F.A., University of Nebraska, Lincoln

Pimentel, David (1973), Professor of Art; B.S.Ed., Massachusetts College of Art; M.F.A., Rochester Institute of Technology

Pinckard, Mary-Margaret (1982), Librarian Emerita; B.S., University of New Hampshire; M.L.S., University of Arizona

Pinkava, Donald J. (1964), Professor Emeritus of Plant Biology; B.S., M.S., Ph.D., Ohio State University

Pittman, Anne M. (1952), Professor Emerita of Exercise Science and Physical Education; B.S., University of Texas, Austin; M.A., New York University; Ed.D., Stanford University

Pittsley, Janice M. (1987), Associate Professor of Art; B.F.A., University of North Carolina, Chapel Hill; M.F.A., University of Georgia

Pizziconi, Vincent B. (1987), Associate Professor of Bioengineering; B.S., University of Lowell; M.S.E., Ph.D., Arizona State University

Platoff, Anne M. (1997), Assistant Librarian, Library Instruction, Systems, and Technology; B.A., Kansas State University; M.A., University of Houston, Clear Lake; M.S., University of North Texas

Podlich, William F. (1949), Professor Emeritus of Education; B.S., Maryland State Teachers College; Ph.D., University of Iowa

Poe, Jerry B. (1974), Professor Emeritus of Finance; B.A., Drury College; M.B.A., Washington University; D.B.A., Harvard University

Polenz, G. Donald (1967), Professor Emeritus of Social Work; B.A., Wartburg College; M.A., University of Iowa; D.S.W., University of Southern California

Polk, Janet C. (1993), Faculty Associate of Nursing; B.S.N., M.S., Arizona State University

Ponce, Fernando A. (1999), Professor of Physics and Astronomy; B.S., National University of Engineering (Peru); M.S., University of Maryland, College Park; Ph.D., Stanford University

Popko, Sigmund (2001), Legal Writing Instructor; B.A., J.D., University of Arizona

Pourbastini, Wendy (2000), Faculty Associate of Nursing; B.S.N., M.S.N., Arizona State University

Poweleit, Christian D. (1995), Assistant Research Professional of Physics and Astronomy; B.A., Thomas Moore College; M.A., Purdue University, West Lafayette; Ph.D., University of Cincinnati

Powers, Doris C. (1960), Professor Emerita of English; B.A., Wellesley College; M.A., Occidental College; Ph.D., University of California, Berkeley

Powers, Jeanne M. (2001), Assistant Professor of Educational Leadership and Policy Studies; B.A., Tufts University; M.A., University of California, Irvine; Ph.D., University of California, San Diego

Powers, Karen (2002), Associate Professor of History; B.A., Herbert H. Lehman College; M.A., Ph.D., New York University

Poynor, Leslie F. (2001), Lecturer of Curriculum and Instruction; B.S., M.A., University of Alabama; Ph.D., Arizona State University

Prather, Elizabeth M. (1978), Professor Emerita of Speech and Hearing Science; B.S., University of Nebraska, Lincoln; M.A., Ph.D., University of Iowa

Pratt, Melvin W. (1987), Senior Research Technologist, Center for Solid State Electronics Research

Presson, Clark C. (1980), Professor of Psychology; B.A., Pomona College; M.S., Ph.D., Columbia University

Prewitt, Kathryn A. (1992), Associate Professor of Mathematics and Statistics; B.A., University of Kansas; M.S., Ph.D., University of California, Davis

Pride, Bill E. (1997), Lecturer of Exercise Science and Physical Education; B.A., M.A., Arizona State University

Prigatano, George P. (1993), Adjunct Professor of Speech and Hearing Science; B.S., Loyola University, Los Angeles; M.A., California State University, Long Beach; Ph.D., Bowling Green State University

Primas, Phyllis J. Krause (1987), Associate Professor of Nursing; B.S.N., University of Pennsylvania; M.P.H., Ph.D., University of Pittsburgh

Priest, Janice (2001), Faculty Associate of Nursing; B.S.N., Weber State University; M.S.N., University of Utah

Pritchard, Mark P. (1998), Assistant Professor of Recreation Management and Tourism; B.S., M.S., Ph.D., University of Oregon

Pritchard, Melissa (1994), Associate Professor of English; B.A., University of California, Santa Barbara; M.A., Western Washington University

Privateer, Paul (1991), Associate Professor of Interdisciplinary Humanities; B.A., M.A., California State University, Stanislaus; Ph.D., University of California, Davis

Provine, Doris Marie (2001), Professor of Justice Studies; Director, School of Justice Studies; A.B., University of Chicago; J.D., Ph.D., Cornell University

Prust, Zenas A. (1959), Professor Emeritus of Technology; B.S., University of Wisconsin, Stout; M.A., University of Minnesota, Twin Cities; Ed.D., University of Northern Colorado

Pyne, Stephen J. (1986), Professor of Biology and History; B.A., Stanford University; M.A., Ph.D., University of Texas, Austin

Q

Quay, Ray (1990), Adjunct Associate Professor of Planning and Landscape Architecture; B.S., Baylor University; M.S.C.R.P., University of Texas, Austin

Quesada, Eugene R. (1973), Professor Emeritus of Design; B.A., Arizona State University

Quigg, John C. (1981), Professor of Mathematics and Statistics; B.S., M.S., Ph.D., Drexel University

Quinn, Paul M. (1995), Lecturer of Speech and Hearing Science; B.A., California State University, Northridge

R

Rabinovich, Elliot (2001), Assistant Professor of Supply Chain Management; B.S., School of Engineering of Antioquia (Columbia); M.S., Ph.D., University of Maryland

Raby, William (1982), Professor Emeritus of Accountancy and Information Management; B.S., Northwestern University; M.B.A., Ph.D., University of Arizona

Rader, Martha (1975), Associate Professor of Curriculum and Instruction; B.S., M.B.E., University of Mississippi; Ph.D., Kansas State University

Radke, Judith J. (1960), Professor Emerita of French; B.S., M.A., University of Wisconsin, Madison; Ph.D., University of Colorado

Ragan, Donal M. (1967), Professor Emeritus of Geological Sciences; B.A., Occidental College; M.S., University of Southern California; Ph.D., University of Washington

Ragsdale, Bruce D. (1989), Adjunct Professor of Anthropology; B.S., University of California; M.D., University of California, San Francisco

Rajan, Subramaniam D. (1983), Professor of Civil and Environmental Engineering; B.Tech., Indian Institute of Technology (India); M.S., Ph.D., University of Iowa

Ralston, Mack A. (1956), Professor Emeritus of Education; B.S., M.S., Indiana State University; Ed.D., Indiana University

Ramage, John (1990), Associate Professor of English; B.A., Whitman College; Ph.D., Washington State University

Ramakrishna, B.L. (1999), Associate Professor of Plant Biology and Solid State Science; B.Sc., Bangalore University (India); M.Sc., Indian Institute of Technology, Kanpur (India); Ph.D., Indian Institute of Technology, Madras (India)

Rankin, Robert L. (1971), Associate Professor of Engineering; B.S., University of Texas, El Paso; Ph.D., William Marsh Rice University

Rankin, W. Parkman (1982), Professor Emeritus of Journalism and Mass Communication; B.S., Syracuse University; M.B.A., Ph.D., New York University

Rapp, James R. (1962), Professor Emeritus of Architecture; Associate Dean, College of Architecture and Environmental Design; B.Arch, University of Detroit; M.S.Arch., Columbia University

Rasmussen, David I. (1963), Professor Emeritus of Biology; B.S., M.S., University of Utah; Ph.D., University of Michigan

Ratner, Esther (1988), Associate Professor of Design; B.F.A., Washington University; M.F.A., University of Michigan

Raupp, Gregory B. (1985), Professor of Chemical Engineering; Associate Dean for Research, College of Engineering and Applied Sciences; B.S., M.S., Purdue University; Ph.D., University of Wisconsin, Madison

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Rausch, Jack D.** (1965), Professor Emeritus of Music; B.S., M.A., Ohio State University
- Rave, Wallace J.** (1967), Professor Emeritus of Music; B.S., Illinois State University; M.M., Ph.D., University of Illinois
- Ravesloot, John C.** (1993), Adjunct Professor of Anthropology; B.A., M.A., Ph.D., Southern Illinois University, Carbondale
- Ravindran, Suryanarayanan** (2001), Assistant Professor of Accountancy and Information Management; B.A., Indian Institute of Technology, (India); M.B.A., Indian Institute of Management, (India); Ph.D., University of Texas, Austin
- Rawlett, Kristen** (2000), Faculty Associate of Nursing; B.S., Virginia Commonwealth University; M.S.N., University of South Carolina
- Rawls, J. Alan** (1997), Assistant Professor of Biology; B.S., University of Western Ontario (Canada); Ph.D., Saint Louis University
- Ray, Timothy E.** (1998), Lecturer of English; B.A., M.A., University of Central Oklahoma; Ph.D., Bowling Green State University
- Ray, William J.** (1968), Professor Emeritus of Curriculum and Instruction; B.S., M.S., State University of New York, Buffalo; Ed.D., Wayne State University
- Razatos, Annetta** (1999), Assistant Professor of Chemical Engineering; B.S., University of Colorado, Boulder; Ph.D., University of Texas, Austin
- Reader, Mark** (1967), Professor Emeritus of Political Science; A.B., A.M., Ph.D., University of Michigan
- Reber, William** (1991), Professor of Music; Director, Music Theatre Program; B.M., M.M, University of Utah; D.M.A., University of Texas, Austin
- Reckers, Philip M.J.** (1980), Professor of Accountancy and Information Management; Director, School of Accountancy and Information Management; B.S., Quincy College; M.B.A., Washington University; Ph.D., University of Illinois
- Redman, Betsy J.** (1988), Associate Librarian; Team Management, Technical Services Department; B.S., M.L.S., University of Arizona
- Redman, Charles L.** (1983), Professor of Anthropology; Director, Center for Environmental Studies; B.A., Harvard University; M.A., Ph.D., University of Chicago
- Reed, Helen** (1985), Professor of Mechanical and Aerospace Engineering; A.B., Goucher College; M.S., Ph.D., Virginia Polytechnic Institute and State University
- Reed, Kaye E.** (1997), Assistant Professor of Anthropology; Research Associate, Institute of Human Origins; B.S., Portland State University; M.A., Ph.D., State University of New York, Stony Brook
- Rees, Ellen** (1996), Assistant Professor of Languages and Literatures; B.A., Evergreen State College; M.A., Ph.D., University of Washington
- Reeves, Henry C.** (1969), Professor Emeritus of Microbiology; B.S., Franklin and Marshall College; M.A., Ph.D., Vanderbilt University
- Reffett, Kevin L.** (1995), Associate Professor of Economics; B.B.A., M.A., University of Iowa; Ph.D., Purdue University
- Regier, Philip R.** (1987), Associate Professor of Accountancy and Information Management; Director, College of Business Honors Program; Associate Dean of Undergraduate Programs, College of Business; B.A., St. John's College; Ph.D., University of Illinois
- Reich, John W.** (1965), Professor of Psychology; B.A., M.S., University of Oklahoma; Ph.D., University of Colorado
- Reif, William E.** (1970), Professor Emeritus of Management; B.B.A., M.A., Ph.D., University of Iowa
- Reiman, Etsuko Obata** (1978), Associate Professor of Japanese; B.A., Keio University (Japan); M.A., Seton Hall University; M.A., Ph.D., University of Wisconsin, Madison
- Reingen, Peter H.** (1982), Davis Distinguished Research Professor of Marketing; B.B.A., Cologne College (Germany); M.B.A., Ph.D., University of Cincinnati
- Reiser, Castle O.** (1958), Professor Emeritus of Chemical Engineering; B.S., Colorado State University; Pet.E., Colorado School of Mines; Ph.D., University of Wisconsin, Madison
- Reiser, Mark R.** (1988), Associate Professor of Statistics; B.S., University of Michigan; Ph.D., University of Chicago
- Reiss, Peter W.** (1976), Professor Emeritus of Business Administration; B.S., Marquette University; M.A., Arizona State University; J.D., Marquette University
- Reisslein, Martin** (2000), Assistant Professor of Electrical Engineering; M.S., Ph.D., University of Pennsylvania
- Remson, Lynne Hebert** (1992), Clinical Associate Professor of Speech and Hearing Science; B.A., M.S., University of Southwestern Louisiana
- Renaut, Rosemary** (1987), Professor of Mathematics and Statistics; Director, Computational Biosciences Program; B.S., Durham University; Ph.D., University of Cambridge (United Kingdom)
- Reuter, Vincent G.** (1961), Professor Emeritus of Operations Management; B.S.C., M.A., Ph.D., University of Iowa
- Reyes, Angelita** (2002), Professor of African American Studies; B.A., City University of New York; M.A., New York University; Ph.D., University of Iowa
- Reyes, Guillermo** (1996), Assistant Professor of Theatre; B.A., University of California, Los Angeles; M.F.A., University of California, San Diego
- Reynolds, Robert D.** (1970), Professor Emeritus of Music; B.M., Texas Christian University; M.M., University of Texas, Austin; Ph.D., Ohio State University
- Reynolds, Stephen J.** (1991), Professor of Geological Sciences; B.S., University of Texas, El Paso; M.S., Ph.D., University of Arizona
- Reynolds, Steven L.** (1988), Associate Professor of Philosophy; B.A., University of Chicago; M.A., Ph.D., University of California, Los Angeles
- Rez, Peter** (1985), Professor of Physics and Astronomy and Solid State Science; B.A., University of Cambridge (United Kingdom); Ph.D., University of Oxford (United Kingdom)
- Reznikoff, Sivon C.** (1973), Professor Emerita of Design; Certificate, New York School of Interior Design; B.A., University of Southwestern Louisiana; M.A., Louisiana State University, Baton Rouge
- Rhoads, David M.** (2000), Assistant Professor of Plant Biology; B.S., Pennsylvania State University; Ph.D., Michigan State University
- Rhodes, Jewell Parker** (1997), Professor of English; B.A., M.A., D.A., Carnegie Mellon University
- Ribic, Catherine** (2000), Adjunct Professor of Anthropology; B.A., M.A., Ph.D., Arizona State University
- Rice, Glen E.** (1986), Associate Professor of Anthropology; Director, Office of Cultural Resource Management; B.A., Reed College; M.A., Ph.D., University of Washington
- Rice, Ross R.** (1950), Professor Emeritus of Political Science; M.A., Ph.D., University of Chicago

Rice, Warren (1958), Professor Emeritus of Engineering; B.S., M.S., Ph.D., Texas A&M University

Richa, Andrea W. (1998), Assistant Professor of Computer Science and Engineering; B.Sc., M.Sc., Federal University of Rio de Janeiro (Brazil); M.Sc., Ph.D., Carnegie Mellon University

Richard, Thelma Shinn (1975), Professor of English; B.A., Central Connecticut State College; M.A., Ph.D., Purdue University

Richards, Gale L. (1965), Professor Emeritus of Communication; B.A., University of Akron; M.A., Ph.D., University of Iowa

Richards, Mary L. (1978), Professor Emerita of Nursing; B.S.N., M.S., DePaul University; Ph.D., Texas Women's University

Richardson, Deane E. (1970), Professor Emeritus of Exercise Science and Physical Education; B.S., Bradley University; M.A., Ed.D., Stanford University

Richardson, Grant L. (1953), Professor Emeritus of Agribusiness and Resource Management; B.S., M.S., University of Arizona; Ph.D., Oregon State University

Richardson, Jeanne (1985), Librarian; Team Leader, Collection Development; B.A., Lawrence University; M.S., M.L.S., Columbia University

Richardson, Richard C. Jr. (1977), Professor Emeritus of Higher Education; B.S., Castleton State College; M.S., Michigan State University; Ph.D., University of Texas, Austin

Richert, Ranko (1999), Assistant Professor of Chemistry and Biochemistry; Ph.D., Philipps University, Marburg (Germany)

Ridenour, Ronda L. (1970), Associate Librarian; Team Management, Technical Services Department; B.A., Arizona State University; M.S.L.S., University of Southern California

Riding In, James (1990), Associate Professor of Justice Studies; B.A., Fort Lewis College; M.A., Ph.D., University of California, Los Angeles

Riggs, Thomas (1998), Lecturer of Speech and Hearing Science; B.S., Metropolitan State College, Denver; M.S., University of Colorado, Boulder

Rikakis, Thanassis (2001), Professor of Music; Director for Institute for Studies in the Arts; B.A., Ithaca College; M.A., D.M.A., Columbia University

Ringenoldus, Garrit M. (1989), Instructor of Military Science; B.S., Illinois State University

Ringhofer, Christian (1983), Professor of Mathematics and Statistics; M.A., Ph.D., University of Vienna (Austria)

Rio, Robin (1998), Assistant Professor of Music; B.M., East Carolina University; M.A., New York University



Ríos, Alberto Alvaro
(1982)
Regents' Professor of English; B.A., M.F.A., University of Arizona

Rippon, Stephen (1989), Academic Associate, Division of Undergraduate Academic Services; Director, Student Success Programs; B.A., M.A., Arizona State University

Riske, Marc C. (1985), Associate Professor of Theatre; B.F.A., North Dakota State University; M.F.A., Ph.D., Wayne State University

Risley-Curtiss, Christina (1992), Associate Professor of Social Work; B.A., University of Connecticut; M.S.S.W., University of Tennessee; Ph.D., University of Maryland, Baltimore

Risseeuw, John L. (1980), Professor of Art; B.S., M.A., M.F.A., University of Wisconsin, Madison

Ritchie, Barry G. (1984), Professor of Physics and Astronomy; Chair, Department of Physics and Astronomy; B.S., Appalachian State University; M.S., Ph.D., University of South Carolina

Rivera, Daniel E. (1990), Associate Professor of Chemical Engineering; B.S., University of Rochester; M.S., University of Wisconsin, Madison; Ph.D., California Institute of Technology

Rivers, Patrick (1998), Assistant Professor of Health Administration and Policy; B.A., University of Ghana (Ghana); M.B.A., University of Wisconsin, Madison; Ph.D., University of Alabama

Robbins, Earl R. (1961), Professor Emeritus of Computer Science; B.S.E.E., Texas Technological College; M.S.E., Ph.D., Arizona State University

Roberson, Loriann (1992), Associate Professor of Management; B.A., Ph.D., University of Minnesota, Twin Cities

Roberson, Robert W. (1989), Associate Professor of Plant Biology; B.S., M.S., Stephen F. Austin State University; Ph.D., University of Georgia

Roberts, Carolyn (1982), Professor Emerita of Nursing; B.S.N., University of Western Ontario (Canada); M.Ed., Columbia University; Ph.D., Wayne State University

Roberts, Chell A. (1989), Associate Professor of Industrial Engineering; B.A., M.S., University of Utah; Ph.D., Virginia Polytechnic Institute and State University

Roberts, Lauren C. (1984), Clinical Associate Professor of Clinical Laboratory Sciences; B.S., Saint Norbert College; M.S. University of Illinois

Roberts, Nancy H. (1980), Senior Lecturer of Economics; B.A., University of Texas, Arlington; M.S., Ph.D., Arizona State University

Roberts, Thomas G. (1970), Professor Emeritus of Curriculum and Instruction; B.A., Wake Forest University; M.A., Ph.D., University of North Carolina, Chapel Hill

Robertson, Shannon D. (1998), Assistant Professor of Exercise Science and Physical Education; B.Pe., M.S., McMaster University (Canada); Ph.D., Purdue University

Robinette, Martin (2000), Adjunct Professor of Speech and Hearing Science; B.S., M.S., University of Utah; Ph.D., Wayne State University

Robinson, Brent, SFC (2001), Instructor of Military Science

Robinson, Dahlia M. (2000), Assistant Professor of Accountancy and Information Management; B.S., M.S., University of the West Indies (Barbados); M.S., Pennsylvania State University; Ph.D., University of Georgia

Robinson, Daniel O. (1950), Professor Emeritus of Agribusiness and Resource Management; A.B., Brigham Young University; M.S., University of Arizona; Ph.D., Ohio State University

Robinson, Helene M. (1967), Professor Emerita of Music; B.A., University of Oregon; M.M., Northwestern University

Robinson Kurpius, Sharon E. (1978), Professor of Counseling Psychology and Counselor Education; B.S., M.S., University of Wisconsin, LaCrosse; Ph.D., Indiana University, Bloomington

Rockmaker, Jody (1997), Associate Professor of Music; B.M., New England Conservatory, Boston; M.F.A., Ph.D., Princeton University

Rodland, Carol (2001), Associate Professor of Music; B.M., M.M., The Juilliard School

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Rodriguez, Armando** (1990), Associate Professor of Electrical Engineering; B.S., Polytechnic Institute of New York, Brooklyn; M.S., Ph.D., Massachusetts Institute of Technology
- Rodriguez, Ester** (1986), Associate Professor of Nursing; B.S.N., M.S., Ph.D., Arizona State University
- Rody, Joseph** (1994), Senior Lecturer of Mathematics and Statistics; B.S., M.S., University of Akron
- Roe, Sue** (2000), Faculty Associate of Nursing; B.S.N., M.S., University of Arizona; D.P.A., Arizona State University
- Roedel, Ronald J.** (1981), Professor of Electrical Engineering; Associate Dean, Academic Affairs, College of Engineering and Applied Sciences; B.S.E., Princeton University; M.S., Ph.D., University of California, Los Angeles
- Roen, Duane** (1995), Professor of English; Director, Center for Learning and Teaching Excellence; B.S., M.S., University of Wisconsin, River Falls; Ph.D., University of Minnesota, Minneapolis
- Rogers, Joseph** (1988), Adjunct Professor of Biology; B.A., Emory University; Ph.D., University of California, San Diego
- Rogers, Rodney** (1987), Professor of Music; B.M., University of Iowa; M.M., Arizona State University; Ph.D., University of Iowa
- Rogerson, Richard** (2001), Ronthaler Professor of Economics, B.Sc., University of Alberta (Canada); Ph.D., University of Minnesota
- Roher, Alex E.** (1997), Adjunct Professor of Biology; M.D., National University of Mexico School of Medicine; Ph.D., University of Cambridge (United Kingdom)
- Rollier, Dwayne A.** (1971), Professor Emeritus of Industrial Engineering; B.S., M.S., Oklahoma State University; Ph.D., Florida State University
- Rollins, George, Major.** (2000), Assistant Professor of Military Science; B.A., St. Leo College
- Rolnick, Melissa** (2000), Assistant Professor of Dance; B.F.A., University of New York; M.F.A., Mills College
- Rolstad, Kellie** (1999), Assistant Professor of Curriculum and Instruction; B.A., M.A., Ph.D., University of California, Los Angeles
- Romero, Mary** (1995), Professor of Justice Studies; B.A., Regis College; Ph.D., University of Colorado
- Romeyn, Esther** (1998), Assistant Professor of Interdisciplinary Humanities; B.A., M.A., University of Amsterdam (Netherlands)
- Rook, Fern II** (1969), Professor Emerita of Technology; B.A., University of Colorado; M.A., Arizona State University
- Roosa, Mark W.** (1980), Professor of Family and Human Development; B.S., Ohio State University; M.A., Ph.D., Michigan State University
- Roper, Devon J.** (1966), Professor Emeritus of Aeronautical Management Technology; B.S., Utah State University; M.S., Arizona State University
- Rosa, John P.** (2000), Assistant Professor of Asian Pacific American Studies; B.A., Northwestern University; M.A., Ph.D., University of California, Irvine
- Rosales, F. Arturo** (1980), Professor of History; B.A., Arizona State University; M.A., Stanford University; Ph.D., Indiana University, Bloomington
- Rosdahl, Dana** (1994), Instructor of Nursing; B.S.N., Montana State University; M.S., Arizona State University
- Rose, Jonathan** (1968), Professor of Law; B.A., University of Pennsylvania; LL.B., University of Minnesota, Twin Cities
- Rose, Seth D.** (1976), Professor of Chemistry and Biochemistry; B.S., University of California, Berkeley; Ph.D., University of California, San Diego
- Rosen, Bernice M.** (1986), Instructional Professional Emerita; B.A., Brooklyn College; M.A., New York University
- Rosen, Seymour L.** (1986), Professor Emeritus of Music; Dean Emeritus, Herberger College of Fine Arts; B.S., The Juilliard School
- Rosier, Kathlene** (2000), Director, Indian Legal Program; B.A., Capital University; J.D., University of Utah
- Rossi, Patrick J.** (1967), Professor Emeritus of Psychology; B.S., Saint Mary's College; M.A., San Fernando Valley State College; Ph.D., University of California, Riverside
- Rothschild, Mary L.** (1975), Professor of Women's Studies and History; Interim Director, Interdisciplinary Humanities Program; B.A., M.A., Ph.D., University of Washington
- Rothstein, Paul** (1998), Assistant Professor of Design; B.F.A., University of Wisconsin-Stout, Menomonie; M.D., Illinois Institute of Technology
- Rotondi, Michael** (1999), Professor of Architecture; Dipl. Arch., Southern California Institute of Architecture
- Rountree-Antar, Michele** (1999), Assistant Coordinator of Field Education; B.A., University of Arizona; M.S.W., Boston University
- Roussinov, Dmitri** (2001), Assistant Professor of Accountancy and Information Management; B.S., M.S., Moscow Institute of Physics and Technology (Russia); M.A., Indiana University, Bloomington; Ph.D., University of Arizona
- Rowe, Casey** (2001), Assistant Professor of Accountancy and Information Management; B.S., Northern Arizona University; M.S., San Diego State University; Ph.D., University of Pittsburgh
- Rowe, Kenneth L.** (1962), Professor Emeritus of Marketing; B.A., M.A., Northern Iowa University; Ph.D., Michigan State University
- Roy, Asim** (1983), Professor of Computer Information Systems; B.E., Calcutta University (India); M.S., Case Western Reserve University; Ph.D., University of Texas, Austin
- Roy, Radha R.** (1963), Professor Emeritus of Physics and Astronomy; B.Sc., M.Sc., University of Calcutta (India); Ph.D., University of London (United Kingdom)
- Roy, Ramendra P.** (1981), Professor of Engineering; B.Sc., University of Calcutta (India); M.S., University of Washington; M.Sc., Ph.D., University of California, Berkeley
- Rubarth, Lorraine B.** (2000), Faculty Associate of Nursing; B.S.N., Grand Valley State University; M.S.N., Wayne State University
- Ruch, William A.** (1968), Professor Emeritus of Management; B.S., M.B.A., D.B.A., Indiana University, Bloomington
- Rucker, Robert** (1986), Professor Emeritus of Industrial Engineering; B.S., M.S., University of Miami; M.S., Ph.D., Arizona State University
- Rudolph, Robert A., Maj.** (1999), Assistant Professor of Military Science; B.A., Arizona State University
- Ruedemann, Richard** (1997), Lecturer of Mathematics and Statistics; B.S., M.A., Arizona State University; Ph.D., University of South Florida
- Rummel, John R.** (1975), Professor Emeritus of Architecture; B.A., M.S., Stanford University
- Rund, James A.** (2001), Associate Professor of Educational Leadership and Policy Studies; Associate Vice President, Student Affairs; B.A., Moorehead State University; M.S., North Dakota State University; Ed.D., Arizona State University

Runger, George (1996), Professor of Industrial Engineering; B.S., Cornell University; Ph.D., University of Minnesota

Rungtusanatham, Manus (Johnny) (1998), Associate Professor of Management; B.S., Birmingham-Southern College; Ph.D., University of Minnesota

Ruppé, Carol V. (1962), Librarian Emerita; B.A., University of New Mexico; M.A., University of Denver

Ruppert, K.D. (1976), Research Specialist Emeritus of Geography; B.S.E.E., University of Iowa

Rush, James (1990), Associate Professor of History; Director, Program for Southeast Asian Studies; B.A., Gettysburg College; M.A., Ph.D., Yale University

Russell, Dennis E. (1991), Associate Professor of Journalism and Mass Communication; B.S., M.M.C., Arizona State University; Ph.D., University of Utah

Russell, Paul E. (1967), Professor Emeritus of Electrical Engineering; B.S.E.E., B.S.M.E., New Mexico A&M University; M.S.E.E., Ph.D., University of Wisconsin, Madison; P.E.

Russell, Scott C. (1990), Adjunct Professor of Anthropology; B.A., University of New Mexico; M.A., Ph.D., Arizona State University

Russell, Timothy (1993), Professor of Music; B.M.Ed., Northwestern University; M.A., Ph.D., Ohio State University



Russo, Nancy Felipe
(1985)
**Regents' Professor of Psychology; B.A.,
University of California, Davis; Ph.D.,
Cornell University**

Russomanno, Joseph A. (1994), Associate Professor of Journalism and Mass Communication; B.A., University of Colorado, Denver; M.A., University of Missouri, Columbia; Ph.D., University of Colorado

Rutherford, Robert B. Jr. (1976), Professor of Curriculum and Instruction; Director, Interdisciplinary Ph.D. Program in Curriculum and Instruction; Associate Director, Research and Graduate Education; B.S., M.Ed., University of Virginia; Ed.S., Ph.D., Vanderbilt University

Rutowski, Ronald L. (1976), Professor of Biology; B.A., University of California, Santa Cruz; Ph.D., Cornell University

Ryan, Louise (2001), Faculty Associate of Nursing; B.S.N., M.S.N., University of Wisconsin, Madison

Ryu, Kyung Dong (2001), Assistant Professor of Computer Science and Engineering; B.S., M.S., Seoul National University (South Korea); M.S., Ph.D., University of Maryland, College Park

S

Sacks, Benjamin (1963), Professor Emeritus of History; B.A., University of New Mexico; M.A., McGill University (Canada); Ph.D., Stanford University

Sackton, Frank J. (1976), Professor Emeritus of Public Affairs; B.S., University of Maryland, College Park; M.P.A., Doctor of Humane Letters, Arizona State University

Sadalla, Edward K. (1974), Professor of Psychology; B.A., University of California, Berkeley; Ph.D., Stanford University

Sabo, John S. (2001), Assistant Professor of Biology; B.S., University of Notre Dame; M.S., University of Washington; Ph.D., University of California, Berkeley

Saenz, Delia S. (1989), Associate Professor of Psychology; B.A., Pan American University; M.A., Ph.D., Princeton University

Sager, Harvey M. (1977), Librarian Emeritus; B.A., San Francisco State College; M.A., California State University, Chico; M.A., University of Denver

Saks, Michael (2000), Professor of Law; B.A., B.S., Penn State University; M.S.L., Yale University; M.A., Ph.D., Ohio State University

Saldaña, Johnny (1981), Professor of Theatre; Interim Chair, Department of Theatre; B.F.A., M.F.A., University of Texas, Austin

Salerno, Nicholas A. (1961), Professor Emeritus of English; B.A., M.A., Arizona State University; Ph.D., Stanford University

Salmirs, Seymour (1981), Professor Emeritus of Technology; B.A.E., M.S.A.E., Georgia Institute of Technology

Saltz, Charlene (2000), Academic Associate, Center for Environmental Studies; Environmental Education Coordinator; B.A., Emory University; M.S., Antioch New England Graduate School

Salvatore, Joseph Raphael (1998), Adjunct Faculty of Microbiology; M.D., Universidad Autónoma de Guadalajara (Mexico)

Salvucci, Michael E. (1995), Adjunct Faculty of Plant Biology; B.S., Pennsylvania State University; M.S., Ph.D., University of Florida

Samuelson, Hava Tirosh (1999), Associate Professor of History; B.A., State University of New York, Stony Brook; Ph.D., Hebrew University of Jerusalem (Israel)

Samuelson, Norbert M. (1998), Professor of Religious Studies; Harold and Jean Grossman Chair in Jewish Studies; B.A., Northwestern University; B.H.L., M.H.L., Hebrew Union College Jewish Institute of Religion; Ph.D., Indiana University

Sanchez, Angel (1990), Associate Professor of Languages and Literatures; Licenciatura, University Complutense (Spain); M.A., University of Minnesota, Twin Cities; Ph.D., University of Minnesota, Minneapolis

Sanders, Bevie T. (1957), Professor Emeritus of Accountancy and Information Management; B.B.A., North Texas State University; M.S., Texas A&M University; Ph.D., University of Texas; C.P.A., Arizona, Texas

Sandler, Irwin (1970), Professor of Psychology; B.A., Brooklyn College; Ph.D., University of Rochester

Sands, Kathleen M. (1977), Professor of English; B.A., Fort Wright College of the Holy Names; M.A., Ph.D., University of Arizona

Sanft, Alfred C. (1990), Associate Professor of Design; B.F.A., Brigham Young University; M.F.A., Basel School of Design (Switzerland)

Sankey, Otto F. (1982), Professor of Physics and Astronomy; B.S., University of Missouri, St. Louis; M.S., Ph.D., Washington University

Sansone, Fred J. (1965), Professor Emeritus of Mathematics and Statistics; B.S.E., M.S.E., University of Michigan; M.S., Ph.D., Rutgers, The State University of New Jersey

Santanam, Raghu (1998), Assistant Professor of Computer Information Systems; B.E., National Institute of Engineering (India); M.S., Indian Institute of Technology (India); M.S., Ph.D., State University of New York, Buffalo

Santello, Marco (1999), Assistant Professor of Exercise Science and Physical Education; B.Sc., Higher Institute of Physical Education (Italy); M.Phil., Ph.D., University of Birmingham (United Kingdom)

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Santos, Manuel** (1999), Professor of Economics; Licenciatura, Autonomous University of Madrid (Spain); M.A., Ph.D., University of Chicago
- Santos de Barona, Maryann** (1989), Professor of Psychology in Education; B.S., City University of New York; M.A., Ph.D., University of Texas, Austin
- Sargent, Charles S. Jr.** (1971), Professor Emeritus of Geography; B.A., University of Wyoming; M.A., Ph.D., University of California, Berkeley
- Saric, William** (1984), Professor of Engineering; B.S., Illinois Institute of Technology; M.S., University of New Mexico; Ph.D., Illinois Institute of Technology
- Sarjoughian, Hessam S.** (2001), Assistant Professor of Computer Science and Engineering; B.S. Mississippi State University; M.S., Ph.D., University of Arizona
- Sater, Vernon E.** (1962), Professor Emeritus of Chemical Engineering; B.S.Ch.E., M.S.Ch.E., Ph.D., Illinois Institute of Technology
- Satterlie, Richard A.** (1980), Professor of Biology; B.A., Sonoma State University; Ph.D., University of California, Santa Barbara
- Satterthwaite, Lester L. Jr.** (1968), Professor Emeritus of Educational Media and Computers; B.S., M.S., Ed.D., Indiana University, Bloomington
- Sattler, Howard E.** (1967), Professor Emeritus of Education; B.S., M.S., Ph.D., Arizona State University
- Saubolle, Michael** (1995), Adjunct Faculty of Microbiology; B.S., Ph.D., University of California, Davis
- Saunders, Melissa** (2001), Faculty Associate of Nursing; B.S.N., M.S., Arizona State University
- Savage, Nevin W.** (1959), Professor Emeritus of Mathematics and Statistics; B.S., M.A., Pennsylvania State University; Ph.D., University of California, Los Angeles
- Savage, Stephen H.** (1998), Adjunct Professor of Anthropology; B.A., Cincinnati Bible Seminary; M.A., University of South Carolina; Ph.D., Arizona State University
- Savard, Jeannine A.** (1990), Associate Professor of English; B.S., State University of New York, Plattsburg; M.A., University of New Hampshire
- Savenye, Wilhelmina C.** (1991), Associate Professor of Psychology in Education; B.A., University of Washington; M.Ed., Ph.D., Arizona State University
- Sawhney, Anil** (1999), Associate Professor of Construction; B.S.E., Institution of Engineers (India); M.S., School of Planning and Architecture (India); Ph.D., University of Alberta (Canada)
- Sayles, Judy** (1997), Clinical Assistant Professor of Nursing; B.S.N., University of Michigan; M.S., Arizona State University
- Schabacker, Joseph C.** (1963), Professor Emeritus of Management; B.S., Temple University; M.B.A., Ph.D., University of California, Los Angeles
- Schade, Thomas V.** (1974), Professor Emeritus of Justice Studies; B.A., Hope College; M.A., Ph.D., Western Michigan University
- Schall, Merri H.** (1960-66; 1967), Professor Emerita of Curriculum and Instruction; B.A., Albion College; M.S., Ed.D., Arizona State University
- Schatzki, George** (2000), Professor of Law; A.B., LL.B., LL.M., Harvard University
- Schaumburg, Donald R.** (1953), Professor Emeritus of Art; B.A., College of Arts and Crafts; M.F.A., Claremont Graduate College
- Scheatzle, David G.** (1979), Professor Emeritus of Architecture; B.S., Kent State University; M.S.E., Arizona State University; Arch.D., University of Michigan
- Scheck, Adrienne C.** (1997), Adjunct Professor of Biology; B.A., University of Rochester; Ph.D., Rensselaer Polytechnic Institute
- Scheiner, Georganne** (1983), Associate Professor of Women's Studies; B.A., Ithaca College; M.A., University of Western Ontario (Canada); Ph.D., Arizona State University
- Scheiner, Samuel M.** (2000), Adjunct Professor of Biology; B.S., M.S., Ph.D., University of Chicago
- Scheinfein, Michael R.** (1990), Professor of Physics and Astronomy; B.S., Massachusetts Institute of Technology; M.S., Ph.D., Cornell University
- Schexnayder, Clifford J.** (1994), Visiting Eminent Scholar of Construction; B.C.E., M.S.C.E., Georgia Institute of Technology; Ph.D., Purdue University
- Schlacter, John L.** (1969), Professor of Marketing; B.B.A., Case Western Reserve University; M.B.A., Ph.D., Ohio State University
- Schlee, Edward E.** (1990), Professor of Economics; B.A., North Texas State University; M.S., Ph.D., University of Illinois
- Schleif, Corine** (1988), Associate Professor of Art; B.A., Concordia College; M.A., Washington University; Ph.D., University of Bamberg (Germany)
- Schmid, Maureen** (1990), Associate Research Scientist; Director, Tandem Translation Project; B.A., Saint Mary's College of Notre Dame; M.A., University of Notre Dame; Ph.D., State University of New York, Buffalo
- Schmidt, Jean M.** (1966), Professor of Microbiology; B.A., M.S., University of Iowa; Ph.D., University of California, Berkeley
- Schmidt, Kevin E.** (1989), Professor of Physics and Astronomy; A.B., Washington University; M.S., Ph.D., University of Illinois
- Schmidt, Margaret** (2001), Assistant Professor of Music; B.M.E., Lawrence University; M.M., State University of New York, Stony Brook; Ph.D., University of Michigan
- Schmidt, Randall B.** (1968), Professor of Art; B.A., Hamline University; M.A., University of New Mexico
- Schmidt, Sherrie** (1990), Librarian; Dean, University Libraries; B.A., Ohio State University; M.L.S., Emory University
- Schneberger, Lois I.** (1969), Librarian; Head, Preservation; B.A., Viterbo College; M.L.S., Emporia State University
- Schneider, Anne L.** (1989), Professor of Justice Studies; Dean, College of Public Programs; B.A., M.A., Oklahoma State University; Ph.D., Indiana University, Bloomington
- Schneider, Ingrid** (1995), Adjunct Professor of Recreation Management and Tourism; B.S., M.S., University of Minnesota; Ph.D., Clemson University
- Schneller, Eugene S.** (1985), Professor of Health Administration and Policy; Director, School of Health Administration and Policy; B.A., Post College; Ph.D., New York University
- Schober, Juliane** (1991), Associate Professor of Religious Studies; B.A., University of Northern Colorado; M.A., Ph.D., University of Illinois
- Schoebel, Henry L.** (1990), Associate Professor of Art; B.F.A., Syracuse University; M.F.A., University of Maryland, College Park
- Schoen, Robert A.** (1966), Professor Emeritus of Technology; B.S., M.S., Arizona State University
- Schoenwetter, James** (1967), Professor Emeritus of Anthropology; A.B., University of Chicago; M.S., University of Arizona; Ph.D., Southern Illinois University

- Schroder, Dieter K.** (1981), Professor of Electrical Engineering; Codirector, Center for Low Power Electronics; B.S.E.E., M.S.E.E., McGill University (Canada); Ph.D., University of Illinois
- Schroeder, Milton R.** (1969), Professor of Law; B.A., Wesleyan University; J.D., University of Chicago
- Schuback, Gertrud B.** (1966), Professor Emerita of German; B.A., M.A., Arizona State University
- Schultz, Joseph J.** (1983), Professor of Accountancy and Information Management; B.S., M.B.A., Mississippi State University; Ph.D., University of Texas, Austin; C.P.A., Mississippi
- Schuring, Martin** (1992), Assistant Professor of Music; B.M., Curtis Institute of Music; M.A., Arizona State University
- Schutte, Jerry** (1988), Associate Professor of Art; B.A., Fort Hays State University; M.F.A., Arizona State University
- Schwalm, David E.** (1986), Associate Professor of English; Dean of East College, Vice Provost of Arizona State University East; B.A., Carleton College; M.A., Ph.D., University of Chicago
- Schwartz, Andrew B.** (1993), Faculty Research Associate of Bioengineering; B.A., Ph.D., University of Minnesota
- Scoggin, Janet** (1989), Professor Emerita of Nursing; B.S.N., University of Portland; M.S., Ph.D., Arizona State University
- Scott, Ronald Jr., Col.** (1999), Professor of Aerospace Studies; Chair, Department of Aerospace Studies; B.S., United States Air Force Academy, Colorado Springs; M.A., University of Northern Colorado, Greeley; M.A., University of North Texas, Denton
- Scowen, Paul A.** (1992), Assistant Research Professor of Physics and Astronomy; B.S., University of Birmingham (United Kingdom); M.S., Ph.D., Rice University
- Searfoss, Lyndon W.** (1973), Professor of Curriculum and Instruction; B.S., West Chester State College; M.A., Ph.D., Syracuse University
- Sears, Robert L.** (1986), Senior Research Administrator Emeritus, Center for Energy Systems Research; B.S., U.S. Military Academy; M.S.E., Arizona State University
- Seaton, Helen J.** (1987), Librarian, Noble Science Reference Services; B.A., Rutgers, The State University of New Jersey; M.L.S., University of Missouri, Columbia
- Sebald, Hans** (1963), Professor Emeritus of Sociology; B.A., Manchester College; M.S., Ph.D., Ohio State University
- Segal, Elizabeth A.** (1995), Professor of Social Work; B.A., Brandeis University; M.S.W., Boston University; Ph.D., University of Illinois, Chicago
- Segura, Joseph M.** (1979), Associate Professor of Art; B.A., M.F.A., Southern Illinois University, Carbondale
- Sehsted, Colene R.** (1967), Assistant Professor of Nursing; B.S.N., University of Arkansas, Fayetteville; M.S.N., University of Maryland, Baltimore
- Seipp, Kenneth F.** (1963), Professor Emeritus of Music; B.S., Hartwick College; M.M., University of Kansas; Mus.Ed.D., Indiana University, Bloomington
- Selkirk, Susan** (1977), Senior Research Professional of Geological Sciences; B.A., M.A., Arizona State University
- Sell, Susan** (1995), Adjunct Faculty of Microbiology; A.B., University of California, Berkeley; Ph.D., University of Utah Medical Center
- Sellheim, Eckart** (1989), Professor of Music; Concert Diploma, Cologne Academy of Music (Germany)
- Sen, Arunabha** (1986), Associate Professor of Computer Science and Engineering; B.E., Jadavpur University (India); Ph.D., University of South Carolina
- Senner, Wayne M.** (1973), Professor Emeritus of German; B.A., Portland State University; M.A., University of Washington; Ph.D., University of Illinois
- Sensibar, Judith L.** (1985), Professor of English; B.A., Vassar College; M.A., Ph.D., University of Chicago
- Sentinery, Robert** (1994), Faculty Associate of Design; B.S.D., Arizona State University
- Seo, Dong-Kyun** (2001), Assistant Professor of Chemistry and Biochemistry; B.S., M.S., Seoul National University (South Korea); Ph.D., North Carolina State University
- Serwint, Nancy J.** (1988), Associate Professor of Art; B.A., University of Illinois; M.A., University of Chicago; M.A., Ph.D., Princeton University
- Shackle, Linda A.** (1984), Librarian; Team Leader, Noble Science Reference Services; B.A., State University of New York, Oswego; M.L.S., State University of New York, Albany
- Shaeffer, J. Duncan** (2000), Lecturer of Geography; B.S., Brigham Young University; M.A., Ph.D., Arizona State University
- Shah, Jami** (1984), Professor of Engineering; B.S.M.E., University of Karachi (Pakistan); M.S., University of Pittsburgh; Ph.D., Ohio State University
- Shao, Benjamin** (1999), Assistant Professor of Computer Information Systems; B.S., M.S., National Chiao Tung University (Taiwan); Ph.D., State University of New York, Buffalo
- Shapiro, Joan Rankin** (1997), Adjunct Professor of Biology; B.S., Westminster College; M.A., Hofstra University; Ph.D., Cornell University Medical College
- Sharer, Jon W.** (1975), Professor of Art; Interim Director, School of Art; B.A., Roosevelt University; M.S., Illinois Institute of Technology; Ph.D., Ohio State University
- Sharma, Renu** (1985), Associate Research Scientist, Center for Solid State Science; B.S, B.Ed., Punjab University (India); M.S., Ph.D., University of Stockholm (Sweden)
- Sharp, Thomas** (1996), Associate Professor of Geological Sciences; B.S., University of Minnesota; M.S., Ph.D., Arizona State University
- Sharp, William P.** (1979), Senior Research Specialist of Plant Biology; B.A., University of Northern Iowa; M.S., Arizona State University
- Shaw, Milton C.** (1978), Professor Emeritus of Engineering; B.S.M.E., Drexel University; M.E.Sc., Sc.D., University of Cincinnati; Dr.H.C., University of Louvain (Belgium)
- Shearer, Nelma B.C.** (1993), Assistant Professor of Nursing; B.S., South Dakota State University; M.Ed., University of Missouri, St. Louis; M.S., Southern Illinois University, Edwardsville; Ph.D., University of Arizona
- Shearman, Harriett Joy** (1995), Clinical Assistant Professor of Nursing; B.S.N., University of Iowa; M.S., Boston University
- Shears, Brenda L.** (1987), Assistant Research Administrator; Research Coordinator, Center for Environmental Studies; B.A., Arizona State University; M.A., Hunter College
- Shell, Leon G.** (1967), Professor Emeritus of Counselor Education; B.A., University of Colorado; A.M., Ed.D., University of Northern Colorado
- Shellans, Michael J.** (1992), Senior Lecturer of Music; B.M., University of Arizona; M.M., Arizona State University
- Shen, Jun** (1996), Professor of Electrical Engineering; B.S., South China University of Science and Technology (China); M.S., Texas Tech University; Ph.D., University of Notre Dame

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Sheppard, Douglas C.** (1971), Professor Emeritus of Spanish; B.A., Montana State University; M.A., Ph.D., University of Wisconsin, Madison
- Sherman, Carolina Espejel** (2000), Lecturer of Spanish; B.A., University of Nebraska, Lincoln; M.A., Boston College
- Sherman, Thomas L.** (1964), Professor Emeritus of Mathematics and Statistics; B.A., University of California, Los Angeles; M.S., Ph.D., University of Utah
- Sheydayi, E. Yury** (1973), Professor Emeritus of Architecture; B.S.C.E., University of Arizona; M.S.C.E., Arizona State University
- Shinn, Randall A.** (1978), Professor of Music; B.A., Southwestern Oklahoma State University; M.M., University of Colorado; D.M.A., University of Illinois
- Shipp, Vernon E.** (1966), Professor Emeritus of Art; B.S., Grand Canyon College; M.A., Arizona State University
- Shlyakhtenko, Luda** (1993), Adjunct Faculty of Microbiology; M.S., Ph.D., Moscow Physical Technical Institute (Russia)
- Shock, Everett L.** (2002), Professor of Geological Sciences; B.S., University of California, Santa Cruz; Ph.D., University of California, Berkeley
- Shrader, Tina** (1999), Assistant Librarian; B.A., Bethany College, Bethany; M.S.L.I.S., University of Kentucky
- Shrednick, Harvey R.** (1995), Senior Lecturer of Computer Information Systems; B.S., City College of New York; M.B.A., Baruch College
- Shriver, Keith A.** (1982), Professor Emeritus of Accountancy and Information Management; B.S., Linfield College; M.S., Arizona State University; Ph.D., University of Texas, Austin; C.P.A., Arizona
- Shuman, I. Gayle** (1974), Professor Emeritus of Justice Studies; B.S., M.A., Ed.D., Arizona State University
- Shumway, John** (2001), Assistant Professor of Physics and Astronomy; B.S., M.S., University of Missouri, Columbia; Ph.D., University of Illinois, Urbana-Champaign
- Shunk, Dan L.** (1984), Associate Professor of Industrial Engineering; B.S.I.E., M.S.I.E., Ph.D., Purdue University
- Si, Jennie** (1991), Professor of Electrical Engineering; B.S., M.S., Tsinghua University (China); Ph.D., University of Notre Dame
- Sieradzki, Karl** (1994), Professor of Chemical and Materials Science Engineering and Mechanical and Aerospace Engineering; B.S., Utica College of Syracuse University; M.S., Ph.D., Syracuse University
- Sierks, Michael R.** (2000), Associate Professor of Chemical Engineering; B.S., Stanford University; M.S., Colorado State University; Ph.D., Iowa State University
- Siferd, Sue Perrott** (1989), Associate Professor of Supply Chain Management; Director, Undergraduate Supply Chain Management Program; B.S., Denison University; M.B.A., Wright State University; M.A., Ph.D., Ohio State University
- Silcock, B. William** (2001), Assistant Professor of Journalism and Mass Communication; B.A., M.A., Brigham Young University; Ph.D., University of Missouri
- Silver, Benjamin** (1971), Professor Emeritus of Journalism and Mass Communication; B.A., M.A., University of Iowa
- Simhony, Avital** (1994), Associate Professor of Political Science; B.A., M.A., University of Haifa (Israel); D.Phil., University of Oxford (United Kingdom)
- Simmons, Douglas J.** (1963), Professor Emeritus of French; A.B., Wabash College; M.A.T., Harvard University; Certificat de français usuel, degré supérieur, Certificat de prononciation française, Sorbonne University (France)
- Simmons, Howard** (1996), Professor Emeritus of Educational Leadership and Policy Studies; B.S., Spring Hill College; M.A.T., Indiana University; Ph.D., Florida State University
- Simon, Arleyn W.** (1989), Associate Research Professor of Anthropology; B.A., Montana State University; M.A., Oregon State University; Ph.D., Arizona State University
- Simon, Sheldon** (1975), Professor of Political Science; B.A., University of Minnesota, Twin Cities; M.A., Princeton University; Ph.D., University of Minnesota, Twin Cities
- Simpson, Brooks** (1990), Professor of History; B.A., University of Virginia; M.A., Ph.D., University of Wisconsin, Madison
- Sinex, Donal** (1995), Professor of Speech and Hearing Science; Director, Executive Committee, Speech and Hearing Science; B.S., Purdue University; Ph.D., Washington University, St. Louis
- Singh, Sheo Bux** (1983), Associate Research Professor, Cancer Research Institute; B.Sc., M.Sc., Gorakhpur University (India); Ph.D., Avadh University (India)
- Singhal, Avi C.** (1977), Professor of Civil and Environmental Engineering; B.Sc.Math., Agra University (India); B.Sc.Engr., B.Sc.Hons., St. Andrews University (United Kingdom); S.M., C.E., Sc.D., Massachusetts Institute of Technology
- Sinha, Rajiv K.** (1989), Associate Professor of Marketing; B.A., M.A., Delhi University (India); Ph.D., Pennsylvania State University
- Sirkis, Murray D.** (1968), Professor Emeritus of Electrical Engineering; B.S., Massachusetts Institute of Technology; M.S., Ph.D., University of Illinois
- Skiba, Christopher J.** (1987), Associate Research Professional of Geological Sciences; B.S., Arizona State University
- Skibo, Edward B.** (1982), Professor of Chemistry and Biochemistry; B.S., M.S., Drexel University; Ph.D., University of California, San Francisco
- Skindlov, Jonathan A.** (1993), Adjunct Professor of Geography; B.A., Saint Olaf College; M.A., Ohio University; Ph.D., University of Delaware
- Skoldberg, Phyllis** (1977), Professor Emerita of Music; B.M., M.M., New England Conservatory of Music; M.M.E., D.M., Indiana University, Bloomington
- Skromme, Brian J.** (1989), Associate Professor of Electrical Engineering; B.S., University of Wisconsin, Madison; M.S., Ph.D., University of Illinois
- Smeltzer, Larry R.** (1986), Professor of Supply Chain Management; B.S., University of Montana; M.A., University of Nebraska; Ed.D., Northern Illinois University
- Smith, Andrew T.** (1978), Professor of Biology; A.B., University of California, Berkeley; Ph.D., University of California, Los Angeles
- Smith, Arthur B. Jr.** (1967), Professor Emeritus of General Business; B.S., Hardin-Simmons University; M.B.A., Ed.D., University of Houston
- Smith, Beth** (2000), Associate Law Librarian; Assistant Director, Ross-Blakley Law Library; B.A., Centenary College; M.L.S., J.D., University of Washington
- Smith, Cheryl Aubin** (1996), Faculty Associate of Nursing; B.S.N., University of Arizona; M.S., Arizona State University



Smith, David J. (1984)
Regents' Professor of Physics and Astronomy and Center for Solid State Science; Director, Center for Solid State Science; B.Sc., Ph.D., D.Sc., University of Melbourne (Australia)

- Smith, Hal L.** (1979), Professor of Mathematics and Statistics; B.A., Ph.D., University of Iowa
- Smith, Harvey A.** (1977), Professor of Mathematics and Statistics; B.S., Lehigh University; M.S., A.M., Ph.D., University of Pennsylvania
- Smith, Henry Charles** (1989), Professor Emeritus of Music; B.A., University of Pennsylvania; Artist Diploma, Curtis Institute of Music
- Smith, Jeffrey B.** (1990), Associate Professor of Music; M.M., University of Illinois; D.M.A., University of North Texas
- Smith, Karen Ann** (1999), Associate Professor of Curriculum and Instruction; B.A., University of the Americas (Mexico); M.A., Ph.D., Arizona State University
- Smith, L. Christian** (1971), Associate Professor of History; B.A., Union College; M.A., Ph.D., University of Illinois
- Smith, Lehi T.** (1959), Professor Emeritus of Mathematics and Statistics; B.S., M.A., Arizona State University; Ed.D., Stanford University
- Smith, Marion W.** (1952), Professor Emerita of Music; B.S., Capital University; M.M., American Conservatory of Music
- Smith, Mary Lee** (1986), Professor of Educational Leadership and Policy Studies; B.A., M.P.S., Ph.D., University of Colorado
- Smith, Ralph E.** (1970), Professor of Accountancy and Information Management; B.B.A., Washburn University of Topeka; M.S., Ph.D., University of Kansas; C.P.A., Kansas
- Smith, Richard L.** (1967), Professor Emeritus of Industrial Engineering; B.S., Washington University; M.S., Ohio State University; Ph.D., Arizona State University
- Smith, Ronald D.** (1962), Professor Emeritus of History; A.B., San Diego State College; Ph.D., University of Southern California
- Smith, Stanley E.** (1977), Professor Emeritus of Journalism and Mass Communication; B.A., Colgate University; M.A., Purdue University
- Smith-Daniels, Dwight E.** (1987), Associate Professor of Management; B.B.A., University of Michigan; Ph.D., University of Arizona
- Smith-Daniels, Vicki L.** (1987), Professor of Operations Management; B.B.A., University of San Diego; Ph.D., Ohio State University
- Sneed, Jim** (1990), Faculty Associate of Design; B.S., Arizona State University
- Sneed, Jimmie R.** (1988), Faculty Associate of Construction; B.S., Arizona State University
- Snow, Robert** (1970), Professor Emeritus of Sociology; B.S., M.A., Ph.D., University of Minnesota, Twin Cities
- Snyder, Ernest E. Jr.** (1958), Professor Emeritus of Physics and Astronomy/Science Education; A.B., M.A., Colorado State University; Ed.D., New York University
- Snyder, Lester M. Jr.** (1967), Professor Emeritus of Counseling Psychology; B.S., Millersville State College; M.Ed., Western Maryland College; Ph.D., University of Michigan

- Soergel, Philip M.** (1989), Associate Professor of History; B.A., Muskingum College; A.M., Ph.D., University of Michigan
- Sola, Anthony** (1995), Faculty Associate of Design; B.A., Ottawa University; M.B.A., University of Phoenix
- Solis, Theodore** (1989), Associate Professor of Music; B.A., Arizona State University; M.A., University of Hawaii, Manoa; Ph.D., University of Illinois
- Somerville, Susan C.** (1977), Professor of Psychology; B.A., University of New England (Australia); Ph.D., Australian National University (Australia)
- Sommerfeld, Milton R.** (1968), Professor of Plant Biology; Associate Dean, College of Liberal Arts and Sciences; B.S., Southwest Texas State College; Ph.D., Washington University
- Song, Yuwu** (1999), Assistant Librarian; B.A., Luo Yang Foreign Languages University, China (China); M.A., Clemson University; M.L.I.S., University of Texas, Austin
- Sonmez, Sevil F.** (1995), Associate Professor of Recreation Management and Tourism; B.B.A., Bernard M. Baruch College; M.P.R.T.M., Clemson University; Ph.D., Pennsylvania State University
- Soroka, Ellen** (1996), Assistant Professor of Architecture; B.F.A., Pratt Institute; M.Arch., Massachusetts Institute of Technology
- Sousa, Karen H.** (1998), Assistant Professor of Nursing; B.S., M.S., Ph.D., University of California, San Francisco
- Spanias, Andreas S.** (1988), Professor of Electrical Engineering; B.S.E.E., M.S.E.E., Ph.D., West Virginia University
- Spanias, Photini** (1998), Lecturer of Curriculum and Instruction; B.A., M.Ed., Ed.D., Arizona State University
- Speer, Therese** (1997), Faculty Associate of Nursing; B.S.N., Salve Regina University; M.S., University of Arizona
- Spellman, Catherine** (1995), Associate Professor of Architecture; B.A., B. Arch., Rice University; M.Arch., University of California, Los Angeles



Spence, John C.H. (1976)
Regents' Professor of Physics and Astronomy; M.Sc., Ph.D., University of Melbourne (Australia)

- Spielberg, John** (1990), Associate Professor of Mathematics and Statistics; B.S., Stanford University; Ph.D., University of California, Berkeley
- Spielmann, Katherine A.** (1987), Professor of Anthropology; A.B., Harvard University; M.A., Ph.D., University of Michigan
- Spiers, James V.** (1990), Senior Lecturer of Marketing; B.S., Weber State College; M.A., University of Northern Colorado
- Spindler, Robert P.** (1988), Archivist; Head, Department of Archives and Manuscripts; B.A., M.A., Boston University; M.S., Simmons College
- Spinosa, Frank** (1965), Professor Emeritus of Music; B.M., M.A., Boston University; D.M.A., University of Illinois
- Spinrad, Tracy** (2000), Assistant Professor of Family and Human Development; B.A., University of California, Irvine; M.S., Ph.D., Pennsylvania State University
- Spring, Robert S.** (1988), Professor of Music; B.M., M.M., D.M.A., University of Michigan

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Spritzer, Ralph S. (1986), Visiting Professor of Law; B.S., LL.B., Columbia University

Spruyt, Hendrik (1999), Associate Professor of Political Science; Director of Graduate Studies; B.A., Leiden University (Netherlands); M.A., Ohio State University; Ph.D., University of California, San Diego

Squires, Kyle D. (1997), Associate Professor of Mechanical and Aerospace Engineering; B.S., Washington State University; M.S., Ph.D., Stanford University

Squires, Rose L. (1981), Professor Emerita of Nursing; B.S., Duquesne University; M.A., Ed.D., Columbia University

St. Louis, Robert D. (1982), Professor of Accountancy and Information Management; A.B., Rockhurst College; M.S., Ph.D., Purdue University

Staab, Wayne J. (2001), Adjunct Professor of Speech and Hearing Science; B.A., Fort Hays State University; M.S., University of Wisconsin; Ph.D., Michigan State University

Stafford, Kenneth R. (1957), Professor Emeritus of Education; B.A., M.Ed., Ph.D., University of Oklahoma

Stafford, Mary E. (1994), Associate Professor of Educational Psychology; Training Director, School Psychology; B.A., University of Texas, Austin; M.Ed., University of Houston, Victoria; Ph.D., University of Texas, Austin

Stage, Christina (1992), Lecturer, Division of Undergraduate Academic Services; Director, Bachelor of Interdisciplinary Studies; B.J., University of Nebraska, Lincoln; M.A., Ohio University; Ph.D., Arizona State University

Stahl, Robert (1978), Professor of Curriculum and Instruction; B.A., M.A., Ed.D., University of Florida

Staley, Frederick A. (1970), Professor of Curriculum and Instruction; B.A., M.A., Western Michigan University; Ph.D., Michigan State University

Stalzer, Frank S. (1955), Professor Emeritus of Music; B.M.Ed., University of Kansas; M.M., Eastman School of Music

Stamm, Jill (1998), Clinical Assistant Professor of Psychology in Education; B.A., DePauw University; M.A., Ph.D., Arizona State University

Stancliff, Michael G. (2001), Lecturer of English; B.A., Albion College; M.A., Ph.D., State University of New York, Buffalo

Stanford, Michael (1992), Senior Lecturer of the Barrett Honors College; B.A., Duke University; M.A., Ph.D., University of Virginia

Stange, Jean B. (1970), Professor Emerita of Family and Human Development; B.S., Iowa State University; M.S., University of Minnesota, Twin Cities

Stanley, James T. (1968), Professor Emeritus of Materials Science and Engineering; B.S., M.S., Ph.D., University of Illinois

Stanton, Ann M. (1980), Professor of Law; B.A., University of Minnesota, Twin Cities; Ph.D., J.D., Stanford University

Stanton, Dan (2000), Assistant Librarian, Government Documents/Maps Collection; B.A., Trinity College; M.L.S., University of Arizona

Stark, Barbara L. (1972), Professor of Anthropology; B.A., Rice University; M.Phil., Ph.D., Yale University



Starrfield, Sumner G. (1972)
Regents' Professor of Physics and Astronomy; B.A., University of California, Berkeley; M.A., Ph.D., University of California, Los Angeles

Stauffer, Sandra L. (1990), Professor of Music; B.S., West Chester University; M.M., Ph.D., University of Michigan

Steadman, Lyle B. (1971), Assistant Professor of Anthropology; B.A., Occidental College; M.A., University of California, Los Angeles; Ph.D., Australian National University (Australia)



Stearns, Mary Beth (1981)
Regents' Professor Emerita of Physics and Astronomy; B.S., University of Minnesota, Twin Cities; Ph.D., Cornell University

Steenerson, Craig A. (2001), Assistant Professor of Theatre; B.A., California State University, San Bernardino; M.F.A., Utah State University

Steele, Caryl J. (1960), Professor Emerita of Education; B.A., Albion College; M.A., Arizona State University

Steffl, Bernita M. (1961), Professor Emerita of Nursing; B.S.N., M.P.H., University of Minnesota, Twin Cities

Steimle, Timothy C. (1985), Professor of Chemistry and Biochemistry; B.S., Michigan State University; Ph.D., University of California, Santa Barbara

Steinbart, Paul (1997), Professor of Accountancy and Information Management; B.A., University of Illinois; M.B.A., Southern Illinois University; Ph.D., Michigan State University

Steiner, Sue (1996), Associate Professor of Social Work; B.A., Brandeis University; M.S.W., San Francisco State University; Ph.D., University of Washington

Stelmach, George E. (1990), Professor of Exercise Science and Physical Education; B.S., University of Illinois; M.A., Ed.D., University of California, Berkeley

Stephens, Nancy J. (1979), Associate Professor of Marketing; Director, Night M.B.A. Program; B.S., M.S., University of Illinois; Ph.D., University of Texas, Austin

Stephenson, Christine F. (1995), Adjunct Professor of Biology; B.S., University of Ulster (United Kingdom); Ph.D., The Queen's University of Belfast (United Kingdom)

Stephenson, Larry K. (1986), Adjunct Professor of Geography; B.S., M.A., Arizona State University; Ph.D., University of Cincinnati

Sterling, Pamela (1999), Assistant Professor of Theatre; B.F.A., M.F.A., University of Washington

Steverson, Norris J. (1932), Professor Emeritus of Physical Education; B.A., Arizona State University; M.S., University of Southern California

Stewart, Donald G. (1964), Professor Emeritus of Mathematics and Statistics; B.A., M.S., Utah State University; Ph.D., University of Tennessee, Knoxville

- Stewart, Kenneth M.** (1947), Professor Emeritus of Anthropology; A.B., M.A., Ph.D., University of California, Berkeley
- Stiftel, Ruthy Z.** (1997), Lecturer of Hebrew; B.A., Hebrew University of Jerusalem (Israel); M.A., Ohio State University
- Stiles, Philip G.** (1969), Professor Emeritus of Agribusiness and Resource Management; B.S., University of Arkansas; M.S., University of Kentucky; Ph.D., Michigan State University
- Stillwell, Susan B.** (1997), Clinical Associate Professor of Nursing; B.S., College of Saint Teresa; M.S.N., University of Florida
- Stinson, Judith M.** (1997), Director, Legal Research and Writing and Academic Success Program; B.S., J.D., University of Arizona
- Stites, William H.** (1954), Professor Emeritus of Communication; B.A., Louisiana Polytechnic Institute; M.A., Ph.D., University of Denver
- Stock, William A.** (1984), Professor Emeritus of Exercise Science and Physical Education; B.A., Blackburn College; M.S., Ph.D., Iowa State University
- Stocker, David Allen** (1978), Professor Emeritus of Music; B.S., Concordia Teachers College; M.M., Ph.D., Northwestern University
- Stokrocki, Mary L.** (1990), Professor of Art; B.S., State University of New York, New Paltz; M.S., Massachusetts College of Art; D.Ed., Pennsylvania State University
- Stone, Gregory O.** (1986), Associate Professor of Psychology; B.A., Harvard University; Ph.D., University of California, San Diego
- Stoner, K. Lynn** (1985), Associate Professor of History; B.S., George Peabody College for Teachers; M.A., Ph.D., Indiana University
- Stout, Robert** (1978), Professor Emeritus of Educational Administration and Supervision; B.A., Carleton College; Ph.D., University of Chicago
- Stout, Valerie** (1991), Associate Professor of Microbiology; B.S., University of Wisconsin, Madison; Ph.D., Kansas State University
- Stowe, Noel J.** (1967), Professor of History; Chair, Department of History; B.A., Ph.D., University of Southern California
- Strange, Richard E.** (1974), Professor Emeritus of Music; B.M.E., Wichita State University; M.M.E., University of Colorado; D.M.A., Boston University
- Streufert, Hildegarde** (1961), Professor Emerita of Design; B.S., University of Minnesota, Twin Cities; M.S., Iowa State University
- Strittmatter, Connie** (2000), Assistant Law Librarian; B.A., Indiana University of Pennsylvania; M.L.S., Kent State University
- Strom, Robert** (1969), Professor of Psychology in Education; B.S., Macalester College; M.S., University of Minnesota, Twin Cities; Ph.D., University of Michigan
- Stromberg, Juliet C.** (1988), Associate Professor of Plant Biology; B.S., M.S., University of Wisconsin, Milwaukee; Ph.D., Arizona State University
- Stromwall, Layne** (1996), Assistant Professor of Social Work; B.A., M.S.S.W., University of Wisconsin, Madison; Ph.D., Case Western Reserve University
- Strouse, Daniel S.** (1990), Professor of Law; A.B., S.M., Harvard University; J.D., University of Wisconsin, Madison
- Stuler, John H.** (1962), Professor Emeritus of Art; B.A., M.F.A., Arizona State University
- Stump, Edmund** (1976), Professor of Geological Sciences; A.B., Harvard University; M.S., Yale University; Ph.D., Ohio State University
- Stump, Glenda** (2000), Faculty Associate of Nursing; B.S., University of Pittsburgh; M.S., Wayne State University
- Stumpf, Angela M.** (1959), Professor Emerita of Nursing; B.S.N., Marquette University; M.A., University of Chicago
- Stutz, Jean C.** (1981), Associate Professor of Plant Biology; B.S., Ursinus College; M.S., University of Delaware; Ph.D., Pennsylvania State University
- Sudol, David E.** (1996), Senior Lecturer of English; B.A., Simpson College; M.A., Drake University; Ph.D., University of Arizona
- Sugar, Thomas G.** (1999), Assistant Professor of Mechanical and Aerospace Engineering; B.S.E., M.S.E., Ph.D., University of Pennsylvania
- Sugiyama, Saburo** (1999), Associate Research Professor of Anthropology; B.S., Tokyo-Keizai University (Japan); Ph.D., Arizona State University
- Sullivan, Deborah A.** (1976), Associate Professor of Sociology; B.S., University of Massachusetts, Amherst; M.A., University of California, Irvine; Ph.D., Duke University
- Sullivan, Howard** (1971), Professor of Psychology in Education; B.S., Oregon College of Education; M.Ed., Ph.D., University of Oregon
- Sullivan, Jill M.** (2000), Assistant Professor of Music; B.M., Illinois State University; M.M., University of Michigan; Ph.D., University of Iowa
- Sullivan, John J.** (1976), Professor Emeritus of Education; B.A., Villanova University; M.A., Ph.D., Arizona State University
- Sunkett, Mark E.** (1976), Professor of Music; B.M., Curtis Institute of Music; M.M., Temple University; Ph.D., University of Pittsburgh
- Surbeck, Elaine** (1988), Professor of Curriculum and Instruction; Associate Director, Initial Teacher Certification program; B.A., University of Washington; M.Ed., Ed.D., University of Georgia
- Surgent, Scott** (1997), Lecturer of Mathematics and Statistics; B.S., M.S., University of California, Riverside
- Sushka, Marie E.** (1984), Professor of Finance; B.A., Sweet Briar College; M.A., Ph.D., Georgetown University
- Suslov, Sergei K.** (1997), Associate Professor of Mathematics and Statistics; M.Sc., Moscow Institute of Physics and Technology (Russia); Ph.D., Kurchatov Institute of Atomic Energy (Russia)
- Susser, Eric** (1997), Lecturer of the Barrett Honors College; B.A., University of Michigan; M.A., Ph.D., University of Virginia
- Suwarno, Peter** (1993), Associate Professor of Indonesian; B.A., Satya Wacana Christian University (Indonesia); M.A., Ph.D., Ohio University
- Swadener, Beth Blue** (2001), Professor of Curriculum and Instruction; B.A., Indiana University, South Bend; M.S., Ph.D., University of Wisconsin, Madison
- Swafford, James R.** (1971), Professor Emeritus of Plant Biology; B.S., M.S., Arizona State University
- Swaim, S. Daniel** (1975), Professor of Music; B.M., Cincinnati College Conservatory of Music; M.M.E., Indiana University, Bloomington; D.M.A., North Texas University
- Swanson, Tod D.** (1988), Associate Professor of Religious Studies; Director, Latin American Studies Center; B.A., University of Minnesota, Twin Cities; M.Div., Luther Theological Seminary; Ph.D., University of Chicago

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Swartz, Jonathan (2001), Assistant Professor of Music; B.M., Rice University; M.M., Mannes College of Music; D.M.A., Rice University

Swaty, Mary A. (1968), Associate Librarian, Technical Services Department; B.A., University of Missouri, Columbia; M.L.S., Indiana University, Bloomington

Sweeney, J. Gray (1986), Professor of Art; B.A., University of New Mexico; M.A., Ph.D., Indiana University, Bloomington

Sweeney, James D. (1989), Associate Professor of Bioengineering; Sc.B., Brown University; Ph.D., Case Western Reserve University

Swimmer, Alvin (1963), Associate Professor of Mathematics and Statistics; B.S., Pennsylvania State University; M.S., New York University; Ph.D., University of California, Berkeley

Sylvester, Edward J. (1982), Professor of Journalism and Mass Communication; A.B., Princeton University; M.A., City College

Sylvester, Ginny (1981), Associate Librarian; Head, Access Services/Interlibrary Loan and Document Delivery; B.A., Hobart and William Smith Colleges; M.L.S., Rutgers, The State University of New Jersey

Szarek, Stanley R. (1974), Associate Professor of Plant Biology; Associate Chair of Plant Biology; B.S., California Polytechnic State University, Pomona; Ph.D., University of California, Riverside

T

Tao, Nongjian (2001), Professor of Electrical Engineering; B.S., Anhui University (China); Ph.D., Arizona State University

Tambs, Lewis A. (1969), Professor of History; B.S., University of California, Berkeley; M.A., Ph.D., University of California, Santa Barbara

Tan, Rui (1990), Assistant Research Professor, Cancer Research Institute; B.S., Beijing Medical University (China); M.S., Ph.D., Chinese Academy of Medical Sciences (China)

Tang, Carol M. (1997), Assistant Professor of Geological Sciences; B.A., University of California, Berkeley; M.S., Ph.D., University of Southern California

Tann, Sheila (2001), Assistant Professor of Nursing; B.S.N., Northern Arizona University; N.D., University of Colorado Health Sciences Center, School of Nursing

Tatro, B. J. (1990), Faculty Associate of Public Affairs; B.A., M.S.S.W., University of Louisville; D.P.A., Arizona State University

Taylor, Dan (1996), Lecturer of Accountancy and Information Management and Computer Information Systems; B.A., University of Nebraska; M.A., M.Tax., Arizona State University

Taylor, Jack J. (1960), Professor Emeritus of Art; B.S., Kutztown State College; M.Ed., Pennsylvania State University

Taylor, Jacqueline (1984), Professor Emerita of Nursing; B.S.N., University of Washington; M.S., University of North Carolina, Chapel Hill; Ph.D., University of Arizona

Taylor, Nora (1998), Assistant Professor of Interdisciplinary Humanities; B.A., Brown University; M.A., Ph.D., Cornell University

Taylor, Thomas (1983), Associate Professor of Mathematics and Statistics; B.S., California State University; Ph.D., Harvard University

Taysom, Elvin D. (1953), Professor Emeritus of Agribusiness and Resource Management; B.S., University of Idaho; M.S., Utah State University; Ph.D., Washington State University

Tenney, Lester I. (1969), Professor Emeritus of Finance; B.A., University of Miami; M.A., San Diego State College; D.B.A., University of Southern California

Tepedelenlioglu, Cihan (2001), Assistant Professor of Electrical Engineering; B.S., Florida Institute of Technology; M.S., University of Virginia; Ph.D., University of Minnesota

Tesón, Fernando R. (1984), Professor of Law; J.D., University of Buenos Aires (Argentina); L.L.M., Free University of Brussels (Belgium); S.J.D., Northwestern University

Teye, Victor B. (1984), Associate Professor of Recreation Management and Tourism; B.A., University of Ghana (Ghana); M.A., Ph.D., University of Manitoba (Canada)

Tharp, Julie (1991), Associate Librarian, Hayden Reference Services; B.A., University of Hawaii; M.L.S., University of Arizona

Theobald, Clarabelle (1962), Professor Emerita of Nursing; B.S.N., Arizona State University; M.S., University of California, Los Angeles; Ph.D., Arizona State University

Thibeau Catsis, Connie (2001), Assistant Professor of Design; B.Sc., University of Maryland; M.Sc., Oklahoma State University

Thieme, Horst R. (1988), Professor of Mathematics and Statistics; Associate Chair, Graduate Studies; M.S., Ph.D., University of Münster (Germany)

Thomas, David A. (1999), Lecturer, Division of Undergraduate Academic Services and Bachelor of Interdisciplinary Studies Program; B.S., California State Polytechnic University; M.B.A., Ph.D., University of Southern California

Thomas, George M. (1981), Professor of Sociology; B.A., Arizona State University; M.A., Ph.D., Stanford University

Thomas, Keith J. (1975), Professor Emeritus of Reading and Library Science; B.S., Illinois State University; M.A., Loyola University, Chicago; Ed.D., University of Arizona

Thomason, Leslie L. (1969), Professor Emeritus of Technology; A.B., M.A., Ed.D., University of Oklahoma

Thompson, Janice Catherine (1977), Professor of Music; B.M.E., M.M.E., University of Wisconsin; M.M., Western Michigan University; D.M., Northwestern University

Thompson, Marilyn S. (1999), Assistant Professor of Educational Psychology; B.A., Carleton College; M.A., Ph.D., University of Kansas

Thompson, Victoria E. (1999), Assistant Professor of History; B.A., University of California, Berkeley; Ph.D., University of Pennsylvania

Thomson, Jeffrey (1981), Professor of Theatre; B.A., Ripon College; M.A., University of Washington; M.F.A., Wayne State University

Thomson, Tom R. (1961), Professor Emeritus of Chemistry and Biochemistry; B.A., University of California, Berkeley; M.S., Ph.D., Kansas State University

Thorne, Anita (1984), Professor Emerita of Nursing; Diploma, Allegheny General Hospital; B.S.N.Ed., M.A., University of Pittsburgh

Thornton, Sybil (1994), Associate Professor of History; B.A., University of California, Berkeley; B.A., University of Cambridge (United Kingdom); M.A., San Francisco State University; M.A., Ph.D., University of Cambridge (United Kingdom)

Thornton, Trevor John (1998), Professor of Electrical Engineering; B.S., Saint Catherine's College (United Kingdom); M.A., Ph.D., Cambridge University (United Kingdom)

Thurber, Frances (1991), Professor of Nursing; Chair, Division of Adult Health/Parent-Child Nursing; B.S.N., Saint Anselm College; M.S.N., University of Pennsylvania; Ph.D., University of Michigan

Tice, Thomas E. (1967), Professor Emeritus of Electrical Engineering; B.S.E.E., M.S.E.E., Ph.D., Ohio State University

Tidwell, Victor H. (1971), Professor Emeritus of Accountancy and Information Management; B.S., Illinois College; M.B.A., D.B.A., Indiana University; C.P.A., Arizona, Iowa

Tillery, Bill W. (1973), Professor of Physics and Astronomy and Science Education; B.S., Northeastern State College; M.A., Ed.D., University of Northern Colorado

Tillman, Hoyt C. (1976), Professor of History; B.A., Belhaven College; M.A., University of Virginia; A.M., Ph.D., Harvard University

Timothy, Dallen J. (2000), Assistant Professor of Recreation Management and Tourism; Graduate Coordinator, Department of Recreation Management and Tourism; B.S., Brigham Young University; M.A., University of Western Ontario (Canada); Ph.D., University of Waterloo (Canada)

Tipton, Gary P. (1969), Assistant Professor of Chinese; B.A., Brigham Young University; Ph.D., Indiana University, Bloomington

Tobiason, Sarah J. (1963–67; 1974), Professor Emerita of Nursing; B.S.N., Vanderbilt University; M.A., Columbia University

Tobin, Beth Fowkes (2001), Professor of English; B.A., Earlham College; M.A., Ph.D., University of Chicago

Tobin, Joseph (2001), Nadine Mathis Basha Professor of Curriculum and Instruction; B.A., Earlham College; Ph.D., University of Chicago

Tohe, Laura (1994), Associate Professor of English; B.A., University of New Mexico; M.A., Ph.D., University of Nebraska

Tompkins, Cynthia M. (1992), Associate Professor of Spanish; Licenciada en Letras Modernas, National University of Cordoba (Argentina); M.A., Ph.D., Pennsylvania State University

Tongret, JoAnn (2000), Lecturer of Dance, Music, and Theatre; B.A., M.A., Arizona State University

Torrest, Robert S. (1980), Professor Emeritus of Chemical Engineering; B.S., Polytechnic Institute of Brooklyn; Ph.D., University of Minnesota, Twin Cities

Towe, Bruce C. (1984), Professor of Bioengineering; B.S., M.S., Ph.D., Pennsylvania State University

Towill, Leslie R. (1975), Associate Professor of Plant Biology; B.S., M.S., University of Wisconsin, Milwaukee; Ph.D., University of Michigan

Traaen, Teresa (1993), Faculty Associate of Public Affairs; B.A., Northern Arizona University; M.A., Wheaton College; Ed.D., D.P.A., Arizona State University

Tracey, Terence (1999), Professor of Counseling Psychology; Academic Program Leader, Counselor Education; Training Director and Program Coordinator, Counseling Psychology; B.A., Cornell University; M.S.Ed., University of Kansas, Lawrence; Ph.D., University of Maryland, College Park

Tracogna, Stefania (2000), Lecturer of Mathematics and Statistics; Laurea, University of Trieste (Italy); Ph.D., Arizona State University

Tracy, Sarah J. (2000), Assistant Professor of Communication; B.A., University of Southern California; M.A., Ph.D., University of Colorado

Trapido-Lurie, Barbara (1987), Associate Research Professional; B.A., Pomona College; M.A., University of Hawaii

Trapuzzano, Michael (1989), Lecturer of Mathematics and Statistics; B.S., United States Air Force Academy, Colorado; M.B.A., University of Utah

Treasure, Darren C. (1998), Associate Professor of Exercise Science and Physical Education; B.A., West London Institute of Higher Education (United Kingdom); M.S., Ph.D., University of Illinois, Urbana-Champaign

Trelease, Richard N. (1971), Professor of Plant Biology; B.S., M.S., University of Nevada, Reno; Ph.D., University of Texas, Austin

Trennert, Robert A. (1974), Professor of History; B.A., Occidental College; M.A., Los Angeles State College; Ph.D., University of California, Santa Barbara

Trethewey, Angela (1996), Assistant Professor of Communication; B.A., M.A., California State University, Chico; Ph.D., Purdue University

Trost, Melanie R. (1991), Associate Professor of Communication; B.S., Montana State University; M.A., Ph.D., Arizona State University

Trotta, Victoria K. (1996), Associate Dean and Director, Ross–Blakley Law Library; B.A., Occidental College; M.L.S., University of California, Los Angeles; J.D., University of Southern California



Trotter, William T.
(1987)
Regents' Professor of Mathematics and Statistics; Vice Provost for Academic Programs, Office of the Senior Vice President and Provost; B.S., The Citadel; M.A., Ph.D., University of Alabama

Trujillo, Octaviana Valenzuela (1995), Assistant Professor of Curriculum and Instruction; B.A., M.A., Ph.D., Arizona State University

Trujillo, Rosanne E. (1999), Assistant Librarian, Hayden Reference Services; B.A., Utah State University; M.A., University of Arizona; M.B.A., University of Phoenix

Tsai, Wei-Tek (1999), Professor of Computer Science and Engineering; S.B., Massachusetts Institute of Technology; M.S., Ph.D., University of California, Berkeley

Tsakalis, Konstantinos S. (1988), Associate Professor of Electrical Engineering; B.S., National Technical University of Athens (Greece); M.S.E.E., Ph.D., University of Southern California

Tsen, Kong-Tong (1984), Professor of Physics and Astronomy; B.S., Fu-Jen Catholic University (Japan); M.S., Ph.D., Purdue University

Tseng, Ampere A. (1995), Professor of Mechanical and Aerospace Engineering; M.S., University of Illinois, Urbana-Champaign; Ph.D., Georgia Institute of Technology

Tsong, Ignatius S. T. (1981), Professor of Physics and Astronomy; B.Sc., M.Sc., University of Leeds (United Kingdom); Ph.D., University of London (United Kingdom); D.Sc., University of Leeds (United Kingdom)

Tsoie, Rebecca A. (1993), Professor of Law; Executive Director, Indian Legal Program; B.A., J.D., University of California, Los Angeles

Tsukayama, Jennifer (1998), Assistant Professor of Dance; B.F.A., George Mason University; M.F.A., New York University

Tu, Eugenia Y. (1973), Professor Emerita of Chinese; B.Ed., Taiwan Normal University (Taiwan); B.A., University of Mary Hardin-Baylor; M.S., University of Arizona

Tucker, Bonnie P. (1987), Professor of Law; B.S., Syracuse University; J.D., University of Colorado

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Turk, Rudy H. (1967), Professor Emeritus of Art; B.S., University of Wisconsin; M.A., University of Tennessee

Turnbow, James W. (1959), Professor Emeritus of Civil Engineering; B.S.M.E., Texas Technological College; M.S.E.M., Ph.D., University of Texas

Turner, Caroline (1999), Professor of Educational Leadership and Policy Studies; B.A., M.A., University of California, Davis; Ed.S., Ph.D., Stanford University



Turner, Christy G. II

(1966)

Regents' Professor of Anthropology; B.A., M.A., University of Arizona; Ph.D., University of Wisconsin, Madison

Turner, Terry (2000), Lecturer of Mathematics and Statistics; B.S., College of Charleston; M.S., Northern Arizona University

Tutunjian, Vatche (1992), Faculty Research Associate of Physics and Astronomy

Tyburczy, James A. (1985), Professor of Geological Sciences; B.A., Whitman College; Ph.D., University of Oregon

Tylavsky, Daniel J. (1982), Associate Professor of Electrical Engineering; B.S.E., M.S.E., Ph.D., Pennsylvania State University

U

Uhl, Rebecca S. (1989), Associate Librarian; Team Management, Technical Services Department; B.S., M.A., Colorado State University; M.S.L.I.S., University of Illinois

Umar, Muhammad Sani (1996), Assistant Professor of Religious Studies; B.A., University of Jos (Nigeria); M.A., Bayero University (Nigeria); Ph.D., Northwestern University

Umberger, Emily (1982), Associate Professor of Art; B.A., University of Pennsylvania; M.A., University of Texas, Austin; Ph.D., Columbia University

Umberson, George E. (1977), Professor of Music; B.M.E., Eastern New Mexico University; M.A., University of Iowa; Ed.D., University of North Colorado

Underhill, Michael J. (1990), Professor of Architecture; B.Arch., Massachusetts Institute of Technology; M.C.P.U.D., Harvard University

Underiner, Tamara (2001), Assistant Professor of Theatre; B.A., University of Dayton; M.A., Arizona State University; Ph.D., University of Washington, Seattle

Underwood, Max (1985), Professor of Architecture; B.S., University of Southern California; M.Arch., Princeton University

Upchurch, Jonathan E. (1982), Professor Emeritus of Civil and Environmental Engineering; B.S., M.S., University of Illinois; Ph.D., University of Maryland

Updegraff, Kimberly (1997), Assistant Professor of Family and Human Development; B.S., M.S., Ph.D., Pennsylvania State University

Upton, Mark Roy (1995), Faculty Associate of Construction; B.S., Michigan State University

Urban, Joseph E. (1989), Professor of Computer Science and Engineering; B.S., Florida State of Technology; M.S., University of Iowa; Ph.D., University of Southwestern Louisiana

Urban, Susan D. (1989), Professor of Computer Science and Engineering; B.S., M.S., Ph.D., University of Southwestern Louisiana

Urioste-Azcorra, Carmen (1995), Associate Professor of Spanish; Licenciatura, University of Seville (Spain); M.A., Ph.D., Arizona State University

Usman, Aribidesi (2001), Assistant Professor of African American Studies; B.A., M.A., University of Ibadan (Nigeria); Ph.D., Arizona State University

Uttal, William R. (1988), Professor Emeritus of Industrial Engineering; B.S., University of Cincinnati; Ph.D., Ohio State University

V

Valdivieso, L. Teresa (1971), Professor of Spanish; B.A., M.A.E., Ph.D., Arizona State University

Valentine, Carol Ann (1975), Professor Emerita of Communication; B.A., M.A., University of Michigan; Ph.D., Pennsylvania State University

Valentine, Kristin B. (1976), Professor of Communication; B.S., University of Wisconsin, Madison; M.A., University of Washington; Ph.D., University of Utah

Vallejo, Carlos J. (1976), Associate Professor of Curriculum and Instruction; B.S., Chadron State College; M.A., Ed.D., University of Nebraska, Lincoln

Valverde, Leonard A. (1992), Professor of Educational Leadership and Policy Studies; B.A., California State University, Los Angeles; Ph.D., Claremont Graduate School

Van Duzer, Leslie (1996), Associate Professor of Architecture; B.Arch., M.Arch., University of California, Berkeley

van Gelderen, Elly (1995), Associate Professor of English; B.A., M.A., Utrecht University (Netherlands); Ph.D., McGill University (Canada)

Van Hook, Barry L. (1976), Associate Professor of Management; B.S., Illinois State University; M.S., Ed.D., Northern Illinois University

Van Orden, Guy C. (1987), Professor of Psychology; B.S., University of Oregon; M.A., Ph.D., University of California, San Diego

Van Schilfgaarde, Mark (2002), Associate Professor of Chemical and Materials Science Engineering; B.A., University of California; Ph.D., Stanford University

Van Wagenen, R. Keith (1963), Professor Emeritus of Education; B.A., Pacific Union College; M.A., Arizona State University; Ph.D., University of Utah

Vanacour, Martin (1987), Faculty Associate of Public Affairs; B.A., State University of New York, Buffalo; M.P.A., New York University; D.P.A., Arizona State University

Vanderhoff, Barbara A. (1968), Associate Librarian, Technical Services Department; B.A., Fort Hays State University; M.A., University of Denver

VanderMeer, Philip R. (1985), Associate Professor of History; B.A., Calvin College; M.A., Ph.D., University of Illinois

Vasileska, Dragica (1997), Assistant Professor of Electrical Engineering; B.S., M.S., University Cyril and Methodius (Macedonia); Ph.D., Arizona State University

Vaz, Paul (1997), Senior Lecturer of Mathematics and Statistics; B.S., M.S., Ph.D., Bombay University (India); Ph.D., Arizona State University

Veatch, Jeannette (1968), Professor Emerita of Education; A.B., Western Michigan University; M.A., Ph.D., New York University

Vega, Santos C. (1989), Senior Research Specialist, Hispanic Research Center; B.A., M.Ed., University of Arizona; Ph.D., Arizona State University

Venables, John A. (1986), Professor of Physics and Astronomy; B.A., Ph.D., University of Cambridge (United Kingdom)

Verch, Todd (1994), Faculty Associate of Design; B.S.D., M.S.D., Arizona State University

Verdini, William A. (1976), Associate Professor of Supply Chain Management; Associate Dean, College of Extended Education; B.S., Case Western Reserve University; M.B.A., D.B.A., Kent State University

Vermaas, Willem F. J. (1986), Professor of Plant Biology; Ph.D., Agricultural University (Netherlands)

Vernon, Brent (2000), Assistant Professor of Bioengineering; B.S.E., Arizona State University; Ph.D., University of Utah

Verstegen, Clare M. (1989), Professor of Art; B.S., University of Wisconsin, Stevens Point; M.F.A., Cranbrook Academy of Art

Vestre, Norris D. (1972), Professor Emeritus of Psychology; B.A., Ph.D., University of Minnesota, Twin Cities

Vicencio, Christina (1994), Lecturer of Speech and Hearing Science; B.A., M.T.E.S.L., Arizona State University

Villalobos, J. Rene (1999), Associate Professor of Industrial Engineering; B.S., Institute of Technology of Chihuahua (Mexico); M.S., University of Texas, El Paso; Ph.D., Texas A&M University

Villanueva, Virginia (1995), Faculty Associate of Nursing; B.S.N., M.S., Arizona State University

Vining, David C. (1975), Associate Professor of Theatre; B.A., University of Redlands; M.F.A., University of Minnesota, Twin Cities

Vinze, Ajay (1998), Professor of Accountancy and Information Management; B.Com., University of Delhi (India); M.B.A., University of Connecticut; Ph.D., University of Arizona

Virden, Randy J. (1984), Associate Professor of Recreation Management and Tourism; Chair, Department of Recreation Management and Tourism; B.S., M.S., Arizona State University; Ph.D., Utah State University

Virgillo, Carmelo (1965), Professor Emeritus of Romance Languages; A.B., State University of New York, Albany; A.M., Ph.D., Indiana University

Viri, Denis (1998), Associate Research Professional; Interim Director, Center for Indian Education; B.A., San Francisco State University; M.Ed., Ph.D., University of Arizona

Vissicaro, Pegge Harper (1983), Assistant Professor of Dance; B.F.A., University of Michigan; M.F.A., University of North Carolina, Greensboro

Vitullo, Juliann (1990), Associate Professor of Italian; B.A., University of Illinois; M.A., Ph.D., Indiana University, Bloomington

Voaden, Rosalynn (1998), Associate Professor of English; B.A., B.Ed., Queen's University, Kingston (Canada); M.A., University of Victoria, British Columbia (Canada); Ph.D., University of York (United Kingdom)

Voeller, Kytja (2000), Adjunct Professor of Speech and Hearing Science; B.A., Reed College; M.A., Bryn Mawr College; M.D., Columbia University

Vogel, Julie Ann (2001), Lecturer of Curriculum and Instruction; B.S., Iowa State University; M.Ed., Ph.D., Arizona State University

Vogus, Brad T. (1999), Assistant Librarian, Government Documents and Map Collection; B.A., Indiana University, Bloomington; M.I.L.S., University of Michigan, Ann Arbor

Volek, Emil (1975), Professor of Spanish; Prom.Phil., Ph.D., Charles University, Prague (Czechoslovakia)

Voss, Howard G. (1964), Professor Emeritus of Physics and Astronomy; A.B., Hope College; M.N.S., Arizona State University; M.S., Purdue University

Voth, Annette (1978), Librarian, Music Library; B.Mus., University of Kansas; M.L.S., M.A., University of California, Berkeley

Votichenko, T. Alexander (1956), Professor Emeritus of Philosophy; A.B., Princeton University; M.A., Columbia University

W

Wachter, Rebekka (2001), Assistant Professor of Chemistry and Biochemistry; B.A., University of California, Santa Cruz; Ph.D., University of Oregon



Wagner, J. Bruce Jr.
(1977)
Regents' Professor Emeritus, Chemistry and Biochemistry and Center for Solid State Science; B.S., Ph.D., University of Virginia

Wagner, Michael G. (1997), Assistant Professor of Computer Science and Engineering; B.S., M.S., Ph.D., Technical University of Vienna (Austria)

Wagner, Ronald F. (1962), Professor Emeritus of Art; B.S., University of Wisconsin, Madison; M.F.A., University of Iowa

Walker, Beth A. (1988), Associate Professor of Marketing; B.S., Virginia Polytechnic Institute and State University; M.S., Ph.D., Pennsylvania State University

Walker, John E. (1970), Professor Emeritus of Educational Administration and Supervision; B.A., Albion College; M.A., Michigan State University; Ed.D., Utah State University

Walker, Sharon (1996), Lecturer of Mathematics and Statistics; B.A., B.S., M.N.S., Arizona State University

Walker, Stephen G. (1969), Professor of Political Science; B.A., Creighton University; M.A., Ph.D., University of Florida

Wall, Gerard (1992), Adjunct Professor of Plant Biology; B.S., State University of New York, Stony Brook; M.S., Ph.D., Kansas State University

Wallace, Charles E. (1958), Professor Emeritus of Mechanical and Aerospace Engineering; B.S., Lewis and Clark College; M.S., Oregon State University; Ph.D., Stanford University

Wallen, Carl (1973), Professor Emeritus of Curriculum and Instruction; B.A., University of California, Santa Barbara; M.A., San Francisco State College; Ed.D., Stanford University

Waller, Margaret Ann (1997), Associate Professor of Social Work; B.M., DePaul University; M.S.W., University of Illinois; Ph.D., University of Chicago

Waller, Sam, Major (1998), Assistant Professor of Military Science; B.A., Mercer University

Walmsley, Amanda (2001), Assistant Research Professor of Plant Biology; B.S., Ph.D., University of Queensland (Australia)

Walsberg, Glenn E. (1978), Professor of Biology; B.S., California State University, Long Beach; Ph.D., University of California, Los Angeles

Walsh, Kenneth D. (1994), Associate Professor of Construction; B.S.E., M.S., Ph.D., Arizona State University

Walters, Sheila A. (1971), Librarian Emerita; B.A., University of Oklahoma; M.L.S., Louisiana State University

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Walton-Ramirez, Anne (1999), Lecturer of Spanish; B.A., University of South Alabama; M.A., Arizona State University

Wamacks, Naomi W. (1968), Professor Emerita of Curriculum and Instruction; B.A., M.A., Ed.D., Arizona State University

Wang, Alan P. (1970), Professor Emeritus of Mathematics and Statistics; B.A., Washington State University; M.A., Ph.D., University of California, Los Angeles

Wang, Cecilia (1971), Professor Emerita of Mathematics and Statistics; B.A., Immaculate Heart College; M.A., Ph.D., University of California, Los Angeles

Wang, Edward Y. (1979), Professor Emeritus of Electrical Engineering; B.S., Morningside College; M.S., Purdue University; Ph.D., Tufts University

Ward, James C. (1986), Professor of Marketing; B.A., M.B.A., Ph.D., University of Minnesota, Twin Cities

Ward, Lance (1997), Lecturer of Mathematics and Statistics; B.S., M.S., Brigham Young University

Wardwell, Sandra W. (1974), Research Specialist Emerita of Geography; B.S., University of Michigan

Warner, Carolyn (1994), Associate Professor of Political Science; B.A., University of California, San Diego; M.A., Ph.D., Harvard University

Warnicke, Retha M. (1972), Professor of History; A.B., Indiana University; M.A., Ph.D., Harvard University

Warren, Morrison F. (1968), Professor Emeritus of Education; B.A., M.A., Ed.D., Arizona State University

Warren-Findley, Jannelle (1992), Associate Professor of History; B.A., Texas Woman's University; M.Phil., Ph.D., George Washington University

Watkins, Thomas B. (1972), Professor Emeritus of Technology; B.S., University of Wyoming; M.S., Arizona State University

Watson, Clyde W. (1971), Professor Emeritus of Art; B.F.A., Bethany College; M.A., Kansas State University

Watson, Emma Jane (1999), Lecturer and Curriculum Coordinator of Small Business; Academic Director, Small Business Programs; B.A., Sonoma State University; M.Ed., Western Washington University

Watson, George L. (1969), Professor of Journalism and Mass Communication; B.A., Phillips University; M.A., Ph.D., Duke University

Webb, L. Dean (1978), Professor of Educational Leadership and Policy Studies; B.A., M.A.T., Ph.D., University of Florida

Webb Peterson, Patricia R. (1998), Assistant Professor of English; B.A., M.A., Illinois State University, Normal; Ph.D., University of Illinois, Urbana-Champaign

Webber, Andrew N. (1989), Professor of Plant Biology; Director, Center for the Study of Early Events in Photosynthesis; B.Sc., Ph.D., University of Essex (United Kingdom)

Weber, Sandra L. (1985), Associate Professor of Construction; B.S.C.E., M.S.C.E., University of California, Berkeley; Ph.D., Arizona State University

Weed, Andrew (1999), Assistant Professor of Design; B.F.A., Arizona State University; M.F.A., Basel School of Design (Switzerland)

Wegner, Artnoll L. (1957), Professor Emeritus of Physical Education; B.S., Wisconsin State College; M.S., University of Wisconsin, Madison; P.E.D., Indiana University

Weidemaier, William (1977), Professor Emeritus of the Barrett Honors College; B.A., Northern Arizona University; M.A., Ph.D., Arizona State University

Weierstall, Uwe (1994), Assistant Research Scientist of Physics and Astronomy; B.S., University of Tübingen (Germany); M.S., Ph.D., Institute of Applied Physics in Tübingen (Germany)

Weigand, Robert F. Jr. (1990), Senior Lecturer of Family and Human Development and Psychology; Director, Child Laboratory Programs; B.S., University of Scranton; M.S., Purdue University

Weigend, Guido G. (1976), Professor Emeritus of Geography; Dean Emeritus, College of Liberal Arts and Sciences; B.S., M.S., Ph.D., University of Chicago

Weiner, Gordon M. (1968), Professor Emeritus of History; A.B., Ph.D., University of Pennsylvania

Weinstein, James (1986), Professor of Law; Amelia D. Lewis Professor of Constitutional Law; B.A., J.D., University of Pennsylvania



Weiser, Kurt
(1989)
Regents' Professor of Art; B.F.A., Kansas City Art Institute; M.F.A., University of Michigan

Weiss, Karl H. (1984), Senior Research Professional, Center for Solid State Science; B.Sc., Ursinus College; M.Sc., University of Arizona

Weiss, Jane (2000), Assistant Professor of Accountancy and Information Management; B.B.A., University of Wisconsin, Whitewater; M.Acc., University of Georgia; Ph.D., University of Wisconsin

Weiss, Neil A. (1970), Professor Emeritus of Mathematics and Statistics; B.A., M.A., Ph.D., University of California, Los Angeles

Weitz, Rose (1978), Professor of Sociology; B.A., City University of New York; M.A., Ph.D., Yale University

Weitzman, Irene (1998), Adjunct Faculty of Microbiology; B.S., Brooklyn College; M.A., Ph.D., Columbia University

Welch, H. William (1967), Professor Emeritus of Electrical Engineering; B.A., DePauw University; M.S., Ph.D., University of Michigan; P.E.

Welfert, Bruno (1990), Associate Professor of Mathematics and Statistics; M.A., University of Paris VI (France); Ph.D., University of California, San Diego

Wells, Barrie E. (1981), Professor Emeritus of Music; B.M., M.M., University of the Pacific; D.M.A., University of Oregon

Wells, Christine L. (1976), Professor Emerita of Exercise Science and Physical Education; B.S., University of Michigan; M.S., Smith College; Ph.D., Pennsylvania State University

Wells, David (1998), Lecturer, Division of Undergraduate Academic Services; Curriculum Coordinator, Bachelor of Interdisciplinary Studies Program; B.A., Bucknell University; Ph.D., University of Southern California

Wells, Valana L. (1987), Associate Professor of Engineering; A.B., M.S., Ph.D., Stanford University

Welsh, Peter H. (1986), Associate Professor of Anthropology; B.A., Northern Arizona University; M.A., Ph.D., University of Pennsylvania

Wentz, Elizabeth A. (1997), Assistant Professor of Geography; B.A., M.A., Ohio State University; Ph.D., Pennsylvania State University

- Wentz, Richard E.** (1972), Professor Emeritus of Religious Studies; A.B., Ursinus College; B.D., Lancaster Theological Seminary; M.Phil., Ph.D., George Washington University
- Wesbury, Stuart A. Jr.** (1994), Professor Emeritus of Health Administration and Policy; B.S., Temple University; M.H.A., University of Michigan; Ph.D., University of Florida
- Weschler, Louis** (1980), Professor Emeritus of Public Affairs; B.A., California State University, Long Beach; M.A., Ph.D., University of California, Los Angeles
- West, Stephen G.** (1981), Professor of Psychology; B.A., Cornell University; M.A., Ph.D., University of Texas
- Westerhoff, Paul** (2001), Associate Professor of Civil and Environmental Engineering; B.S., Lehigh University; M.S., University of Massachusetts, Amhurst; Ph.D., University of Colorado, Boulder
- Westie, Frank R.** (1983), Adjunct Professor of Sociology; B.S., Central Michigan University; Ph.D., Ohio State University
- Wetsel, W. David** (1989), Professor of French; B.A., University of Texas, Austin; M.A., University of Chicago; M.A., Ph.D., Brandeis University
- Wexler, Kathryn** (1992), Clinical Assistant Professor of Speech and Hearing Science; B.A., University of Michigan; M.S., Tulane University
- Wheatley, John C.** (1983), Senior Research Professional of Physics and Astronomy; B.S., Arizona State University
- Wheeler, Jacqueline** (1994), Senior Lecturer of English; B.S., M.A., Northern Arizona University; Ph.D., Arizona State University
- Wheeler, Michael D.** (1975), Senior Research Professional of Chemistry and Biochemistry; B.S., University of Wisconsin, Madison
- Whiffen, Marcus** (1960), Professor Emeritus of Architecture; B.A., M.A., University of Cambridge (United Kingdom)
- Whitaker, Matthew** (2001), Assistant Professor of History; B.A., M.A., Arizona State University; Ph.D., Michigan State University
- Whitam, Frederick L.** (1966), Professor Emeritus of Sociology; B.A., Millsaps College; A.M., Ph.D., Indiana University, Bloomington
- White, Barbara G.** (1990), Clinical Associate Professor of Nursing; B.S., M.S., Virginia Commonwealth University
- White, Harold C.** (1966), Professor Emeritus of Management; B.S., M.S., University of Oregon; Ph.D., University of Florida
- White, James J.** (1991), Senior Lecturer of Chemistry and Biochemistry; B.A., Idaho State University; M.S., Ph.D., University of Arizona
- White, James R.** (1981), Professor of Art; B.F.A., M.F.A., Ohio University
- White, Joann** (1997), Faculty Associate of Design; B.S., Northwestern University
- White, John P.** (1963), Professor Emeritus of Political Science; A.B., University of Cincinnati; A.M., Ph.D., University of Chicago
- White, Michael J.** (1974), Professor of Philosophy; B.A., Arizona State University; M.A., Ph.D., University of California, San Diego
- White, Patricia D.** (1999), Professor of Law; Dean, College of Law; B.A., M.A., J.D., University of Michigan
- Whitecotton, Stacey** (1997), Associate Professor of Accountancy and Information Management; B.A., Texas Tech University; Master of Accountancy, Ph.D., University of Oklahoma
- Whitehurst, Harry B.** (1958), Professor Emeritus of Chemistry and Biochemistry; B.A., M.A., Ph.D., Rice University
- Wie, Bong** (1989), Professor of Engineering; B.S., Seoul National University (South Korea); M.S., Ph.D., Stanford University
- Wiesel, Avi** (1995), Associate Professor of Construction; B.Sc.C.E., Polytechnic Institute of Timisoara (Romania); M.Sc.C.E., Ph.D., Technion-Israel Institute of Technology (Israel)
- Wigal, Kathy D.** (2000), Lecturer of Accountancy and Information Management; B.S., Arizona State University; M.B.A., M.Ed., Ed.D., Northern Arizona University
- Wiggins, Harry B.** (1987), Senior Lecturer Emeritus of Supply Chain Management; B.S., U.S. Merchant Marine Academy; B.S., University of Vermont; M.B.A., Harvard University
- Wilcox, M. Jeanne** (1990), Professor of Speech and Hearing Science; B.A., Kansas State; M.A., Ph.D., Memphis State University
- Wiley, Terrence G.** (2000), Professor of Educational Leadership and Policy Studies; Director, Division of Educational Leadership and Policy Studies; Academic Program Coordinator, Education Policy Studies; B.A., M.A., California State University, Long Beach; Ph.D., University of Southern California
- Wilkins, Barry J.** (1992), Senior Research Professional, Center for Solid State Science; B.A., Columbia Union College; M.Sc., Rutgers University
- Wilkinson, Christine K.** (1970), Associate Professor of Educational Leadership and Policy Studies; Vice President, Student Affairs; B.A., Arizona State University; M.A., University of California, Berkeley; Ph.D., Arizona State University
- Wilkinson, Joseph W.** (1964), Professor Emeritus of Accountancy and Information Management; B.S., Carnegie Institute of Technology; M.B.A., Stanford University; D.B.A., University of Oregon
- Williams, Carol E.** (1984), Academic Associate, Division of Undergraduate Academic Services; Coordinator, Campus Match and Supplemental Instruction; B.A., Trinity University, San Antonio; M.A., Arizona State University
- Williams, David P. III** (1978), Instructor of Sociology; B.A., B.S., M.A., University of Pennsylvania; Ph.D., Arizona State University
- Williams, Donald, SFC** (1999), Instructor of Military Science
- Williams, Frank G.** (1975), Professor Emeritus of Health Administration and Policy; B.S., M.A., Oregon State University; M.A., Ph.D., University of Iowa
- Williams, Jenny L.** (1967), Associate Librarian, Technical Services Department; B.A., M.L.S., Indiana University
- Williams, Peter** (1981), Professor of Chemistry and Biochemistry; B.S., Ph.D., University of London (United Kingdom)
- Williams, Philip F.C.** (1986), Professor of Chinese; B.A., University of Arkansas; M.A., Ph.D., University of California, Los Angeles
- Williams, Robert C.** (1978), Professor of Anthropology; B.A., M.A., University of Cambridge (United Kingdom); B.A., M.A., Ph.D., University of Michigan
- Williams, Stanley N.** (1991), Professor of Geological Sciences; B.S., Beloit College; M.A., Ph.D., Dartmouth College
- Williamson, Madeline J.** (1976), Professor of Music; B.A., Ohio Wesleyan University; M.M., Western Michigan University; Ph.D., Arizona State University
- Willis, Wayne T.** (1989), Associate Professor of Exercise Science and Physical Education; A.B., University of California, Berkeley; M.A., San Francisco State University; Ph.D., University of California, Berkeley

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

- Wills, J. Robert** (1994), Professor of Theatre; Dean, Herberger College of Fine Arts; B.A., College of Wooster; M.A., University of Illinois; Ph.D., Case Western Reserve University
- Wilson, Angela Cavender** (2000), Assistant Professor of History; B.A., University of Minnesota, Minneapolis; M.A., Ph.D., Cornell University
- Wilson, Gail Eugene** (1972), Associate Professor of Music; B.S., Ohio State University; M.M., Arizona State University
- Wilson, Gloria N.** (1961), Professor Emerita of Educational Media and Computers; B.A., Montclair State College; M.A., Ed.D., Columbia University
- Wilson, Jeffrey R.** (1985), Associate Professor of Statistics; B.A., University of the West Indies (Trinidad and Tobago); M.S., Ph.D., Iowa State University
- Wilson, Lorna A.** (1968), Professor Emerita of French; B.Ed., University of Saskatchewan (Canada); M.A., Arizona State University
- Wilson, Patricia M.** (1987), Associate Professor of Family and Human Development; B.S., M.Ed., Iowa State University; Ph.D., Oklahoma State University
- Wilson-Rawls, N. Jeanne** (1997), Assistant Professor of Biology; B.S., McMaster University (Canada); Ph.D., Saint Louis University
- Wilt, Glenn A. Jr.** (1963), Professor Emeritus of Finance; A.B., Occidental College; M.B.A., Miami University; Ph.D., University of Michigan; C.F.A.
- Windhorst, Rogier A.** (1987), Professor of Physics and Astronomy; B.Sc., M.Sc., Ph.D., University of Leiden (Netherlands)
- Winer, Laurence H.** (1983), Professor of Law; B.A., M.A., Ph.D., Boston University; J.D., Yale University
- Winkelman, Michael** (1988), Senior Lecturer of Anthropology; B.A., Rice University; Ph.D., University of California, Irvine
- Winkelman, Richard D.** (1965), Associate Professor of Economics; B.A., Southern Illinois University; M.A., Ph.D., University of Illinois
- Wintergalen, Barbara A.** (1992), Professor Emerita of Nursing; B.S.N., Loretto Heights College; M.S., Arizona State University
- Wirtz, Dorothy** (1959), Professor Emerita of French; B.A., University of Iowa; M.A., Ph.D., University of Wisconsin
- Wiseman, Douglas E.** (1976), Professor Emeritus of Curriculum and Instruction; B.S., M.A., Eastern Michigan University; Ph.D., University of Illinois
- Witczak, Matthew W.** (1999), Professor of Civil and Environmental Engineering; B.S.C.E., M.S.C.E., Ph.D., Purdue University
- Witt, Tom** (1975), Associate Professor of Design; B.A., M.A., M.F.A., University of California, Los Angeles
- Wixted, Jane** (2000), Faculty Associate of Nursing; B.S.N., Arizona State University; M.S.N., Case Western Reserve University
- Wixted, J. Timothy** (1978), Professor of Asian Languages; B.A., University of Toronto (Canada); A.M., Stanford University; D.Phil., University of Oxford (United Kingdom)
- Wochner, Raymond E.** (1952), Professor Emeritus of Education; B.S., York College; M.A., University of Nebraska, Lincoln; Ph.D., University of Wyoming
- Wojciechowski, Martin F.** (2001), Assistant Professor of Plant Biology; B.S., Northern Michigan University; Ph.D., University of Northern Colorado
- Wolchik, Sharlene** (1980), Professor of Psychology; B.A., Vassar College; M.S., Ph.D., Rutgers, The State University of New Jersey
- Wolf, Donald J.** (1969), Professor Emeritus of Political Science; B.A., M.A., Gonzaga University; S.T.M., University of Santa Clara; Ph.D., Georgetown University
- Wolf, George H.** (1986), Associate Professor of Chemistry and Biochemistry; B.A., University of California, San Diego; M.S., Ph.D., University of California, Berkeley
- Wolf, Robert** (1985), Professor Emeritus of Design; Director, School of Design; B.S., Southern Illinois University, Carbondale; M.A., University of Missouri; Certificate, Konstindustriskulan (Sweden)
- Wolf, W. Shapard Jr.** (1983), Associate Research Administrator, Sociology; Director, Survey Research Laboratory, Sociology; B.F.A., Florida State University; M.Ed., University of Georgia
- Wolfe, Philip M.** (1988), Professor of Industrial Engineering; B.S., University of Missouri; M.S.E., Ph.D., Arizona State University
- Wolffthal, Diane** (1995), Associate Professor of Art; Assistant Professor of Anthropology; B.A., M.A., City University of New York; Ph.D., Institute of Fine Arts, New York University
- Wollam, Owen A.** (1964), Professor Emeritus of French; B.A., M.A., Montana State University; Ph.D., University of Washington
- Wong, Elizabeth** (1996), Lecturer of Japanese; B.A., William Smith College; M.A., Washington University, St. Louis; Ph.D., Stanford University
- Wong, Timothy C.** (1995), Professor of Chinese; Director, Center for Asian Studies; B.A., Saint Mary's College; M.A., University of Hawaii; Ph.D., Stanford University
- Wood, Byard D.** (1970), Professor Emeritus of Mechanical and Aerospace Engineering; B.S.M.E., M.S.M.E., Utah State University; Ph.D., University of Minnesota, Twin Cities
- Wood, Steven D.** (1975), Professor Emeritus of Marketing; B.S., M.A., California State University, San Diego; Ph.D., University of Wisconsin, Madison
- Woodbury, Neal W.** (1987), Professor of Chemistry and Biochemistry; B.S., University of California, Davis; Ph.D., University of Washington
- Woodfill, Marvin C.** (1966), Professor Emeritus of Computer Science and Engineering; B.S., M.S., Ph.D., Iowa State University
- Wooding, Robert R.** (1971), Professor Emeritus of Construction; B.S., United States Naval Academy; B.C.E., M.C.E., Rensselaer Polytechnic Institute
- Woodley, Ann E.** (2000), Professor of Law; Director, Lodestar Mediation Clinic; B.A., University of Arizona; J.D., Arizona State University
- Woodman, Natalie J.** (1969), Professor Emerita of Social Work; B.A., New York University; M.S.S., Smith College
- Woods, Roosevelt Jr.** (1965), Professor Emeritus of Art; B.S., M.A., Arizona State University
- Woodson, Stephani E.** (2000), Assistant Professor of Theatre; B.F.A., M.A., University of Texas, Austin; Ph.D., Arizona State University
- Woodward, Mark R.** (1985), Associate Professor of Religious Studies; B.A., M.A., Ph.D., University of Illinois
- Woolf, Charles M.** (1961–63; 1964), Professor Emeritus of Biology; Dean Emeritus, College of Liberal Arts and Sciences and Graduate College; B.S., M.S., University of Utah; Ph.D., University of California, Berkeley
- Wooten, William W.** (1959), Professor Emeritus of History; B.A., University of Chicago; M.A., University of Iowa; Ph.D., University of Minnesota, Twin Cities

Wootton, Richard T. (1964), Professor Emeritus of Education; B.S., M.S., Ed.D., University of Utah

Wosinski, Marek (1995), Senior Lecturer of Psychology; B.A., M.A., Ph.D., University of Warsaw (Poland)

Wotring, Roxena A. (1994), Clinical Assistant Professor of Nursing; B.S.N., M.S., Arizona State University

Wright, David (1981), Associate Research Professional, Center for Solid State Science; B.S., Arizona State University

Wright, Johnson Kent (1994), Associate Professor of Interdisciplinary Humanities; Director, Graduate Studies; B.A., Kalamazoo College; M.A., Ph.D., University of Chicago

Wright, M. Lin (1973), Professor Emerita of Theatre; B.A., M.A., Ph.D., University of Minnesota, Twin Cities

Wu, Ai-Hwa (1964), Librarian Emerita; B.A., National Taiwan University (Taiwan); M.L.S., University of Washington

Wu, Jianguo (1995), Associate Professor of Plant Biology; B.S., University of Inner Mongolia (China); M.S., Ph.D., Miami University

Wu, Teresa (2001), Assistant Professor of Industrial Engineering; B.S., M.S., Beijing University of Aeronautics and Astronautics (China); Ph.D., University of Iowa

Wulk, Ned W. (1957), Professor Emeritus of Physical Education; B.S., Wisconsin State University; M.Ed., Xavier University

Wurzburger, Marilyn J. (1960), Librarian; Head, Special Collections; B.A., MacMurray College

Wurzell, Carol A. (1965), Professor Emerita of Nursing; B.S., California State College, Chico; M.S., University of Maryland, College Park

Wyckoff, Susan (1979), Professor of Physics and Astronomy; B.A., Mount Holyoke College; Ph.D., Case Western Reserve University

Wyndelts, Robert W. (1974), Professor of Accountancy and Information Management; B.B.A., M.P.A., Georgia State University; Ph.D., University of Georgia; C.P.A., Arizona, Georgia

Wytko, Joseph R. (1975), Professor of Music; B.M.E., West Virginia University; M.M., D.M., Northwestern University

X

Xu, Jun-Ping (1991), Assistant Research Professor, Cancer Research Institute; B.S., Shanghai College of Traditional Chinese Medicine (China); Ph.D., Tokyo College of Pharmacy (Japan)

Xue, Guoliang (2001), Associate Professor of Computer Science and Engineering; B.S., M.S., Qufu Teachers University (China); Ph.D., University of Minnesota, Minneapolis

Y

Yabes, Ruth Ammerman (1990), Associate Professor of Planning and Landscape Architecture; B.S., B.A., University of California, Davis; M.C.P., University of Pennsylvania; Ph.D., Cornell University

Yaghi, Omar M. (1992), Adjunct Professor of Chemistry and Biochemistry; B.S., State University of New York, Albany; Ph.D., University of Illinois

Yamaguchi, Gary T. (1989), Associate Professor of Bioengineering; A.B., Occidental College; B.S., California Institute of Technology; S.M.M.E., Massachusetts Institute of Technology; Ph.D., Stanford University

Yamamori, Tetsumao (1989), Adjunct Professor of Sociology; B.A., Northwest Christian College; B.D., Texas Christian University; Ph.D., Duke University

Yancy, Margaret Lee (1997), Faculty Associate of Nursing; B.S.N., M.S., Arizona State University

Yao, Lun-Shin (1981), Professor of Engineering; B.S.E., Cheng Kung University; M.S., University of Texas; Ph.D., University of California, Berkeley

Yao, Winberta M. (1975), Librarian Emerita; B.A., University of California, Berkeley; M.S., Columbia University

Yates, Ann M. (1978), Research Professional Emerita of Chemistry and Biochemistry; B.S., Saint Lawrence University; Ph.D., Arizona State University

Yau, Stephen S. (1994), Professor of Computer Science and Engineering; B.S., National Taiwan University (Taiwan); M.S., Ph.D., University of Illinois, Urbana-Champaign

Yazdi, Navid (1998), Assistant Professor of Electrical Engineering; B.Sc., University of Tehran (Iran); M.A.Sc., University of Windsor (Canada); Ph.D., University of Michigan, Ann Arbor

Ye, Nong (1998), Associate Professor of Industrial Engineering; B.S., Peking University (China); M.S.E., Chinese Academy of Sciences (China); Ph.D., Purdue University

Yeater, James W. (1958), Professor Emeritus of Theatre; B.A., Baker University; M.A., University of Washington; Ph.D., University of Illinois

Yellow Bird, Michael J. (2000), Associate Professor of Social Work; B.S.W., University of North Dakota; M.S.W., University of Wisconsin, Milwaukee; Ph.D., University of Wisconsin, Madison

Yen, Jerome (2002), Associate Professor of Accountancy and Information Management; B.S., M.E., Chung Yuan Christian University (Taiwan); Ph.D., University of Arizona

Yepez, Eleanor (1984), Academic Professional of Social Work; B.A., Michigan State University; M.A., Western Michigan University; M.S.W., University of Michigan

Yoshioka, Carlton F. (1988), Professor of Recreation Management and Tourism; B.A., University of California, Santa Barbara; M.A., California State University, Chico; Ph.D., University of Oregon

Youn, Kyu Ho (1991), Professor of Journalism and Mass Communication; B.A., Konkuk University (South Korea); M.A., Ph.D., Southern Illinois University, Carbondale

Young, Bernard (1988), Professor of Art; B.F.A., Temple University; M.F.A., Ph.D., Cornell University

Young, David A. (2001), Professor of Plant Biology; Dean, College of Liberal Arts and Sciences; B.A., M.A., California State University, Fullerton; Ph.D., Claremont Graduate University

Young, Dennis L. (1975), Professor of Mathematics and Statistics; B.S., Saint Louis University; M.S., Ph.D., Purdue University

Young, Hewitt H. (1967), Professor Emeritus of Industrial Engineering; B.S.M.E., M.S.I.E., Case Institute of Technology; Ph.D., Arizona State University

Young, Joseph E. (1979), Professor Emeritus of Art; B.A., California State University at Los Angeles; M.A., University of California, Los Angeles

Young, Josephine Peyton (1998), Assistant Professor of Curriculum and Instruction; M.A., University of West Florida; Ph.D., University of Georgia

Young, Otis E. Jr. (1963), Professor Emeritus of History; A.B., A.M., Ph.D., Indiana University

Youngblood, Robert L. (1973), Professor of Political Science; Chair, Department of Political Science; B.A., Willamette University; M.A., University of Hawaii, Manoa; Ph.D., University of Michigan

ASU MAIN FACULTY AND ACADEMIC PROFESSIONALS

Z

Zaffran, Annie (1997), Academic Associate of Interdisciplinary Humanities; B.S., M.S., University of Wisconsin

Zandieh, Michelle (1997), Assistant Professor of Mathematics and Statistics; B.A., Northwestern University; M.S., Ph.D., Oregon State University

Zaslow, Bertram (1956), Professor Emeritus of Chemistry and Biochemistry; B.A., Cornell University; M.S., University of Minnesota, Twin Cities; Ph.D., Iowa State University

Zatz, Marjorie S. (1982), Professor of Justice Studies; Associate Dean, Student Support Services, Graduate College; B.A., University of Massachusetts, Amherst; M.A., Ph.D., Indiana University, Bloomington

Zautra, Alex (1976), Professor of Psychology; Director, Clinical Program in Psychology; B.A., Antioch College; M.S., Ph.D., University of Utah

Zehnder, Joseph A. (2000), Professor of Geography; B.S., M.S., University of Illinois, Chicago; Ph.D., University of Chicago

Zeitlin, Marilyn A. (1992), Director, ASU Art Museum; A.B., M.A., Harvard University

Zell, Ann (2000), Academic Associate of Electrical Engineering

Zellmer, Linda R. (1997), Assistant Librarian, Map Collection; B.S., University of Wisconsin, Oshkosh; M.A., College of William and Mary; M.L.S., University of Wisconsin, Milwaukee

Zhang, Junshan (2000), Assistant Professor of Electrical Engineering; B.E., Huazong University of Science and Technology (China); M.S., University of Georgia; Ph.D., Purdue University

Zhang, Young-Hang (1997), Professor of Electrical Engineering; Nanjing Normal University (China); M.Sc., Institute of Semiconductors, Chinese Science and Technology University (China); Ph.D., University of Stuttgart (Germany)

Zhou, Lin (2001), Lincoln Professor of Ethics; B.S., Fudan University (China); Ph.D., Princeton University

Zhu, Anmin (1997), Senior Lecturer of Mathematics and Statistics; B.S., Anhui University (China); M.S., Milin University (China); Ph.D., Arizona State University

Zhu, Han (1997), Assistant Professor of Civil and Environmental Engineering; B.S., M.S., Fudan University (China); Ph.D., Northwestern University

Zhu, Yingxian (1996), Lecturer of Mathematics and Statistics; B.S., Anhui University (China); M.S., Dalian University of Science and Technology (China); Ph.D., Arizona State University

Zimiles, Herbert (1988), Professor of Educational Psychology; B.A., New York University; Ph.D., University of Rochester

Zimmer, Carl R. (1959), Professor Emeritus of Engineering; B.S.E.E., Cornell University; M.S.E.E., Ph.D., Syracuse University

Zucker, Stanley H. (1975), Professor of Curriculum and Instruction; B.A., State University of New York, Stony Brook; M.S., Hofstra University; Ph.D., University of Missouri, Columbia

Zunkel, Gretchen M. (1998), Assistant Professor of Nursing; B.S.N., University of Colorado; M.N., University of California, Los Angeles; M.N., Ph.D., University of Washington

Zuo, Yijun (1998), Assistant Professor of Mathematics and Statistics; B.S., Zhenjiang Teachers University (China); M.S., Lanzhou University (China); M.S., Ph.D., University of Texas, Dallas

Zwiebel, Imre (1979), Professor Emeritus of Chemical Engineering; B.S., University of Michigan; M.S., Ph.D., Yale University

Zygas, K. Paul (1984), Associate Professor of Architecture; A.B., M.Arch., Harvard University; Ph.D., Cornell University



A tour boat on Tempe Town Lake passes under the Mill Avenue bridge.

Tim Trumble photo

Administrative Personnel

Arizona Board of Regents

Executive Director	Linda Blessing
Governor of Arizona	Jane Dee Hull
Superintendent of Public Instruction	Jaime Molera
Student Regent (voting), appointed to June 2002	Myrina Robinson
Student Regent (nonvoting), appointed to June 2003	Matthew Meaker
Regent, appointed to January 2004	Kay McKay
Regent, appointed to January 2004	Donald J. Ulrich
Regent, appointed to January 2006	Chris Herstam
Regent, appointed to January 2006	Jack Jewett
Regent, appointed to January 2008	Christina Palacios
Regent, appointed to January 2008	Gary Stuart
Regent, appointed to January 2010	Fred T. Boice
Regent, appointed to January 2010	Robert B. Bulla
Counsel to the Board	Joel Sideman

President's Office

President	Lattie F. Coor
Senior Vice President	Gary S. Krahenbuhl
Senior Executive Assistant to the President	Ben R. Forsyth
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Dean, College of Extended Education	Bette F. DeGraw
ICA Faculty Representative	Jerry L. Kingston

ASU Main

Academic Affairs

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Director, Fiscal Planning and Analysis	Alan Carroll
Director, Institutional Analysis	Joseph Matt
Director, International Programs	William G. Davey

ADMINISTRATIVE PERSONNEL

Director, Strategic Planning and Policy Analysis Douglas Vinzant
Director, Summer Sessions Carol Switzer
Director, University Evaluation Patricia Green
Executive Director, Division of Undergraduate Academic Services William S. Johnson

Barrett Honors College

Dean, the Barrett Honors College Ted Humphrey
Associate Dean Janet M. Burke
Assistant Dean Diane A. Facinelli
Director, Office of National Scholarship Advisement John M. Lynch

College of Architecture and Environmental Design

Dean, College of Architecture and Environmental Design *To Be Appointed*
Associate Dean, College of Architecture and Environmental Design Lorraine M. Cutler
Associate Dean, College of Architecture and Environmental Design Mary Kihl
Director, Ph.D. Program in Environmental Planning in Design David K. Pijawka
Director, School of Architecture Ron McCoy
Director, School of Design Jacques Giard
Director, School of Planning and Landscape Architecture *To Be Appointed*
Director, Herberger Center for Design Excellence Mary Kihl
Coordinator, Joint Urban Design Program John McIntosh
Coordinator, Joint Urban Design Studio Michael Dollin

College of Business

Dean, College of Business Larry E. Penley
Associate Dean, Executive and Professional Programs Lee R. McPheters
Associate Dean, Graduate Programs Dennis L. Hoffman
Associate Dean, Undergraduate Programs Philip R. Regier
Assistant Dean, Graduate Programs Carl Harris
Assistant Dean, Undergraduate Programs Kay Faris
Director, School of Accountancy and Information Management Philip M.J. Reckers
Chair, Department of Economics Arthur E. Blakemore
Chair, Department of Finance Herbert M. Kaufman
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Chair, Department of Management William H. Glick
Chair, Department of Marketing Michael P. Mokwa
Chair, Department of Supply Chain Management Joseph R. Carter
Director, Center for Advanced Purchasing Studies Phillip L. Carter
Director, Center for the Advancement of Small Business Mary Lou Bessette
Director, Arizona Real Estate Center Jay Q. Butler
Director, Center for Business Research Timothy D. Hogan
Director, Center for Services Leadership Stephen W. Brown
Director, Bank One Economic Outlook Center Lee R. McPheters
Director, L. William Seidman Research Institute Timothy D. Hogan

College of Education

Dean, College of Education Eugene E. Garcia
Associate Dean, Teacher Education Carlos Julio Ovando
Interim Associate Dean, Personnel and Academic Programs Terence Tracey
Interim Associate Dean for Research James Arthur Middleton
Assistant Dean, Office of Student Services Inta "Maggie" Tolan
Director, Division of Curriculum and Instruction Carlos Julio Ovando
Associate Director of Research and Graduate Education, Division of Curriculum and Instruction Robert B. Rutherford Jr.
Associate Director for Professional Development and Induction, Division of Curriculum and Instruction Billie J. Enz
Associate Director of Initial Teacher Certification, Division of Curriculum and Instruction Elaine Surbeck
Director, Division of Educational Leadership and Policy Studies Terrence G. Wiley
Director, Education Policy Studies Laboratory Alex Molnar
Academic Program Coordinator, DELTA Doctorate Kay Hartwell Hunnicutt

ADMINISTRATIVE PERSONNEL

Academic Program Coordinator, Educational Administration and Supervision, On-Campus Programs	M. Scott Norton
Academic Program Coordinator, Education Policy Studies	Gary Hanson
Academic Program Coordinator, Education Policy Studies	Terrence G. Wiley
Academic Program Coordinator, Social and Philosophical Foundations	Eric Margolis
Academic Program Coordinator, Higher and Postsecondary Education	Gary Hanson
Internship Coordinator, Educational Administration and Supervision	Donna J. Macey
Recruitment and External Program Planning Coordinator, Educational Leadership and Supervision	Timothy J. Dyer
Director, Division of Psychology in Education	Elsie G.J. Moore
Training Director and Academic Program Leader, Counseling Psychology	Terence Tracey
Academic Program Leader, Counselor Education	Terence Tracey
Academic Program Leader, Educational Technology	Thomas A. Brush
Academic Program Leader, Educational Psychology	Edward A. Nelsen
Training Director, School Psychology	Mary E. Stafford
Director, Southwest Center for Education Equity and Language Diversity	Josué M. González
Director, Bureau of Educational Research and Services	Margaret A. Mangini
Interim Director, Center for Indian Education	Denis Viri
Director, Counselor Training Center	Judith Homer
Director, Office of Professional Field Experiences	Karen Kimerer

College of Engineering and Applied Sciences

Dean, College of Engineering and Applied Sciences	Peter E. Crouch
Associate Dean, Academic Affairs	Ronald J. Roedel
Associate Dean, Planning and Administration	Ben M. Huey
Associate Dean, Research	Gregory B. Raupp
Associate Dean, Student Affairs and Special Programs	Mary R. Anderson-Rowland
Director, Del E. Webb School of Construction	William W. Badger
Director, School of Engineering	Ronald J. Roedel
Chair, Department of Bioengineering	Eric J. Guilbeau
Chair, Department of Chemical and Materials Engineering	Subhash Mahajan
Chair, Department of Civil and Environmental Engineering	Sandra L. Houston
Chair, Department of Computer Science and Engineering	Charles J. Colbourn
Chair, Department of Electrical Engineering	Stephen M. Goodnick
Chair, Department of Industrial Engineering	Gary L. Hogg
Chair, Department of Mechanical and Aerospace Engineering	Robert E. Peck
Director, Engineering Core and Special Studies	Ronald J. Roedel
Director, Center for Research on Education in Science, Mathematics, Engineering, and Technology	Donovan L. Evans
Codirector, Center for Low Power Electronics	Dieter K. Schroder
Director, Center for Professional Development and Distance Education	<i>To Be Appointed</i>
Director, Center for Solid State Electronics Research	Michael Kozicki
Director, Center for System Science and Engineering Research	Frank C. Hoppensteadt
Director, Institute for Manufacturing Enterprise Systems	Thomas E. Callarman
Interim Director, Telecommunications Research Center	Sayfe Kiaei

College of Extended Education

See [“ASU Extended Campus Administrative Personnel,” page 713.](#)

College of Law

Dean, College of Law	Patricia D. White
Associate Dean for Academic Affairs and Research	Patrick Brennan
Associate Dean and Director, Ross–Blakley Law Library	Victoria K. Trotta
Assistant Dean, Administrative and Business Services	Rhonda Sandler
Assistant Dean and Director of Admissions	Brenda Brock
Assistant Dean, Student Services	Leslie Mamaghani
Development Officer	Susan Mathew
Director, Career Planning	Iлона DeRemer
Director, Communications	Jodi Weisberg
Director, Center for the Study of Law, Science, and Technology	Andrew Askland

ADMINISTRATIVE PERSONNEL

Director, Clinical Programs	Catherine O'Grady
Director, Development	Tom Stevick
Director, Legal Research and Writing and Academic Success Program	Judith M. Stinson
Director, Student Development and Financial Aid	Michael Bossone
W.P. Carey Director of Placement	Iлона DeRemer
Executive Director, Indian Legal Program	Rebecca A. Tsosie
Executive Director, Center for the Study of Law, Science, and Technology	Gary E. Marchant
Director, Indian Legal Program	Kathlene Rosier

College of Liberal Arts and Sciences

Dean, College of Liberal Arts and Sciences	David A. Young
Associate Dean	Milton R. Sommerfeld
Associate Dean, Academic Programs	<i>To Be Appointed</i>
Associate Dean, Administration and Personnel	Nancy A. Gutierrez
Chair, Department of Aerospace Studies	Col. Ronald Scott Jr.
Chair, Department of Anthropology	John K. Chance
Chair, Department of Biology	James P. Collins
Chair, Department of Chemistry and Biochemistry	J. Devens Gust
Chair, Department of Chicana and Chicano Studies	Cordelia Candelaria
Chair, Department of English	<i>To Be Appointed</i>
Chair, Department of Exercise Science and Physical Education	Philip E. Martin
Chair, Department of Family and Human Development	Richard A. Fabes
Chair, Department of Geography	Breandán Ó hUallacháin
Chair, Department of Geological Sciences	Simon M. Peacock
Chair, Department of History	Noel J. Stowe
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Acting Chair, Department of Psychology	Morris Okun
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Chair, Department of Sociology	Verna M. Keith
Chair, Department of Speech and Hearing Science	David Ingram
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Director, Center for Asian Studies	Timothy Wong
Director, Cancer Research Institute	G. Robert Pettit
Director, Center for the Study of Early Events in Photosynthesis	Andrew N. Webber
Director, Climatology Laboratory	Robert C. Balling
Director, Hispanic Research Center	Gary D. Keller
Director, Interdisciplinary Committee for Molecular and Cellular Biology	Robert W. McGaughey
Director, Institute of Human Origins	Donald C. Johanson
Director, Latin American Studies Center	Tod D. Swanson
Director, Arizona Center for Medieval and Renaissance Studies	Robert E. Bjork
Director, Center for Meteorite Studies	Carleton B. Moore
Director, Center for Solid State Science	David J. Smith
Director, Program for Southeast Asian Studies	Karen L. Adams
Director, Women's Studies Program	Kathleen J. Ferraro
Interim Director, Interdisciplinary Humanities Program	Mary L. Rothschild

College of Nursing

Dean, College of Nursing	Barbara A. Durand
Associate Dean for Graduate Programs and Research	Pamela Kidd
Associate Dean for Undergraduate Programs and Extended Education	Mary Killeen

ADMINISTRATIVE PERSONNEL

Director, Continuing and Extended Education	David Hrabe
Director, Student Services	Jean Craig Stengel
Chair, Division of Adult Health/Parent-Child Nursing	Frances Thurber
Chair, Division of Community Health/Psychosocial Nursing Systems	Betty J. Gale
Manager, Community Health Services Clinic	Elizabeth Holman

College of Public Programs

Dean, College of Public Programs	Anne L. Schneider
Associate Dean, College of Public Programs	Frederick C. Corey
Assistant Dean, College of Public Programs	Kathryn Gundersen
Director, Student Services	Cheryl Herrera
Director, Hugh Downs School of Human Communication	Jess K. Alberts
Director, Walter Cronkite School of Journalism and Mass Communication	Joe S. Foote
Director, School of Justice Studies	Doris Marie Provine
Director, School of Public Affairs	Jeffrey Chapman
Director, School of Social Work	Leslie Leighninger
Chair, Department of Recreation Management and Tourism	Randy J. Virden
Director, Advanced Public Executive Program	Peggy O'Sullivan-Kachel
Director, American Indian Studies Program	Carol C. Lujan
Director, Asian Pacific American Studies Program	Thomas K. Nakayama
Director, Morrison Institute for Public Policy	Robert Melnick
Director, Center for Nonprofit Leadership and Management	Robert F. Ashcraft
Director, Center for Urban Inquiry	Peg Bortner

Division of Undergraduate Academic Services

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Associate Director, Education Services	Gay W. Brack
Associate Director, Advising Services	Stephanie Jacobson
Director, Student Success Programs	Stephen Rippon
Director, Academic Advising Services	Casey Self
Director, Bachelor of Interdisciplinary Studies	Christina Stage
Senior Program Coordinator, General Studies	Phyllis Lucie
Senior Business Manager	Kathleen Renshaw

Graduate College

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Associate Dean, Student Support Services	Marjorie S. Zatz
Associate Dean, Academic Programs	Maria T. Allison
Assistant Dean, Academic Programs	Sarah B. Lindquist
Assistant Dean, Administrative Services and Information Systems	Kent D. Blaylock

Herberger College of Fine Arts

Dean, Herberger College of Fine Arts	J. Robert Wills
Interim Director, School of Art	Jon W. Sharer
Chair, Department of Dance	Claudia Murphy
Director, School of Music	Wayne A. Bailey
Interim Chair, Department of Theatre	Johnny Saldaña
Director, Communications	Stacey Shaw
Director, Community Programs	Melanie Ohm
Director, Institute for Studies in the Arts	Thanasis Rikakis
Director, Public Art	Dianne Cripe
Director, Student Academic Services	Gina Stephens
Director, ASU Art Museum	Marilyn A. Zeitlin

University Libraries

Dean, University Libraries	Sherrie Schmidt
Associate Dean, Continuous Improvement/Total Quality Service	<i>To Be Appointed</i>
Associate Dean, Library Services	Jane A. Conrow
Interim Associate Dean, Video Resources	Robert Follet

ADMINISTRATIVE PERSONNEL

Assistant Dean, Personnel	Kurt R. Murphy
Head, Access Services/Interlibrary Loan and Document Delivery	Ginny Sylvester
Head, Architecture and Environmental Design Library	Deborah H. Koshinsky
Head, Department of Archives and Manuscripts	Robert P. Spindler
Head, Government Documents/Map Collection	Rebecca S. Burke
Head, Library Instruction, Systems, and Technology (LIST)	Scott S. Herrington
Head, Music Library	Robert E. Follet
Head, Preservation	Lois I. Schneberger
Head, Special Collections	Marilyn J. Wurzburger
Team Leader, Noble Science Reference Services	Linda A. Shackle
Team Leader, Collection Development	Jeanne Richardson
Team Leader, Hayden Reference Services	Rosalinda DeFato
Team Management, Technical Services Department	Betsy J. Redman, Ronda L. Ridenour, and Rebecca S. Uhl

Administrative Services, ASU Main

Vice Provost, Administrative Services	Mernoy Harrison
Assistant Vice Provost, Administrative Services	LeEtta Overmyer
Senior Executive Assistant, Administrative Services	Sheila Stokes
Comptroller and Treasurer	Gerald E. Snyder
Associate Comptroller	Terri Deasey
Associate Comptroller	Marilyn Mulhollan
Associate Comptroller	Joanne Wamsley
Assistant Vice Provost, Facilities Management	Scott Cole
Director, Facilities Services	Dave Brixen
Director, Capital Program Management Group	Ted Cary
Director, Facilities Planning and Space Management	David Techau
Director, Risk Management	Robert Gomez
Acting Assistant Director, Administrative Services	Carrie McNamara-Segal
Assistant Director, Business Operations	Dennis Ederer
Assistant Director, Design and Construction Services	Vance Linden
Acting Assistant Director, Crafts Services	Polly Pinney
Assistant Director, Utilities and General Services	Fred Giles
Assistant Director, Custodial Services	Charles Simonette
Assistant Director, Environmental Affairs	Steve Hunter
Acting Assistant Director, Grounds Services	Scott Cisson
Campus Architect	Jason Eslamieh
Campus Planner	Rick Collins
Manager, Computing Services	Joe Metzger
Assistant Director, Engineering Services	Ray Tena
Assistant Vice Provost, Human Resources	<i>To Be Appointed</i>
Director, Human Resources Programs	Connie Wood
Assistant Director, Human Resources	Christine Cervantes
Assistant Director, Human Resources	Susan Madden
Director/Chief of Police, Public Safety	John Pickens
Assistant Chief of Police	Kay Gojkovich
Director, Parking and Transit	Linda Riegel
Executive Director, Purchasing and Business Services	Ray Jensen
Associate Director	John Riley
Assistant Director	Greg Rush
Assistant Director, Real Estate	Karen Honeycutt
Assistant Director, Document Production Services	Robert Lane
Assistant Director, ASU Stores Operations	Gina Webber
Director, ASU Bookstore	Val Ross
Director, Internal Audit and Management Services	Walter B. Silva

Institutional Advancement

Vice President for Institutional Advancement	Jack Pfister
Associate Vice President for Institutional Advancement	Steve Miller

ADMINISTRATIVE PERSONNEL

Assistant Vice President for Institutional Advancement Nancy Jordan
 Interim Assistant Vice President for Strategic Communications Nancy Neff
 Executive Director, Alumni Association Susan Clouse Dolbert
 Executive Director, Federal Relations Stuart Hadley
 Executive Director, Public Events Colleen Jennings-Roggensack
 Director, Development Lonnie L. Ostrom
 Director, Economic Development and Community Outreach Gail Howard
 Director, Federal and Community Relations Neil Giuliano
 Director, Media Relations Nancy Neff
 Director, Public Relations Wilma Mathews
 Director, State Relations Blake Anderson
 Director, Special Events Adelaida Severson
 General Manager, Television Station KAET Charles R. Allen

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Secretary	Bob Matthews

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Gene Drake	Greg Hancock	Bob Hobbs Sr.	Fred Homes
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Steve Loy	Nate Norris	Bill Post	Ed Robson
Max Schrimsher	Don Tapia	Gregg Tryhus	Steve Wood

Intercollegiate Athletics

Director, Athletics	Gene Smith
---------------------	------------

ASU Head Coaches

Baseball–Men	Pat Murphy
Basketball–Men	Rob Evans
Basketball–Women	Charli Turner Thorne
Cross Country–Men	Walt Drenth
Cross Country–Women	Walt Drenth
Diving–Men and Women	Mark Bradshaw
Football–Men	Dirk Koetter
Golf–Men	Randy Lein
Golf–Women	Mickey Yokoi
Gymnastics–Women	John Spini
Soccer–Women	Ray Leone
Softball–Women	Linda Wells
Swimming–Men	Michael Chasson
Swimming–Women	Michael Chasson
Tennis–Men	Lou Belken
Tennis–Women	Sheila McInerney
Track and Field–Men	Greg Kraft
Track and Field–Women	Greg Kraft
Volleyball–Women	Patti Snyder-Park
Wrestling–Men	Thom Ortiz

Research

Vice Provost for Research	Jonathan Fink
Associate Vice Provost for Research	Ronald Barr

ADMINISTRATIVE PERSONNEL

Assistant to the Vice Provost	Cynthia Ryan
Director, Fiscal and Business Services	Rich Fill
Executive Director/Strategic Initiatives	Patrick Burkhardt
Director, Office of Research and Sponsored Projects Administration	Randall Draper
Director, Office of Research Publications	Conrad Storad
Director, Center for Environmental Studies	Charles L. Redman
Director, Partnership for Research in Stereo Modeling Program (PRISM)	Anshuman Razdan
Director, Animal Care Facility	Tedd A. Brandon
Director, Southwest Center for Environmental Research and Policy	Anthony J. Brazel
Director, Radiation Safety Office	Kenneth L. Mossman
Director, Technology Collaborations and Licensing Office	Alan Poskanzer

Student Affairs

Vice President	Christine K. Wilkinson
Associate Vice President for Student Affairs and Dean, Student Development	Jim Rund
Assistant Vice President for Student Affairs and Dean, Student Life	Bob Soza
Director, Counseling and Consultation	Martha Dennis Christiansen
Manager of Student Affairs Computing Services	Michael Schaefer
Associate Dean, Student Development and Director, Memorial Union	Sally Ramage
Director, Arizona Prevention Resource Center	Gail Chadwick
Director, Career Services	Raymond I. Castillo
Director, Recreational Sports	Howard Taylor
Director, Residential Life and Assistant Dean, Student Development	Kevin Cook
Director, Student Financial Assistance	Diane Stemper
Director, Student Health and Wellness Center	Mary Rimza
Director, Student Media	<i>To Be Appointed</i>
Director, Undergraduate Admissions	Tim Desch
Registrar	Lou Ann Denny

University Continuous Improvement

Project Administrator	Jacquie Gentry
Program Coordinator	Vicki Harmon
Human Resources Specialist Senior	Patrick Patterson

ASU East

See [“ASU East Administrative Personnel,” page 688.](#)

ASU Extended Campus

See [“ASU Extended Campus Administrative Personnel,” page 713.](#)

ASU West

See [“ASU West Administrative Personnel,” page 701.](#)

ASU East

www.east.asu.edu

Charles E. Backus, Ph.D., Campus CEO and Provost

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Arizona State University East, located 23 miles southeast of ASU Main, was established in 1996 at the former Williams Air Force Base. There, ASU East and its educational partners have created the Williams Campus—an academic community focused on meeting the needs of students, business, industry, and the larger community. The 600-acre campus offers a small residential college environment, with access to the amenities of a major metropolitan area and the resources of a major research university.

ASU East offers degree programs that help students develop knowledge and skills they need for success in their professional, civic, and personal lives in the 21st century. Sixteen baccalaureate degree programs, five master's degree programs, and two certificate programs can be completed at

ASU East, with additional programs in the planning stages. (See the [“Morrison School of Agribusiness and Resource Management Baccalaureate Degrees and Majors” table, page 628](#), the [“East College Baccalaureate Degrees and Majors” table, page 641](#), and the [“College of Technology and Applied Sciences Baccalaureate Degrees and Majors” table, page 656](#).)

The College of Technology and Applied Sciences offers a master's degree and a range of bachelor's programs in high demand areas of technology, the only programs of their kind in Arizona. The unique bachelor's and master's degrees in Agribusiness offered by the faculty in the Morrison School of Agribusiness and Resource Management lead to careers in one of the fastest growing sectors of global business. The Environmental Resources degrees offered through the Morrison School provide opportunities to study wilderness areas and urban habitats and how people's activities affect the regenerative ability of natural resources.

East College offers a range of supporting courses for all ASU East programs and bachelor's degrees with majors in Business Administration, Applied Psychology, Nutrition, Elementary Education, Multimedia Writing and Technical Communication, Exercise and Wellness, and Interdisciplinary Studies. Students who are uncertain of their major may start college at ASU East as East College/No Preference majors.

Although it is a young campus, ASU East has already developed significant student-centered innovations in higher education that have earned national recognition.

ASU East assumed leadership in Arizona in developing and offering the Bachelor of Applied Science (B.A.S.) degree, a program designed specifically as a career progression degree for students holding the Associate of Applied Science (A.A.S.) degree. The B.A.S. emphasizes management, leadership, and communication skills, along with additional technical course work.

ASU East has also developed an innovative academic partnership with Chandler-Gilbert Community College (CGCC). This partnership combines the strengths of the two institutions to provide ASU students with high quality education in a cost-effective way. CGCC provides lower-division general education and major prerequisite courses that are directly equivalent to ASU courses and transfer automatically. ASU East provides both lower- and upper-division courses in the major and upper-division general studies and general interest courses. Through the partnership, students at the Williams Campus can take all of the courses needed to graduate with an ASU baccalaureate degree, generally at some savings in tuition.

New facilities, new programs, and new opportunities are constantly emerging at ASU East. The campus is easily accessible via major interstate routes. See the [“ASU East](#)

Academic Advising at ASU East

Unit	Location	Telephone	Days	Hours ¹
Agribusiness and Resource Management, Morrison School of	CNTR 20	480/727-1585	Mon.–Fri.	8 A.M.–5 P.M.
Barrett Honors College ²	IRISH A 121	480/965-2359	Mon.–Fri.	8 A.M.–5 P.M.
East College	CNTR 92	480/727-1515	Mon.–Fri.	8 A.M.–5 P.M.
Elementary Education	COMM2 105	480/727-1454	Mon.–Fri.	8 A.M.–5 P.M.
Exercise and Wellness, Department of	CLRB 102	480/727-1945	Mon.–Fri.	8 A.M.–5 P.M.
Nutrition, Department of	HSC 1345	480/727-1728	Mon.–Fri.	8 A.M.–5 P.M.
Technology and Applied Sciences, College of	CNTR 10	480/727-1874	Mon.–Fri.	8 A.M.–5 P.M.

¹ Walk-ins are welcome; appointments are recommended.

² The Barrett Honors College is located at ASU Main.

[Map.” page 682.](#) For the latest information, call 480/727-EAST (3278) or access the Web site at www.east.asu.edu.

ACADEMIC ORGANIZATION AND ACCREDITATION

The chief executive and academic officer of ASU East is the provost. There are two colleges and one school at ASU East administered by deans. These academic units develop and implement the teaching, research, and service programs of the institution. Additional support for the academic mission of the campus is provided by Library Services and Information Technology, each administered by a director. See [“ASU East Faculty and Academic Professionals,” page 684](#), and [“Academic Organization,” page 8](#).

Accreditation

The North Central Association of Colleges and Schools accreditation of ASU Main includes ASU East. In addition, ASU East programs in Aeronautical Engineering Technology, Electronics Engineering Technology, and Manufacturing Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (TAC of ABET). For more information, call 410/347-7700 or write

TECHNOLOGY ACCREDITATION COMMISSION
OF THE ACCREDITATION BOARD FOR
ENGINEERING AND TECHNOLOGY INC
111 MARKET PLACE SUITE 1050
BALTIMORE MD 21202-7102

Both the professional flight and the air transportation management concentrations, in the Department of Aeronautical Management Technology, are fully accredited by the Council on Aviation Accreditation. For more information, call 334/844-2431, e-mail caa@auburn.edu, or write

COUNCIL ON AVIATION ACCREDITATION
3410 SKYWAY DRIVE
AUBURN AL 36830

ADMISSION

Nondegree Students. Nondegree students may take courses at ASU East according to the special provisions under [“Undergraduate Enrollment,” page 58](#).

Degree-Seeking Students. Degree-seeking students must meet the university admissions standards set by the Arizona Board of Regents (ABOR). Any student admitted to ASU may take courses at ASU East. To be admitted to an ASU East degree program, the student must meet undergraduate admissions requirements and the specific admission requirements of the ASU East program. A student who is admitted to an ASU East degree program is defined as an ASU East student.

For more admissions information and applications to ASU East degree programs, call 480/727-EAST (3278) or write

UNDERGRADUATE ADMISSIONS
ARIZONA STATE UNIVERSITY
PO BOX 870112
TEMPE AZ 85287-0112

TRANSFER CREDIT

Courses taken from Chandler-Gilbert Community College through the Partnership in Baccalaureate Education are automatically transferred to ASU East each semester. These courses and courses taken at other Arizona public community colleges transfer according to equivalencies established in the current Arizona Higher Education Course Equivalence Guide. (Transfer guides are available at www.asu.edu/provost/articulation.) The acceptability and applicability of courses transferred from other universities and community colleges is determined by ASU Main Undergraduate Admissions in consultation with the faculty or academic advisor of the student’s choice of major.

Transfer Among ASU Campuses

Degree-seeking students currently enrolled at either ASU Main or ASU West who want to relocate to an ASU East degree program should contact the OASIS at ASU East, the Office of the Registrar at ASU Main, or the Admissions and Records Office at ASU West for appropriate procedures. All credit earned at any ASU campus automatically transfers to ASU East. Students should consult with their ASU East major advisor to determine how this credit applies to their major and graduation requirements. Students should be aware that certain requirements (e.g., the minimum number

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

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of upper-division semester hours to graduate) may differ among campuses.

JOINT ADMISSION CONTINUOUS ENROLLMENT (JAC)

JAC 001 Joint Admission Continuous Enrollment. (0–12)

fall, spring, summer

For use by ASU East to track undergraduate students admitted to East Campus degree programs who are concurrently enrolled or solely enrolled in courses offered by Chandler-Gilbert Community College. May be repeated for credit.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

ADVISING

Students are encouraged to take advantage of the skill and knowledge of the advising professionals available to them in the academic units and to seek academic advising early.

For more information or to schedule an advising session, contact an academic advisor (see the [“Academic Advising at ASU East” table, page 623.](#))

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges, including those at ASU East to meet the instructional and informational needs of a diverse community.



Student Cindy Kolby (left) and Nutrition Professor Carol Johnston (right) study levels of glucose for diabetes tests.

Chris Lambrakis photo

The ASU Extended Campus goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies including television, the Internet, and Independent Learning. The Extended Campus also offers a variety of professional continuing education and community outreach programs.

For more information, see [“ASU Extended Campus,” page 703,](#) or access the Web site at www.asu.edu/xed.

CAMPUS AND STUDENT SERVICES

ASU East is a student-centered campus that offers many of the features of a small residential college in a rural area while providing access to the resources of a major research university and the amenities of a large metropolitan area. The campus includes excellent educational facilities: modern classrooms and laboratories, a 21st-century electronic library, and state-of-the-art computer equipment. Other amenities include a learning center, child care services, campus union, bookstore, copy center, and free parking. A shuttle service provides transportation between ASU East, Mesa Community College, and ASU Main. An additional shuttle is available for transportation from ASU Main to ASU West.

Enrollment Services—OASIS

The OASIS provides one-stop services for admission, financial aid, business services, and registration. Conveniently located in the Academic Center Building, students find personnel ready to assist them with registration processes, tuition payment, financial assistance information, student employment, ASU Sun Cards (photo IDs), and parking information.

Learning Center

In the Learning Center, undergraduate and graduate students can study, utilize computers for research and writing, and access tutoring services that support ASU East course work. Qualified undergraduate and graduate students provide tutoring by appointment or on a drop-in basis. Writing assistance is offered both face-to-face and online through the Learning Center Web site. Other services include workshops on writing, presentation and study skills, and computer-assisted instruction.

Located in the Academic Center Building, the Learning Center offers a convenient and quiet study location for individuals and groups. The center encourages leisure reading by offering paperback books to borrow and comfortable furnishings in which to relax. All Learning Center services are free to currently enrolled students. For more information or to schedule a tutoring appointment, call 480/727-1452, or visit the Web site at www.east.asu.edu/learningcenter.

Library Services

Strong resources and personal service define the ASU East Library. As a primarily electronic research library, it is designed to take maximum advantage of new technology. Electronic indexes, catalogs, and journals support study and research in many fields, with an emphasis on the majors offered at ASU East. While the library acquires materials in

all formats, by intention it prefers electronic text. Thousands of periodicals are available digitally in all subjects, while those that remain in print form can be obtained by the library quickly. Documents in electronic form can be delivered directly to students' computers. Librarians and staff pursue service customized to individual students' needs, cultivating a small college atmosphere. The library's Web address is eastlib.east.asu.edu.

Computing Services

With more than 200 workstations in five classrooms and a Computing Commons, Information Technology at ASU East provides general computing services, including e-mail and general purpose computing. The IT East department provides specialized software and systems to meet the particular needs of the ASU East programs. In addition, IT East provides mediated classrooms and audiovisual material to support e-learning initiatives. IT East has a staff of support personnel to aid the campus community's diverse computing needs, including Web development.

Food Services

ASU East has a variety of food service options on campus to serve student, faculty, staff, and visitor needs. Services include a coffee bar/convenience shop in the Williams Campus Union, a full-service dining facility in the Campus Dining Hall, and catering services. Food can be purchased on a cash basis; a meal plan can be selected to suit individual preferences. For more information about food service at the Williams Campus, call 480/988-5212.

Student Health Services

Health services for ASU East students are provided by the Veteran's Administration Medical Center located at the Williams Campus. Services include primary assessment and treatment of health problems and injuries, physical examinations and immunizations, women's health care, diagnostic tests, laboratory tests/X-rays, and a pharmacy. Student registration fees cover the cost of office visits for full-time ASU East students. Part-time students pay a nominal fee. Some office procedures and laboratory tests require additional charges. Health insurance is not required to use the health services; however, it is strongly advised for all students and is required for international students. For more information, call 602/222-6568.

Student Counseling

Confidential professional counseling services are available to help ASU East students achieve their academic goals by addressing a variety of problems and issues often faced in college. Students may schedule an appointment by calling 480/727-1041. Appointments may also be made in person at Student Services (Garden Level of the Academic Center Building).

Career Preparation Center

Professional career counselors are available to meet with ASU East students. They provide individual career advising, group workshops, assistance in researching job and internship possibilities, resume and cover letter critiques, preparation for employment interviews, and career resources in print and online. For more information, call 480/727-1411 or access the Web site at www.east.asu.edu/sta/career.html.

Williams Campus Union

The Williams Campus Union is in the center of campus and serves as a common gathering place for students, faculty, staff, and guests. The union has meeting space, study rooms, private computer rooms, a TV lounge, a coffee bar/convenience shop, a game room, and a ballroom. Programs and services that complement the academic experience and enhance campus life include a film series, dances, live performances, resources for student organizations, cultural awareness activities, leadership workshops, community service information, and holiday celebrations. The union is staffed primarily by students, providing them the opportunity to develop valuable leadership skills and work experience. For more information, call 480/727-1098.

Recreational Facilities and Services

The Williams Campus Fitness Center is equipped with state-of-the-art strength training and cardiovascular equipment, racquetball courts, and a full-size gymnasium. Trained exercise and wellness professionals are on duty daily to provide expert advice and personal training assistance. A variety of health, fitness, and sports classes also are offered at the fitness center.

The gymnasium is available for open recreation volleyball and basketball during the noon hour and some evenings.

The ASU East Physical Activity Center (PAC) serves two primary purposes. It is the headquarters for a variety of professional and nonprofessional activity classes offered by the Department of Exercise and Wellness. The PAC is also available during the lunch hour and evenings for open recreation and group fitness classes for Williams Campus students, faculty, and staff. The PAC offers three activity gyms, a fitness center equipped with state-of-the-art strength training equipment, a lounge, and a snack bar area for relaxing or studying.

In addition to high quality indoor fitness and recreation facilities, Williams Campus offers an all-weather quarter mile track, four newly resurfaced and remodeled tennis courts, numerous sand volleyball courts, outdoor basketball courts, a softball field, soccer field, and swimming pool. The Williams Campus Intramural and Recreation program offers a variety of team sports, individual sports, and special events. For more information on intramural activities, call 480/727-1972. For more information on open recreation and group fitness classes in the PAC, call 480/727-1971. For a fee of \$30 per semester, students, faculty and staff may use the Williams Campus Fitness Center and the PAC. To sign up, call the Williams Campus Fitness Center at 480/988-8400.

Child Care

Child care programs on campus are offered through the East Mesa/Apache Junction YMCA, Head Start and Early Head Start, and the East Valley Boys & Girls Club. The YMCA offers toddler and preschool programs with full- and part-time options available. Head Start and Early Head Start also offer child care programs on campus for individuals

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

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who meet certain income criteria. The Boys & Girls Club offers after school programs for children ages 6 to 18. For more information, call the YMCA at 480/727-1400, the Boys & Girls Club at 480/279-1406, or Head Start at 480/988-9389.

Williams Campus Housing and Residential Life

Living on-campus at ASU East provides students with the best opportunity to make the most of their college experience. No matter which housing option students choose, the residential life program offers social, academic, and recreational activities that are designed to support and enrich the student's campus life experience. Residential students benefit from easy access to campus resources such as the library, learning center, fitness center, and campus union; and parking is available for residents at no extra cost.

ASU East's unique residential environment offers housing options for Williams Campus students throughout their undergraduate and graduate education. This includes residence halls, houses, and special residential communities. Residential students can also take advantage of such amenities as outdoor swimming, sand volleyball, tennis, and picnic areas.

For more information, call the Williams Campus Housing Office at 480/727-1700, or access the Web site at www.east.asu.edu/sta/u-life/housing.

Residence Halls. Undergraduate and graduate students are eligible for residence halls with a large private room, featuring a private bath and a shared kitchenette. Students may, if they prefer, elect to share a room with another student. Each

room includes basic furnishings; the kitchenette includes a refrigerator and microwave.

Houses. A large number of two-to-five bedroom houses are available for students with families or for groups of single undergraduate or graduate students. Each house includes basic appliances.

Freshman Year Experience (FYE). Freshmen may begin their residential experience on campus in a dedicated freshman residence hall that includes the Freshman Year Experience (FYE) program. The FYE program helps freshmen achieve academic and personal success by providing support services and enhanced opportunities for learning, campus involvement, and out of class interaction with faculty. Research has consistently shown that freshmen participating in living-learning communities, such as FYE, achieve greater academic success. For more information, call 480/727-1909.

The FYE residence hall offers two bedroom suites with a shared bath, to house four students. Each room is equipped with local phone service, basic cable, and two computer ports. The FYE hall features a computer lab, quiet study, group study/tutoring room, and community lounge. Residents can select a meal plan from several options offered by Campus Dining Services.

Special Residential Communities. Special residential communities for students in particular academic majors, and students sharing common interest areas are also available. All residential facilities are non-smoking.



ASU East students (from left) Tiffany Morrissey-Gollem, Dustin Gossett, Jennifer Clark, and Debbie Hurth enjoy an afternoon at the campus gazebo.

Dave Tevis photo

Morrison School of Agribusiness and Resource Management

www.east.asu.edu/msabr

Raymond A. Marquardt, Ph.D, Dean

PURPOSE

The Morrison School of Agribusiness and Resource Management provides academic programs in Agribusiness and in Environmental Resources. Agribusiness is the business of food and fiber production and the technology necessary to change a raw material (a commodity) or an idea into a new product or business for the world's consumers. Producing, financing, marketing, and providing food and fiber for the world amounts to more than one-half of the earth's global economy.

Agribusiness courses in the Morrison School are designed to prepare students for a wide range of job opportunities in agribusiness and business. More than 20 percent of all jobs in the United States are agribusiness-related, and the industry is even more important internationally, with more than half of all jobs in developing countries related to food and fiber products. Population increases worldwide have led forecasters to predict that more than nine billion food and fiber consumers will be part of the global agribusiness system by the year 2050. Forecasts also estimate that, at that time, more than 20,000 agribusiness jobs will go unfilled due to a lack of skilled professionals.

The academic programs in Agribusiness are especially designed to meet the needs of the urban student who has little or no previous agriculture experience. An interest in plants, animals, or food can be the starting point for career development in agricultural industries or resource management. The undergraduate programs also provide the necessary training for students preparing to enter graduate degree programs.

The Morrison School is strategically positioned to offer some unique programs. The concentration in professional golf management provides a student with the opportunity to qualify for the Professional Golfers' Association certification program in addition to majoring in Agribusiness. Similarly, for individuals more interested in the development and management of golf and other turf facilities, the golf and facilities management concentration is well suited.

Food, its marketing and safety, is of paramount importance today and in the future. The Morrison School offers specific concentrations in both of these areas. Food and agribusiness marketing is one of the signature academic concentrations in the school. Food science and safety are emphases stressed in the food and agribusiness marketing concentration.

For students interested in natural resource management, the school offers a major in Environmental Resources. Environmental resources is a science that applies across the eco-

logical continuum of wilderness areas and urban lands. Students learn not only about wildlands but also about urban habitats and how people's activities affect the regenerative ability of natural resources. The Environmental Resources curriculum provides the opportunity to develop technological skills such as remote sensing of data from aircraft or satellites, computer-based Geographic Information Systems, and techniques for ecological restoration.

Graduates of the Environmental Resources programs have employment opportunities in environmental resource management, applied ecology, wildlife biology, soil and water conservation, and land reclamation in both private firms and government agencies.

NATIONAL FOOD AND AGRICULTURAL POLICY PROJECT

The National Food and Agricultural Policy Project (NFAPP) constructs a 10-year baseline forecast for the fruit and vegetable produce industry and specific commodities, responds to congressional inquiries concerning policies affecting the fruit and vegetable industry, and publishes a monthly newsletter highlighting research efforts. Areas of study include domestic and international promotion of fruits and vegetables, trade and the impact of trade agreements, and crop insurance and risk management. For more information, call the director at 480/727-1124.

DEGREE PROGRAMS

The Morrison School of Agribusiness and Resource Management offers two B.S. degrees: Agribusiness and Environmental Resources. Students interested in the Agribusiness major may select from the following concentrations: agribusiness finance, food and agribusiness marketing, food science, general agribusiness, golf and facilities management, international agribusiness, management of agribusiness, professional golf management, resource management, e-commerce, and preveterinary medicine. The Environmental Resources major offers concentrations in ecology, watershed ecology, and wildlife habitat management.

For students holding an A.A.S. degree, the school offers the Bachelor of Applied Science degree with concentrations in consumer products technology, food retailing, and resource team specialist.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

Morrison School of Agribusiness and Resource Management Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Agribusiness	B.S.	Agribusiness finance, e-commerce, food and agribusiness marketing, food science, general agribusiness, golf and facilities management, international agribusiness, management of agribusiness, preveterinary medicine, professional golf management, resource management	Morrison School of Agribusiness and Resource Management
Applied Science	B.A.S.	Consumer products technology, food retailing, resource team specialist	Morrison School of Agribusiness and Resource Management
Environmental Resources	B.S.	Ecology, watershed ecology, wildlife habitat management	Morrison School of Agribusiness and Resource Management

The school offers the M.S. degree in Agribusiness and the M.S. degree in Environmental Resources. Agribusiness students may select either a research-oriented program, which leads to the completion of a supervised thesis, or a program consisting of course work only (nonthesis option). All M.S. candidates in Agribusiness must complete a minimum of 36 semester hours. Students in the Environmental Resources degree program may study natural resource management, Geographic Information System/remote sensing, and animal/plant ecology. All M.S. candidates in Environmental Resources must complete 30 semester hours of approved graduate work. See the *Graduate Catalog* for more information.

See the “Morrison School of Agribusiness and Resource Management Baccalaureate Degrees and Majors” table on this page. For graduate degrees, see the [“Morrison School of Agribusiness and Resource Management Graduate Degrees and Majors” table, page 631](#).

ADMISSION

The Morrison School of Agribusiness and Resource Management admits students to the B.S. degree programs who meet the undergraduate admission requirements of Arizona State University; see [“Undergraduate Admission,” page 58](#). Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and 2.50 for nonresident applicants.

GRADUATION REQUIREMENTS

Agribusiness—B.S.

The completion of a minimum of 120 semester hours—including First-Year Composition, General Studies (see [“General Studies,” page 83](#)), and the school and concentration requirements—leads to the B.S. degree. Note that all three General Studies awareness areas are required. An overall GPA of 2.00 is required for graduation and students must have completed a minimum of 45 semester hours of upper-division credit. Also see special graduation requirements under [“Preveterinary Medicine,” page 630](#).

Prerequisite Courses. Students who select the concentrations in agribusiness finance, food and agribusiness marketing, food science, general agribusiness, golf and facilities management, international agribusiness, management of agribusiness, professional golf management, or resource management must complete the following courses, some of which can also be used to meet university General Studies requirements:

ACC 230	Uses of Accounting Information I.....	3
ACC 240	Uses of Accounting Information II	3
BIO 100	The Living World <i>SQ</i>	4
CHM 101	Introductory Chemistry <i>SQ</i> ¹	4
ECN 111	Macroeconomic Principles <i>SB</i> ²	3
ECN 112	Microeconomic Principles <i>SB</i>	3
ENG 301	Writing for the Professions <i>L</i>	3
MAT 210	Brief Calculus <i>MA</i>	3
Total	.....	26

¹ This course is not required for the professional golf management concentration.

² This course is not required for the golf and facilities management or professional golf management concentration.

Core Requirements. Agribusiness employers require their employees to possess a wide range of skills and competencies. Rapid changes in information technology and the increasingly competitive food production and distribution sector mean that agribusiness needs graduates equipped to deal with these changes. The agribusiness core, required of all the concentrations, is designed to give students these skills. The core consists of courses in business principles—management, marketing, and finance—as well as in the fundamentals of agribusiness operations management.

AGB 100	Introduction to Agribusiness.....	3
AGB 161	Computer Applications for Agribusiness Industries <i>CS</i>	3
AGB 310	Agribusiness Management I	3
AGB 320	Agribusiness Marketing I.....	3
AGB 321	Agribusiness Marketing II*	3
AGB 332	Agribusiness Finance I.....	3
AGB 333	Agribusiness Finance II	3
AGB 360	Agribusiness Statistics <i>CS</i>	3
AGB 364	Agribusiness Technologies I.....	3
AGB 365	Agribusiness Technologies II*.....	3

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

AGB 410 Agribusiness Management II	3
AGB 414 Agribusiness Analysis L	3
Core total.....	36

* This course is not required for the professional golf management or golf and facilities management concentrations.

Concentrations

After completing the required agribusiness core, students select a concentration in their area of interest. A concentration allows a student to select a series of courses that complement the agribusiness core, supplement the student’s desire to master another area of interest, and broaden career opportunities.

E-commerce Concentration. The extraordinary growth of e-commerce in the business and agribusiness venues provides significant opportunities for students prepared to work in this medium. A student following this concentration builds on the prerequisite core and the agribusiness core to prepare for this field. The opportunities for personal development, advancement, and success are present domestically and internationally.

E-commerce

AGB 436 Entrepreneurship and Financial Management of E-commerce.....	3
AGB 463 Electronic Commerce Applications	3
AGB electives	8
Agribusiness core.....	36
Agribusiness prerequisite courses.....	26
Website design course.....	3
Total	79

Agribusiness Finance Concentration. Agribusiness finance concentration graduates are expected to possess a broad knowledge of financial theory and practice as it pertains to the agribusiness sector. This will involve applying quantitative and computer-based analytical techniques to real-world agribusiness problems. Specific course content includes topics in financial management, financial markets, risk management, and the evaluation of financial assets and business alternatives.

Agribusiness Finance

AGB 334 Agricultural Commodities	3
AGB 431 Intermediate Agribusiness Financial Management	3
AGB 434 Agricultural Risk Management and Insurance	3
AGB electives	8
Agribusiness core.....	36
Agribusiness prerequisite courses.....	26
Total	79

Management of Agribusiness Concentration. Agribusiness managers encounter many problems and opportunities on a daily basis that are unique to the agribusiness sector. Students choosing this concentration develop skills in managing people, internal resources, and external relationships in an increasingly dynamic environment.

Management of Agribusiness

AGB 351 Management Science CS.....	3
AGB 380 Applied Microeconomics.....	3

AGB 411 Agricultural Cooperatives	3
or AGB 480 Agribusiness Policy and Government Regulations (3)	3
AGB electives	8
Agribusiness core.....	36
Agribusiness prerequisite courses.....	26
Total	79

Food and Agribusiness Marketing Concentration. Students in the food and agribusiness marketing concentration develop critical skills relevant to dealing with firms involved in food, fiber, consumer products, and pharmaceutical manufacturing; distribution; and retailing. Students also learn about the relationship between input suppliers, commodity associations, and primary producers. To this end, food and agribusiness marketing students are required to complete a series of courses that analyze the behavior and performance of both commodity and consumer food markets.

Food and Agribusiness Marketing

AGB 334 Agricultural Commodities	3
or AGB 420 Food Marketing (3)	3
AGB 422 Consumer Behavior	3
AGB 429 Marketing Research	3
AGB electives	8
Agribusiness core.....	36
Agribusiness prerequisite courses.....	26
Total	79

Food Science Concentration. The food science concentration focuses on both scientific and technical competency skills with an emphasis on food microbiology, food chemistry, biotechnology, mathematics, and statistics. This unique program prepares graduates for employment opportunities in the food, beverage, and dairy industries; regulatory agencies such as the FDA and USDA; international organizations such as FAO and WHO; and consumer organizations. In addition, graduates may choose to pursue advanced degrees.

Food Science

AGB 340 Food Processing	3
AGB 440 Food Safety	3
AGB 442 Food and Industrial Microbiology	4
AGB upper-division electives	7
Agribusiness core.....	36
Agribusiness prerequisite courses.....	26
Total	79

General Agribusiness Concentration. The general agribusiness concentration offers students a chance to build a broad perspective in the field of agribusiness. In an age of specialization, there remains a growing need for generalists. These individuals have mastered finance, marketing, management, and other technologies such as computers and statistics and are capable of demonstrating this mastery.

General Agribusiness

AGB 334 Agricultural Commodities	3
AGB electives	14

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

Agribusiness core.....	36
Agribusiness prerequisite courses.....	26
Total	79

International Agribusiness Concentration. A student studying international agribusiness is typically preparing for a career with government agencies oriented toward international issues; programs of agribusiness for or in developing countries; U.S. agribusiness firms affected significantly by trade; or U.S.-based international agribusiness firms. This concentration requires a mastery of subjects in international trade, agricultural development, international policy, and global marketing practices and institutions.

International Agribusiness

AGB 450 International Agricultural Development <i>G</i>	3
AGB 452 International Agricultural Policy.....	3
AGB 454 International Trade.....	3
AGB electives	8
Agribusiness core.....	36
Agribusiness prerequisite courses.....	26
Total	79

Professional Golf Management Concentration. The Professional Golf Management (PGM) concentration, accredited by the Professional Golfer's Association (PGA) of America, is specifically designed for students who aspire to become Class A PGA Professionals and work in management careers in the golf industry. International students admitted to this program should be aware that membership in the PGA of America is restricted to U.S. citizens and resident aliens. PGM students complete the agribusiness core, which helps them develop the critical skills needed to manage complex organizations. In addition, the PGM concentration requires a minimum of 23 semester hours of golf-related curriculum, of which nine hours consist of hands-on internship experience at golf facilities. The remaining 14 semester hours include courses selected from the following areas: golf course operations, turf grass management, club fitting and repair, pro shop merchandising, movement analysis, sports psychology and equipment, mechanics and shop maintenance and repair. Students must also complete the majority of requirements in the PGA Golf Professional Training Program, including the PGA Playing Ability Test. All golf-related courses and internships are selected with the assistance of the PGM program director.

PGM Admission. To be admitted to the PGM program, students must meet a playing ability test. Call the PGM director at 480/727-1017 for more information.

Professional Golf Management

Agribusiness core.....	30
Agribusiness prerequisite courses.....	22
Professional golf management courses.....	14
Professional golf management internship.....	9
Total	75

Golf and Facilities Management Concentration. The Golf and Facilities Management (GFM) concentration is designed to prepare students for careers as golf course superintendents. Through the agribusiness core, students develop the critical skills needed to manage complex orga-

nizations. In addition, the GFM concentration requires a minimum of 25 semester hours of golf and facilities management-related curriculum, of which six hours consist of hands-on internship experience at golf courses. The remaining 19 semester hours include courses selected from the following areas: golf course operations, plants and landscaping, soils, irrigation and water management, fertilizers, pest control, turf grass management, mechanics and shop maintenance and repair. The GFM concentration also requires the student to complete six semester hours of internship experience at golf facilities, providing valuable hands-on experience. Call the GFM program coordinator at 480/727-1256 for additional information.

Golf and Facilities Management

Agribusiness core.....	30
Agribusiness prerequisite courses.....	23
Golf and facilities management courses	19
Internship	6
Total	78

Prerequisite Courses for Preveterinary Medicine. Students who select the preveterinary medicine concentration must take the following courses, some of which can also be used to meet the General Studies requirement.

ACC 230 Uses of Accounting Information I.....	3
BCH 361 Principles of Biochemistry.....	3
BIO 187 General Biology I <i>SQ</i>	4
BIO 188 General Biology II <i>SG</i>	4
BIO 340 General Genetics.....	4
CHM 113 General Chemistry <i>SQ</i>	4
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i>	5
or CHM 116 General Chemistry <i>SQ</i> (4)	
Choose between the course combinations below.....	4-8
CHM 231 Elementary Organic Chemistry <i>SQ</i> (3) ¹	
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> (1) ¹	
or	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
ECN 112 Microeconomic Principles <i>SB</i>	3
ENG 301 Writing for the Professions <i>L</i>	3
MAT 210 Brief Calculus <i>MA</i>	3
MIC 205 Microbiology <i>SG</i> ²	3
MIC 206 Microbiology Laboratory <i>SG</i> ²	1
PHY 111 General Physics <i>SQ</i> ³	3
PHY 113 General Physics Laboratory <i>SQ</i> ³	1
Upper-division AGB, BIO, or ERS.....	6
Total	53-58

¹ Both CHM 231 and 235 must be taken to secure SQ credit.

² Both MIC 205 and 206 must be taken to secure SG credit.

³ Both PHY 111 and 113 must be taken to secure SQ credit.

Preveterinary Medicine. A student studying agribusiness could also be preparing for admission to a professional veterinary school. While completing the courses needed for acceptance into veterinary school, the student is broadening his or her career potential with agribusiness courses. The major reason for the lack of success as a professional veterinarian is rarely bad medicine or science. It is often a lack of knowledge of how to run a business or practice. In addition,

Morrison School of Agribusiness and Resource Management Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Agribusiness	M.S.	Agribusiness management and marketing, food quality assurance	Morrison School of Agribusiness and Resource Management
Environmental Design and Planning*	Ph.D.	Design; history, theory and criticism; planning	Committee on Environmental Design and Planning
Environmental Resources	M.S.	GIS/remote sensing, natural resource management, range ecology	Morrison School of Agribusiness and Resource Management

* Courses for this interdisciplinary program administered by ASU Main are also offered at ASU East.

should a preveterinary student decide not to apply to a veterinary school, this major provides alternative career paths into human or veterinary pharmaceutical industries or the food industry. This concentration permits students to complete the preveterinary requirements for entrance to professional veterinary school.

Preveterinary Medicine

Agribusiness core.....	21
AGB 310 Agribusiness Management I (3)	
AGB 320 Agribusiness Marketing I (3)	
AGB 332 Agribusiness Finance I (3)	
AGB 360 Agribusiness Statistics CS (3)	
AGB 364 Agribusiness Technologies I (3)	
AGB 365 Agribusiness Technologies II (3)	
AGB 414 Agribusiness Analysis L (3)	
Preveterinary medicine prerequisites.....	53–58
Total	74–79

Veterinary College Acceptance. A student who has been accepted to a school of veterinary medicine before he or she has earned a B.S. degree in the Morrison School may do so by completing a minimum of 30 semester hours at ASU and the General Studies requirement. Students must receive a written statement from the dean of the Morrison School giving senior-in-absentia privileges. A student is eligible to receive the B.S. degree after the ASU Office of the Registrar receives a recommendation from the dean of the veterinary professional school and a transcript indicating the student has completed the necessary semester hours commensurate with ASU graduation requirements.

Veterinary Medical Schools. There are approximately 27 schools of veterinary medicine in the United States. Each school establishes the specific prerequisites that are required for admission. Advisors in the Morrison School assist students in designing their class schedules to meet the requirements of the veterinary schools to which they plan to apply. Each school generally looks for courses in biology, chemistry, genetics, microbiology, and organic chemistry. In addition to a science foundation, all students must meet the University General Studies requirement, complete 45 semester hours of upper-division courses, and satisfy the school requirements.

Resource Management Concentration. The resource management concentration combines the agribusiness concentration core with solid technical preparation in biology, chemistry, and/or economics. There is a growing demand by industry and government for persons who understand both

the technical and managerial basis for sustainable development, remediation and/or utilization of natural resources for agribusiness, conservation, and habitat restoration. Courses and field projects prepare the student to analyze, develop, and manage programs that make use of land and water in an economic as well as environmentally sustainable fashion.

Resource Management Concentration Prerequisite Courses.

Students who select the resource management concentration must complete the following courses, some of which can also be used to meet university General Studies requirements:

ACC 230 Uses of Accounting Information I.....	3
BIO 187 General Biology I SQ.....	4
BIO 188 General Biology II SG	4
CHM 101 Introductory Chemistry SQ.....	4
CHM 231 Elementary Organic Chemistry SQ ¹	3
CHM 235 Elementary Organic Chemistry Laboratory SQ ¹	1
ECN 112 Microeconomic Principles SB.....	3
ENG 301 Writing for the Professions L.....	3
MAT 210 Brief Calculus MA.....	3
PHY 111 General Physics SQ ²	3
PHY 113 General Physics Laboratory SQ ²	1

- ¹ Both CHM 231 and 235 must be taken to secure SQ credit.
- ² Both PHY 111 and 113 must be taken to secure SQ credit.

Resource Management

AGB 455 Resource Management SB	3
AGB 480 Agribusiness Policy and Government Regulations.....	3
ETM 301 Environmental Management	3
Agribusiness core.....	36
Resource Management prerequisites	43–51
Total	88–96

GRADUATION REQUIREMENTS

The completion of a minimum of 120 semester hours—including the First-Year Composition requirement, General Studies (see “General Studies,” page 83), the Environmental Resources core, and selected concentration requirements—leads to the B.S. degree. An overall GPA of 2.00 and a minimum grade of “C” in the Environmental Resources core are required for graduation. Students must have completed a minimum of 45 semester hours of upper-division credit.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

Some of the Environmental Resources core courses may also be used to meet General Studies requirements.

Environmental Resources—B.S.

The primary emphasis of the Environmental Resources major is natural resource management and conservation. Particular attention is given to the study of ecosystem characteristics as they relate to the use of renewable resources. Students learn applications of ecological principles to resource management through examples drawn from forest, range, riparian, and urban ecosystems. The Environmental Resources major offers three concentrations: ecology, watershed ecology, and wildlife habitat management.

Environmental Resources Core

BIO 187 General Biology I <i>SQ</i>	4
BIO 188 General Biology II <i>SG</i>	4
CHM 101 Introductory Chemistry <i>SQ</i>	4
CHM 231 Elementary Organic Chemistry <i>SQ</i> *.....	3
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> *.....	1
ERS 130 Introduction to Environmental Science <i>SQ</i>	4
ERS 207 Applied Plant Taxonomy.....	3
ERS 225 Soils.....	3
ERS 226 Soils Laboratory.....	1
ERS 246 Environmental Conservation and Ecology <i>G</i>	3
ERS 301 Ecology.....	3
ERS 350 Environmental Statistics <i>CS</i>	3
ERS 365 Watershed Management.....	3
ERS 402 Vegetation Measurement.....	4
ERS 480 Ecosystem Management and Planning <i>L</i>	3
ERS 485 GIS in Natural Resources.....	3
ERS 490 Recent Advances in Environmental Resources.....	1
MAT 210 Brief Calculus <i>MA</i>	3
Core total.....	53

* Both CHM 231 and 235 must be taken to secure *SQ* credit.

Ecology Concentration

The ecology concentration focuses on connections between basic ecological principles and their application to a broad array of environmental challenges across a wide range of ecosystems. Course work concentrates on the interrelationships of soil, water, and vegetation systems and the fauna that inhabit these systems. In addition to a strong foundation in these areas, students are provided with the analytical tools and skills to evaluate and apply ecological concepts to management issues. Potential employers of graduates in this field of study include federal resource management agencies, environmental protection agencies, departments of environmental quality, state land departments, and private environmental consulting firms.

This concentration is completed by taking the ERS core curriculum and 25 semester hours of courses listed below, with a minimum of 10 semester hours from each group.

Additional courses must be approved by an advisor.

Group A: Introduction and Backdrop to Ecology

ERS 307 Plant Identification.....	4
ERS 311 Applied Ecology.....	4
ERS 420 Ecological Restoration.....	3
ERS 425 Soil Classification and Management.....	3
ERS 433 Riparian Ecosystem Management.....	3
ERS 434 Wetland Ecosystems and Soils.....	3
ERS 460 Applied Systems Ecology.....	3
ETM 301 Environmental Management.....	3

GLG 101 Introduction to Geology I (Physical) <i>SQ, G</i> *.....	3
GLG 103 Introduction to Geology I—Laboratory <i>SQ</i> *.....	1
GPH 111 Introduction to Physical Geography <i>SQ</i>	4
GPH 210 Society and Environment <i>G</i>	3
PLB 308 Plant Physiology.....	4

Group B: Focus Areas and Tools of Ecology

ERS 364 Surface Water Hydrology.....	3
ERS 448 Soil Ecology.....	3
ERS 449 Landscape Ecology.....	3
ERS 474 Wildlife Ecology.....	3
ERS 475 Wildlife Management.....	4
ERS 477 Environmental Risk Assessment and Management.....	3
ERS 486 Remote Sensing in Environmental Resources.....	4
GPH 314 Global Change <i>HU, G</i>	3
GPH 381 Geography of Natural Resources <i>G</i>	3
GPH 418 Landforms of the Western United States <i>L</i>	3
GPH 481 Environmental Geography.....	3

* Both GLG 101 and 103 must be taken to secure *SQ* credit.

Watershed Ecology Concentration

The watershed ecology concentration underscores the importance of understanding and placing environmental processes and problems at the watershed or landscape level. Students completing this concentration have a solid background in physical and biological sciences. Upper-division course work focuses on providing the intellectual capability and tools to address water-related management issues. Graduates may pursue careers with federal and state agencies or in the private sector as resource managers, environmental health specialists, or consultants.

This concentration is completed by taking the ERS core curriculum and 25 semester hours of courses listed below, with a minimum of 10 semester hours from each group.

Additional courses must be approved by an advisor.

Group A: Introduction and Backdrop to Watershed Ecology

CHM 302 Environmental Chemistry.....	3
ERS 307 Plant Identification.....	4
ERS 311 Applied Ecology.....	4
ERS 333 Water Resources Management.....	3
ERS 364 Surface Water Hydrology.....	3
ERS 425 Soil Classification and Management.....	3
ERS 460 Applied Systems Ecology.....	3
ERS 465 Surface Water Quality.....	3
ETM 302 Water and Wastewater Treatment Technology.....	4
GLG 101 Introduction to Geology I (Physical) <i>SQ, G</i>	3
GLG 103 Introduction to Geology I—Laboratory <i>SQ</i>	1
GPH 212 Introduction to Meteorology <i>SG</i> *.....	3
GPH 214 Introduction to Meteorology Laboratory <i>SG</i> *.....	1

Group B: Focus Areas and Tools of Watershed Ecology

ERS 420 Ecological Restoration.....	3
ERS 433 Riparian Ecosystem Management.....	3
ERS 477 Environmental Risk Assessment and Management.....	3
ERS 486 Remote Sensing in Environmental Resources.....	4

* Both GPH 212 and 214 must be taken to secure *SG* credit.

Wildlife Habitat Management Concentration

The wildlife habitat management concentration focuses on the connection between wildlife ecology and habitat management. The student completing this concentration gains a solid background in wildlife biology, coupled with a strong understanding of the physical and biological elements of vegetation ecology. Upper-division course work

provides those necessary tools to meet the challenges of maintaining a balance between biological diversity and social pressures on the wildland resources. Potential employers of graduates from this field of study include the U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, Department of Defense, state wildlife management departments, and private environmental consulting firms.

This option is completed by taking the ERS core curriculum and 25 semester hours of courses listed below, with a minimum of 10 semester hours from each group.

Additional courses must be approved by an advisor.

Group A: Introduction and Backdrop to Wildlife Habitat Management

BIO 331 Animal Behavior	3
BIO 340 General Genetics	4
BIO 360 Animal Physiology	3
BIO 370 Vertebrate Zoology	4
BIO 385 Comparative Invertebrate Zoology	4
BIO 426 Limnology L	4
BIO 471 Ornithology	3
BIO 472 Mammalogy	4
BIO 474 Herpetology	3

Group B: Focus Areas and Tools of Wildlife Habitat Management

ERS 307 Plant Identification	4
ERS 311 Applied Ecology	4
ERS 353 Wildlife Nutrition	3
ERS 420 Ecological Restoration	3
ERS 433 Riparian Ecosystem Management	3
ERS 434 Wetland Ecosystems and Soils	3
ERS 460 Applied Systems Ecology	3
ERS 474 Wildlife Ecology	3
ERS 475 Wildlife Management	4
ERS 486 Remote Sensing in Environmental Resources	4

Environmental Resources Minor

A minor in Environmental Resources is available to students who are interested in environmental courses but who wish to pursue other majors. A minimum of 27 semester hours of course work is required with 15 semester hours of upper-division courses in environmental resources. A grade of "C" or higher is required for all courses taken for the minor. Independent study and special topics courses may not be used to satisfy the minimum course requirements.

Required courses

BIO 187 General Biology I SQ	4
BIO 188 General Biology II SG	4
ERS 225 Soils	3
ERS 226 Soils Laboratory	1
ERS 301 Ecology	3
Additional upper division ERS courses	12
Total	27

Applied Science—B.A.S.

The Bachelor of Applied Science degree is a capstone degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills to prepare them for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and 2.50 for nonresident applicants.

B.A.S. Degree Graduation Requirements

The B.A.S. degree program consists of 60 semester hours of upper-division courses, with 30 semester hours in residence. An overall GPA of 2.00 or higher is required.

A.A.S. degree	60
Assignable credit	6
B.A.S. core	16
Concentration	19
General Studies	19
Total	120

General Studies Curriculum. The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies courses are taken in the core or concentration. General Studies courses focus on contextual learning.

L	3
MA	3
HU	3
HU or SB	3
SB	3
SG	4
Total	19

Assignable Credit. Assignable credit allows space in the curriculum for prerequisite courses. The courses are determined by the student and advisor.

B.A.S. Core

AGB 310 Agribusiness Management I	3
AGB 320 Agribusiness Marketing I	3
AGB 360 Agribusiness Statistics CS	3
AGB 414 Agribusiness Analysis L	3
AGB 460 Agribusiness Management Systems	4
Total	16

Consumer Products Technology Concentration. Students studying consumer products technology prepare for a career in the food and consumer products industries. Students learn to develop food, drug, cosmetic, and other consumer products and to ensure product safety and marketability by obtaining a thorough mastery of courses in product and package design, manufacturing, processing, and safety.

Consumer Products Technology

AGB 340 Food Processing	3
AGB 364 Agribusiness Technologies I	3
AGB 440 Food Safety	3
MET 341 Manufacturing Analysis	3
MET 494 ST: Consumer Manufacturing	3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

MET 494 ST: Packaging Design3
 AGB elective1
 Total19

Food Retailing Concentration. A student studying food retailing prepares for a career in the food marketing and distribution industries. Potential employers are food manufacturing and processing companies, distribution centers, wholesalers, and all types of food retailers, e.g., supermarkets, mass merchandisers, fast food outlets, restaurants, and direct marketers of food.

Food Retailing

AGB 332 Agribusiness Finance I.....3
 AGB 340 Food Processing3
 AGB 420 Food Marketing.....3
 AGB 440 Food Safety3
 AGB 445 Food Retailing.....3
 AGB 484 Internship1
 AGB elective3
 Total19

Resource Team Specialist Concentration. The resource team specialist concentration combines the technical preparation acquired in an A.A.S. program with a special orientation in environmental and resource management. This concentration prepares individuals to participate as an integral part of an environmental emergency response team as well as postemergency biological and environmental rehabilitation efforts.

Resource Team Specialist

AGB 332 Agribusiness Finance I.....3
 AGB 457 Resource Policy and Sustainability.....3
 AGB 484 Internship1
 ETM 301 Environmental Management3
 ETM 303 Environmental Regulations3
 AGB electives6
 Total19



Mary Ann Turney, associate professor in the Department of Aeronautical Management Technology at ASU East

Tim Trumble photo

**Morrison School of Agribusiness
 and Resource Management**

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CNTR 20

Raymond A. Marquardt, Dean

Professors: Brady, Brock, Daneke, Edwards, Kagan, Marquardt, Seperich, Shultz, Thor

Associate Professors: Green, Miller, Patterson, Raccach, Richards, Whysong

Assistant Professors: Manfredo, Schmitz, Stanton

Senior Lecturer: Lindley

AGRIBUSINESS (AGB)

AGB 100 Introduction to Agribusiness. (3)

fall
 Overview of agribusiness industries and career opportunities.

AGB 161 Computer Applications for Agribusiness Industries. (3)

spring
 Uses and integrates word processing, spreadsheets, and databases as tools for managing an agribusiness firm. Lecture, lab.
General Studies: CS

AGB 171 Animal Science. (3)

spring
 Comparative growth, development, and propagation of domestic animals.

AGB 191 First-Year Seminar. (1-3)

selected semesters

AGB 194 Special Topics. (1-4)

selected semesters

AGB 258 International Agribusiness. (3)

fall
 Identifies and analyzes methods, problems, and future of international agribusiness operations. Emphasizes special problems associated with international agribusiness systems.
General Studies: G

AGB 266 Golf Course Irrigation. (3)

fall and spring
 Design, management, and maintenance of golf course irrigation systems. Lecture, lab.

AGB 271 Veterinary Medicine Today. (3)

spring
 Introduces the role of the veterinarian as related to the fields of food supply and veterinary medicine.

AGB 294 Special Topics. (1-4)

selected semesters

AGB 310 Agribusiness Management I. (3)

fall
 Principles of management, including planning, organizing, integrating, measuring, and developing people in agribusiness organizations.

AGB 311 Establishing an Agribusiness. (3)

fall
 Opportunities and problems associated with new firm development in agribusiness. Business plan is written and presented orally.

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

AGB 320 Agribusiness Marketing I. (3)

fall and spring

Examines marketing strategy, focusing on the marketing mix (product, price, promotion, and place) in a dynamic socioeconomic environment. Prerequisites: ACC 230, 240; AGB 360; ECN 112.

AGB 321 Agribusiness Marketing II. (3)

fall and spring

Examines the food marketing system with emphasis on the marketing institutions, arrangements, and methods for basic commodities. Prerequisites: ACC 230, 240; AGB 360; ECN 112.

AGB 332 Agribusiness Finance I. (3)

fall and spring

Introduces concepts in agribusiness financial management: time value of money, risk and return, capital budgeting, and cost of capital. Prerequisites: ECN 111 and 112 (or their equivalents); introductory accounting.

AGB 333 Agribusiness Finance II. (3)

spring

Introduces financial markets and institutions. Interest rate determination, money and banking, equity markets, farm credit system, vendor financing. Prerequisites: ECN 111 and 112 (or their equivalents); introductory accounting.

AGB 334 Agricultural Commodities. (3)

fall

Trading on futures markets. Emphasis on the hedging practices with grains and meats. Prerequisite: AGB 320.

AGB 340 Food Processing. (3)

fall

Introduces processed food quality assurance, statistical sampling, and inspection procedures. Prerequisite: AGB 364.

AGB 341 Food Analysis. (3)

selected semesters

Processing control and scientific instrumentation used in food quality assurance laboratories. Prerequisites: AGB 364; CHM 101.

AGB 351 Management Science. (3)

fall

Focus on the construction, solution, and interpretation of quantitative models used for management decision making in agribusiness firms. Prerequisites: AGB 320, 360; ECN 112; MAT 117.

General Studies: CS

AGB 355 Sustainable Agriculture Systems. (3)

fall and spring

Innovative developments in precision farming, irrigation, soils, tillage methods, machinery, and biotechnology in crop production.

AGB 360 Agribusiness Statistics. (3)

fall and spring

Statistical methods with applications in agribusiness and resource management. Lecture, computer lab. Prerequisite: college algebra.

General Studies: CS

AGB 364 Agribusiness Technologies I. (3)

fall

Examines methods of managing diverse crop and livestock enterprises with emphasis on growth, development, marketing, and loss prevention. Prerequisite: BIO 100.

AGB 365 Agribusiness Technologies II. (3)

fall

Biotechnology and other methods used in the production, processing, and distribution of food. Prerequisite: BIO 100.

AGB 366 Golf Turf Management. (2)

fall and spring

Selection, establishment, and maintenance of turf grasses bred specifically for golf greens, fairways, and roughs. Lecture, lab.

AGB 367 Golf Course Landscape Plants and Design. (3)

fall and spring

Identification, culture, and use of plants in a golf course setting. Cross-listed as PLB 363. Credit is allowed for only AGB 367 or PLB 363. Fee.

AGB 370 Wildlife and Domestic Animal Nutrition. (3)

spring

Survey of nutritional needs of domestic and wild animals. Prerequisite: a General Studies SQ course.

AGB 371 Animal Genetics. (3)

fall

Principles of animal genetics, including heritable traits, chromosomal aberrations, population genetics, molecular genetics, and gene regulation. Prerequisites: BIO 187, 188.

AGB 380 Applied Microeconomics. (3)

fall and spring

Emphasizes application of the theory of the firm, theory of exchange, and consumer theory.

AGB 394 Special Topics. (1–4)

selected semesters

AGB 410 Agribusiness Management II. (3)

spring

Principles of human resource management in agribusiness firms. Prerequisite: AGB 310.

AGB 411 Agricultural Cooperatives. (3)

spring

Organization, operation, and management of agricultural cooperatives.

AGB 414 Agribusiness Analysis. (3)

fall and spring

Analysis of agribusiness firm decisions in the ecological, economic, social, and political environments. Special emphasis on ethical issues surrounding food production and consumption.

General Studies: L

AGB 420 Food Marketing. (3)

spring

Food processing, packaging, distribution, market research, new food research and development, and social implications. Prerequisite: AGB 320.

AGB 422 Consumer Behavior. (3)

fall

Applies behavioral concepts in analyzing consumer food purchases and their implications for marketing strategies. Prerequisite: completion of Agribusiness core (or its equivalent).

AGB 424 Sales and Merchandising in Agribusiness. (3)

summer

Principles and techniques of selling and merchandising in the agricultural and food industries.

AGB 425 Agricultural Marketing Channels. (3)

fall

Operational stages of agricultural commodities in normal distribution systems and implementation of marketing strategies. Prerequisite: AGB 320.

AGB 429 Marketing Research. (3)

fall

Examines the marketing research process and its role in facilitating agribusiness decisions. Emphasizes problem identification, survey design, and data analysis. Prerequisite: completion of Agribusiness core (or its equivalent).

AGB 431 Intermediate Agribusiness Financial Management. (3)

spring

Comprehensive treatment of topics in financial management of agribusiness: capital structure, dividend policy, asset valuation, mergers and acquisitions, risk management. Prerequisites: AGB 332, 333.

AGB 433 Intermediate Agribusiness Financial Markets. (3)

spring

Role and function of agribusiness in U.S. financial system. Topics include rural banking, farm credit system, monetary policy, and federal reserve. Prerequisite: completion of Agribusiness core (or its equivalent).

AGB 434 Agricultural Risk Management and Insurance. (3)

fall

Strategies to manage agricultural price and business risk: derivatives, insurance, self-insurance, and public policy. Prerequisite: completion of Agribusiness core (or its equivalent).

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

AGB 436 Entrepreneurship and Financial Management of E-commerce. (3)

fall

Uses lectures, case studies, and business plans to highlight challenges of starting and running a small business. Lecture, seminar, case studies, computer labs.

AGB 440 Food Safety. (3)

spring

Control, prevention, and prediction of microbial and chemical food-borne diseases. Prerequisite: AGB 442 or instructor approval.

AGB 441 Food Chemistry. (3)

spring

Biochemical and chemical interactions that occur in raw and processed foods. Prerequisites: CHM 115, 231.

AGB 442 Food and Industrial Microbiology. (4)

selected semesters

Food- and industrial-related microorganisms; deterioration and preservation of industrial commodities. Lecture, lab. Prerequisite: a course in microbiology with lecture and lab.

AGB 443 Food and Industrial Fermentations. (3)

spring

Management, manipulation, and metabolic activities of industrial microbial cultures and their processes. Prerequisite: AGB 442 or instructor approval.

AGB 445 Food Retailing. (3)

fall

Food retail management. Discusses trends, problems, and functions of food retail managers within various retail institutions. Lecture, case studies.

AGB 450 International Agricultural Development. (3)

fall

Transition of developing countries from subsistence to modern agriculture. Emphasis placed on implications for U.S. agribusiness working abroad.

General Studies: G

AGB 452 International Agricultural Policy. (3)

fall

Use of international trade theory to analyze the effects of government policies, trade agreements, and exchange rates on agribusiness. Prerequisite: ECN 112.

AGB 454 International Trade. (3)

spring

International practices in trading of agribusiness, technology, and resource products and services.

AGB 455 Resource Management. (3)

spring

Explores differences between societal and individual valuations of natural resources and considers public policy versus market-based solutions to environmental concerns. Prerequisite: ECN 112.

General Studies: SB

AGB 457 Resource Policy and Sustainability. (3)

fall

Considers the evolution of policy design, focusing on how resource and environmental concerns have affected agricultural development and trade policies. Prerequisite: ECN 112.

AGB 460 Agribusiness Management Systems. (4)

spring

Development and use of decision support systems for agribusiness management and marketing. Lecture, lab.

AGB 463 Electronic Commerce Applications. (3)

fall

Overview of electronic commerce technology with introduction to basics of design, control, operation, organization, and emerging issues. Pre- or corequisite: AGB 460 (or its equivalent).

AGB 466 Integrated Pest Control. (2)

fall and spring

Management of pests affecting golf turf and landscape plants. Structural Pest Control Board sprayer certification preparation offered during the semester. Lecture, lab.

AGB 470 Comparative Nutrition. (3)

selected semesters

Effects of nutrition on animal systems and metabolic functions. Prerequisite: CHM 231.

AGB 471 Diseases of Domestic Animals. (3)

spring

Discusses animal welfare, mechanisms of disease development, causes and classification of diseases, disease resistance, and common zoonoses. Prerequisite: BIO 188.

AGB 473 Animal Physiology I. (3)

selected semesters

Control and function of the nervous, muscular, cardiovascular, respiratory, and renal systems of domestic animals. Prerequisites: BIO 188; CHM 113.

AGB 479 Veterinary Practices. (3)

fall and spring

Observation of and participation in veterinary medicine and surgery supervised by local veterinarians. Prerequisite: advanced preveterinary student.

AGB 480 Agribusiness Policy and Government Regulations. (3)

spring

Development and implementation of government food, drug, pesticide, and farm policies and regulations that affect the management of agribusiness.

AGB 484 Internship. (1–12)

fall and spring

AGB 492 Honors Directed Study. (1–6)

selected semesters

Topics may include the following:

- Recent Advances in Food Science. (1)

AGB 493 Honors Thesis. (1–6)

selected semesters

AGB 494 Special Topics. (1–4)

selected semesters

AGB 498 Pro-Seminar. (1–7)

selected semesters

AGB 499 Individualized Instruction. (1–3)

selected semesters

AGB 500 Research Methods. (1–12)

selected semesters

AGB 501 Master's Thesis Preparation. (1)

fall and spring

Step-by-step guidelines to major elements of a master's thesis along with practical guidelines for conducting research.

AGB 511 Advanced Agribusiness Management. (3)

spring

Analyzes organization behavior, change, and resource requirements within agribusiness systems.

AGB 512 Food Industry Management. (3)

spring

Operations and management of food-processing factories, food distribution centers, and retail food-handling firms.

AGB 513 Advanced Cooperatives. (3)

fall

Advanced study of cooperatives and other nongovernmental organizations (NGO) focusing on management and proposal preparation for international agencies.

AGB 514 Advanced Agribusiness Analysis I. (3)

spring

Vertical integration and differentiation in food and agricultural industries. Prerequisite: AGB 528.

AGB 515 Agribusiness Coordination. (3)

spring

Organizational alternatives for agribusiness with emphasis on cooperatives and trading companies. Prerequisite: AGB 528.

AGB 528 Advanced Agribusiness Marketing. (3)

fall

Theory and analysis of marketing farm commodities, risks, and the effect of future trading on cash prices.

AGB 529 Advanced Agribusiness Marketing Channels. (3)

spring

Analyzes agribusiness market channel systems. Formulation of marketing strategies.

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

AGB 532 Advanced Agribusiness Finance. (3)

fall

Financial management of agribusiness firms; agribusiness financial analysis, investment analysis, agricultural risk management, and introduction to agricultural financial intermediaries. Prerequisites: both computer literacy and a course in finance or only instructor approval.

AGB 535 Commodity Analysis. (3)

fall

Analysis of commodity markets.

AGB 536 Small Business Finance, Entrepreneurship, and E-commerce. (3)

fall

Uses lectures, case studies, and business plans to highlight challenges of starting and running a small business. Lecture, seminar, case studies, computer labs.

AGB 540 Advanced Food Science. (3)

selected semesters

Chemical and physical nature of processed foods. Emphasizes food product development.

AGB 550 International Agricultural Development. (3)

fall

Transition of developing countries from subsistence to modern agriculture. Emphasis placed on implications for U.S. agribusiness working abroad.

AGB 551 Agribusiness in Developing Countries. (3)

spring

Factors influencing successful development of agribusiness enterprises in developing countries, including poverty, access to capital and technology, and trade opportunities.

AGB 552 International Agricultural Policy. (3)

fall

Uses international trade theory to analyze the effects of government policies, trade agreements, and exchange rates on agribusiness.

AGB 554 Advanced International Trade. (3)

fall

Advanced international practices in trading of agribusiness, technology, and resource products and services.

AGB 557 Resource Policy and Sustainability. (3)

fall

Considers the evolution of policy design, focusing on how resource and environmental concerns have affected agricultural development and trade policies.

AGB 558 Advanced Bioremediation. (3)

spring

Management and policy issues related to bioremediation of mineral tailing and animal waste and replacement of chemical control with biological methods. Lecture, case studies.

AGB 560 Advanced Agribusiness Management Systems. (3)

selected semesters

Development and use of decision support systems for agribusiness management decision making.

AGB 561 Agribusiness Research Methods. (3)

fall

Uses model building, hypothesis testing, and empirical analysis in solving agribusiness problems.

AGB 570 Managerial Economics for Agribusiness. (3)

fall

Concepts in micro- and macroeconomics applied to agribusiness management environments: price formation, market structure, information economics, fiscal and monetary policy. Prerequisites: introductory micro- and macroeconomics.

AGB 580 Practicum. (1–12)

selected semesters

AGB 581 Advanced Agribusiness Policy. (3)

fall

Policy-making history, structure, and process.

AGB 583 Field Work. (1–12)

selected semesters

AGB 584 Internship. (1–12)

selected semesters

AGB 587 Resource Policy and Sustainability. (3)

fall

Considers the evolution of policy design, focusing on how resource and environmental concerns have affected agricultural development and trade policies.

AGB 589 Agribusiness Capstone. (3)

fall and spring

Strategic management of organizations focusing on developing value-creating strategies in dynamic environments. Pre- or corequisites: AGB 511, 528, 532, 560, 561, 570.

AGB 590 Reading and Conference. (1–12)

selected semesters

AGB 591 Seminar. (1–12)

selected semesters

AGB 592 Research. (1–12)

selected semesters

AGB 593 Applied Project. (1–12)

selected semesters

AGB 594 Conference and Workshop. (1–12)

selected semesters

AGB 595 Continuing Registration. (1)

selected semesters

AGB 598 Special Topics. (1–4)

selected semesters

AGB 599 Thesis. (1–12)

selected semesters

AGB 600 Research Methods. (1–12)

selected semesters

AGB 690 Reading and Conference. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

ENVIRONMENTAL RESOURCES (ERS)

ERS 130 Introduction to Environmental Science. (4)

fall

Introduces soil resources, their physical and chemical properties, classification, energy dynamics, and the role they play in environmental quality. Lecture, lab.
General Studies: SQ

ERS 191 First-Year Seminar. (1–3)

selected semesters

ERS 207 Applied Plant Taxonomy. (3)

spring

Introduces identification of vascular plants. Surveys plant families. Lecture, lab, field trips. Prerequisite: BIO 187.

ERS 225 Soils. (3)

fall

Fundamental properties of soils and their relation to plant growth and the nutrition of man and animals. Relation of soils to environmental quality. Prerequisite: CHM 101 or 113 (or its equivalent).

ERS 226 Soils Laboratory. (1)

fall

Selected exercises to broaden the background and understanding of basic soil principles. Lab. Corequisite: ERS 225.

ERS 246 Environmental Conservation and Ecology. (3)

spring

Principles of environmental conservation from global, historical, and ecological perspectives. Considers development/sustainability issues.
General Studies: G

ERS 294 Special Topics. (1–4)

selected semesters

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

MORRISON SCHOOL OF AGRIBUSINESS AND RESOURCE MANAGEMENT

ERS 301 Ecology. (3)

fall

Introduces the principles of ecology emphasizing vegetation community ecology. Field trips. Prerequisite: BIO 187.

ERS 307 Plant Identification. (4)

fall

Identification of key plants of western rangelands and forests. Laboratory emphasis on grass identification. Lecture, lab. Prerequisite: ERS 207 or PLB 310 (or its equivalent).

ERS 311 Applied Ecology. (4)

spring

Ecological principles and their implication for management of ecosystems. 3 hours lecture, 1 hour lab. Prerequisites: ERS 225, 301, 350.

ERS 333 Water Resources Management. (3)

selected semesters

Sources, their development, and conservation in arid regions for agricultural, natural resources, and urban uses. Prerequisite: CHM 101 or 113.

ERS 350 Environmental Statistics. (3)

fall

Statistical methods with applications in natural resource management and the environmental sciences. Uses computers and the internet. Prerequisites: CSE 180; MAT 117.

General Studies: CS

ERS 353 Wildlife Nutrition. (3)

selected semesters

Principles of nutrient metabolism in wildlife species, with emphasis on understanding the interaction of wildlife with their environment. Prerequisites: a combination of BIO 187 and 188 and CHM 101 or only instructor approval.

ERS 364 Surface Water Hydrology. (3)

fall in even years

Hydrologic principles in an ecological context. Discharge measurements, open channel hydraulics, bed forms, sediment transport as applied to ecological problems. Lecture, lab, field trip. Prerequisite: ERS 350.

ERS 365 Watershed Management. (3)

selected semesters

Hydrologic, physical, biological, and ecological principles applied to watershed management. Impact of ecosystem manipulations on water yield and quality. 1 weekend field trip. Prerequisites: ERS 225, 246.

ERS 402 Vegetation Measurement. (4)

spring

Vegetation sampling and inventory as related to animal-habitat relations. Lecture, lab, 1 weekend field trip. Prerequisites: a combination of ERS 301 and 307 and 350 and program major or only instructor approval.

ERS 415 Wildlife Life Histories. (4)

spring

Life histories of the major mammal, reptile/amphibian, and avian species found in the Southwest, with emphasis on management. Lecture, lab. Prerequisite: BIO 370 or 385.

ERS 420 Ecological Restoration. (3)

spring

Techniques of ecological restoration applied for the improvement of arid and semiarid land and sensitive habitats. Weekend field trips.

ERS 425 Soil Classification and Management. (3)

selected semesters

Principles of soil genesis, morphology, and classification. Presents management and conservation practices. Prerequisite: ERS 225.

ERS 433 Riparian Ecosystem Management. (3)

selected semesters

Examines the functions and components that make up riparian ecosystems and the management of these ecosystems. Lecture, field trip. Prerequisite: ERS 225 or instructor approval.

ERS 434 Wetland Ecosystems and Soils. (3)

selected semesters

Wetland ecosystems structure and function including hydrology and biogeochemistry with special emphasis on soils. Lecture, weekend field trip. Prerequisite: ERS 225 or instructor approval.

ERS 448 Soil Ecology. (3)

selected semesters

Soils viewed in an ecosystem context, soil-plant relationships, nutrient budgets, and abiotic factors that influence soil processes. Prerequisites: a combination of BIO 320 and ERS 225 and 226 or only instructor approval.

ERS 449 Landscape Ecology. (3)

selected semesters

Causes and ecological consequences of spatial and temporal patterns in the environment. Prerequisite: ERS 301.

ERS 460 Applied Systems Ecology. (3)

selected semesters

Systems approach applied to analysis and management of natural resource ecosystems. Uses simulation models. 2 hours lecture, 3 hours lab. Prerequisites: ERS 350 (or its equivalent); a course in ecology.

ERS 465 Surface Water Quality. (3)

spring in odd years

Examines factors that impact water quality. Surface water sampling and analysis with interpretation for wildlife, humans, and other users. Prerequisites: ERS 364, 365.

ERS 474 Wildlife Ecology. (3)

selected semesters

Integrates ecological concepts as applied to wildlife populations and their interaction with the habitat and other species. Lecture, lab, 1 weekend field trip.

ERS 475 Wildlife Management. (4)

spring

Principles and techniques of applied ecology for the management and wildlife populations. Lecture, lab. Prerequisites: ERS 311 and 474 (or their equivalents).

ERS 477 Environmental Risk Assessment and Management. (3)

selected semesters

Survey of methods related to identification, evaluation, comparison, and management of environmental risks. Prerequisite: senior standing.

ERS 480 Ecosystem Management and Planning. (3)

spring

Planning for management and conservation of wildland ecosystems. Ecological, economic, and social constraints on long-term sustainable resource development. Computer tools for resource planning. Lecture, 1 weekend field trip. Prerequisites: ERS 402 (or its equivalent); senior standing.

General Studies: L

ERS 484 Internship. (1–12)

selected semesters

ERS 485 GIS in Natural Resources. (3)

fall

Principles of Geographic Information Systems (GIS) utilized in natural resource management. Use of computers for spatial analysis of natural resources. Lecture, lab. Prerequisite: CSE 180 (or its equivalent).

ERS 486 Remote Sensing in Environmental Resources. (4)

spring

Principles and application of remote sensing technologies in natural resource management. Integration of computerized data from aerial photography and Landsat imagery in resource management. Lecture, lab. Prerequisite: ERS 485 (or its equivalent).

ERS 489 Undergraduate Research. (1–3)

fall and spring

Undergraduate research under the supervision of an environmental resources faculty member. Prerequisite: junior or senior status.

ERS 490 Recent Advances in Environmental Resources. (1)

fall and spring

Current literature and significant developments involving environmental resources. May be repeated for credit.

ERS 492 Honors Directed Study. (1–6)

selected semesters

ERS 493 Honors Thesis. (1–6)

selected semesters

ERS 494 Special Topics. (1–4)

selected semesters

ERS 498 Pro-Seminar. (1–7)
selected semesters

ERS 499 Individualized Instruction. (1–3)
selected semesters

ERS 500 Research Methods. (1–12)
selected semesters

ERS 533 Riparian Ecology. (3)
selected semesters
Review of recent literature, developments, and methods related to riparian ecology. Applications of soil and landscape ecology to riparian systems. Lecture, discussion, field trips.

ERS 540 Plant Responses to Environmental Stresses. (3)
selected semesters
Reaction of plants to environmental stresses; aerial pollutants, fire, herbivores, mechanical treatments, pesticides, and soil amendments. 1 weekend field trip. Prerequisite: instructor approval.

ERS 550 Vegetation Dynamics. (4)
fall
Dynamics of vegetation emphasizing ecological succession, applications of landscape ecology and GIS, and analysis of vegetation data. Field trips, studio. Prerequisite: a course in introductory statistics.

ERS 551 Advanced Environmental Statistics. (4)
spring
Advanced statistical procedures for environmental resources. Techniques for analyzing research data that do not meet assumptions. Studio. Prerequisite: ERS 350 (or its equivalent).

ERS 553 Advanced Animal Nutrition. (4)
selected semesters
Metabolic and physiological interactions of nutrients in wild and domesticated animals consuming natural feeds. Lecture, lab.

ERS 560 Systems Ecology. (3)
selected semesters
Quantitative description and mathematical modeling of ecosystem structure and function. Techniques for model construction and simulation. Lecture, lab. Prerequisites: ERS 350 (or its equivalent); computer programming; 6 hours in ecological studies.

ERS 561 Spatial Statistics and GIS. (3)
fall
Dependent spatial data, analysis and description, semivariograms, variograms, kriging, and GIS analysis. Lecture, lab. Prerequisites: ERS 350 and 485 (or their equivalents).

ERS 580 Practicum. (1–12)
selected semesters

ERS 584 Internship. (1–12)
selected semesters

ERS 585 Spatial Modeling with GIS. (3)
fall
GIS technology for spatial modeling of natural resources. Practical application of GIS technology for problem solving. Lecture, lab. Prerequisite: ERS 485 (or its equivalent) or instructor approval.

ERS 590 Reading and Conference. (1–12)
selected semesters

ERS 591 Environmental Resources Seminar. (1–12)
selected semesters

ERS 592 Research. (1–12)
selected semesters

ERS 593 Applied Project. (1–12)
selected semesters

ERS 594 Conference and Workshop. (1–12)
selected semesters

ERS 595 Continuing Registration. (1)
selected semesters

ERS 598 Special Topics. (1–4)
selected semesters

ERS 599 Thesis. (1–12)
selected semesters

ERS 691 Seminar. (1–12)
selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

PROFESSIONAL GOLF MANAGEMENT (PGM)

PGM 100 Introduction to GPTP. (2)
fall and spring

Introduces the golf professional training program. Career enhancement, rules of golf, tournament operations, and playing professional development programs. Prerequisite: admission to PGM program.

PGM 110 Player Development I. (1)
fall and spring

Introductory instruction on golf game improvement to assist PGM students in preparation for Players Ability Test. Lecture, lab. Prerequisite: admission to PGM program.

PGM 111 Player Development II. (1)
fall and spring

Instruction to assist PGM students in preparation for Players Ability Test with emphasis on full swing mechanics and practice plan development. Lecture, lab. Prerequisite: admission to PGM program.

PGM 112 Player Development III. (1)
fall and spring

Emphasizes classroom and "hands-on" applications of full swing analysis and short game strategies. Special focus on golf course management. Lecture, lab. Prerequisite: admission to PGM program.

PGM 113 Player Development IV. (1)
fall and spring

Emphasizes classroom and "hands-on" applications of full swing analysis and short game strategies. Special focus on golf course management. Lecture, lab. Prerequisite: admission to PGM program.

PGM 150 Teaching Golf I. (2)
fall and spring

Introduces golf instruction. Focus on fundamentals of golf swing and teaching techniques. Prerequisite: admission to PGM program.

PGM 200 GPTP II. (2)
fall

Focus on golf professional training program and the completion of the PGA Level One experience kit. Prerequisite: admission to PGM program.

PGM 250 Teaching Golf II. (1)
fall and spring

Communicating with student golfers, swing evaluation, key factors club fitting, developing a successful teaching practice. Prerequisite: admission to PGM program.

PGM 300 GPTP III. (1)
fall

Business planning and operations, business communications related to business of golf. Completion of the PGA Level Two experience kit. Prerequisite: admission to PGM program.

PGM 350 Teaching Golf III. (1)
fall and spring

Teaching swing concepts. Developing a teaching philosophy, analyzing flawed swing mechanics through video and swing analysis software. Prerequisite: admission to PGM program.

PGM 400 GPTP IV. (1)
fall

Food and beverage control, supervision and delegation of golf facilities. Completion of the PGA Level Three experience kit. Prerequisite: admission to PGM program.

PGM 484 Internship. (1–12)
selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

East College

www.east.asu.edu/ecollege

David E. Schwalm, Ph.D., Dean

PURPOSE

East College was created by the Arizona Board of Regents in February 1997 to serve four purposes:

1. to offer an array of upper-division General Studies and general interest courses for students enrolled in ASU East degree programs;
2. to coordinate the Partnership in Baccalaureate Education with Chandler-Gilbert Community College through which ASU East students are provided with lower-division General Studies and major prerequisite courses;
3. to offer an academic home for students who choose the unique environment of ASU East but do not wish to declare a major immediately; and
4. to develop new degree programs for ASU East.

General Studies/General Interest. Each semester, East College offers a selection of popular upper-division ASU General Studies and general interest courses, primarily for support of ASU East students but open to all ASU students who might find the time or location convenient. East College typically offers courses in anthropology, art, communication, economics, English, history, mathematics, music, philosophy, political science, psychology, religious studies, sociology, and women's studies. Students should refer to the current *Schedule of Classes* for specific courses offered at ASU East each semester. All credit earned at ASU East automatically transfers to ASU Main or ASU West.

East College also offers support courses for the Bachelor of Applied Science (B.A.S.) degree. The applied science core (ASC) courses are upper-division courses specifically designed to build upon the mathematics and science base acquired in the Associate of Applied Science (A.A.S.) degree.

APPLIED MATHEMATICS (APM)

APM 301 Introductory Statistics. (3)

selected semesters

Probability, distributions, statistical hypothesis testing, t-tests, basic correlation, and regression. Prerequisite: MAT 117 or instructor approval.

APM 401 Intermediate Statistics. (3)

selected semesters

Analysis of variance, multiple comparisons, multiple regression. Prerequisite: APM 301 (or its equivalent) or instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

APPLIED SCIENCE CORE (ASC)

ASC 301 Contextual Uses of Algebra in Technology. (1)

fall and spring

Uses algebra to solve real-world technological problems using currently available computer software. Prerequisite: B.A.S. major.

ASC 302 Contextual Uses of Geometry in Technology. (1)

fall and spring

Uses geometrical concepts to solve real-world technological problems using currently available computer software. Prerequisite: B.A.S. major.

ASC 303 Contextual Uses of Trigonometry in Technology. (1)

fall and spring

Uses trigonometry to solve real-world technological problems using currently available computer software. Prerequisite: B.A.S. major.

ASC 315 Numeracy in Technology. (3)

fall and spring

Contextual uses of mathematics in applied sciences. Emphasizes using mathematical methodologies to solve technology-related problems. Prerequisite: B.A.S. major.

ASC 325 Physical Sciences in Technology. (4)

fall and spring

Physical systems and their interrelationships on technology systems. Real-world applications of physical systems. Lecture, lab. Prerequisite: B.A.S. major.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Partnership in Baccalaureate Education. Through the partnership with Chandler-Gilbert Community College, ASU East students can take first-year composition courses and courses that meet lower-division ASU General Studies requirements listed in "[General Studies](#)," page 83. These courses, combined with introductory courses in the major, are available in an innovative integrated first-year curriculum designed to foster academic success. Students can also take major prerequisite courses, introductory language courses, and other lower-division courses of general interest through the partnership.

East College/No Preference Majors. Students who would like to start their college careers at ASU East to benefit from the unique campus environment can declare "East College/No Preference" as an interim major while completing the General Studies requirements and searching for an ASU major that serves their personal and career objectives. East College provides advising for No Preference majors.

DEGREE PROGRAMS

See the "[East College Baccalaureate Degrees and Majors](#)" table, page 641. For graduate degrees, see the "[East College Graduate Degrees and Majors](#)" table, page 642.

East College also offers a certificate program in Multimedia Writing and Technical Communication; minors in Wellness Foundations, Food and Nutrition Management and Human Nutrition; and a concentration for the B.A.S. See the *Graduate Catalog* for more information about graduate programs.

East College Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Applied Psychology	B.S.	—	East College
Applied Science	B.A.S.	Multimedia writing and technical communication	East College
Business Administration	B.S.	—	East College
Elementary Education	B.A.E.	—	East College
Exercise and Wellness	B.S.	—	Department of Exercise and Wellness
Interdisciplinary Studies	B.I.S.	See the “B.I.S. Concentrations” table, page 116.	Bachelor of Interdisciplinary Studies Advisory Committee
Multimedia Writing and Technical Communication	B.S.	—	East College
Nutrition	B.S.	Dietetics, food and nutrition management, human nutrition	Department of Nutrition

INTERDISCIPLINARY STUDIES—B.I.S.

The Bachelor of Interdisciplinary Studies (B.I.S.) is a university-wide program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations and an interdisciplinary core, students in the B.I.S. are expected to take an active role in creating their educational plan and defining their career goals. The B.I.S. emphasizes written communication, versatility, and critical thinking, skills desired in a changing workplace environment. Self-assessment and appraisal of opportunities to support academic and career goals are key elements in the core courses. The concentrations are generally based on approved academic minors, certificate programs, or special coherent clusters of course work. The student should be able to integrate these into a meaningful program.

The combination of areas of concentration gives students flexibility in creating unique programs to accomplish individual academic goals. Students who declare the B.I.S. as their major in East College at ASU East take their core courses and at least one concentration through ASU East. The second concentration may be taken at ASU Main, ASU West, or ASU East. The B.I.S. core courses are offered by East College. Concentrations at ASU East are offered by East College, the College of Technology and Applied Sciences, and the Morrison School of Agribusiness and Resource Management. Students interested in the B.I.S. should arrange an appointment with an East College advisor at 480/727-1515 before declaring the B.I.S. major.

Basic Requirements

The B.I.S. requires 120 semester hours. The major is composed of a 12 hour core and a minimum of 36 hours in two concentrations (18 hours each). Throughout the core sequence, the student assembles a portfolio including self-assessment of progress toward career goals and an evaluation of key educational and personal activities that may apply. The core courses must be taken in sequence. These courses may not be transferred from other institutions. BIS 302 and 401 may be taken concurrently. All core courses must be completed with a grade of “C” or higher.

Core Courses

BIS 301 Foundations of Interdisciplinary Studies L.....	3
BIS 302 Interdisciplinary Principles	3
BIS 401 Applied Interdisciplinary Studies	3
BIS 402 Senior Seminar L.....	3
Total	12

For course descriptions, see “Bachelor of Interdisciplinary Studies,” [115](#).

Other Requirements

In addition to the basic requirements, students must complete all university requirements, including First-Year Composition and General Studies. Early advising is recommended to ensure that students meet requirements efficiently and optimize their choices.

Declaring the B.I.S. Major. Students must receive approval from an East College advisor before declaring the B.I.S. major. In addition, the following requirements must be met:

1. 45 semester hours of college credit completed;
2. cumulative GPA of 2.00 for continuing ASU students or in-state transfer students (2.50 for out of state transfers); and
3. selection of two concentrations with a minimum of two courses in each (minimum grade of “C”) completed or one completed and one in progress (i.e., after the drop/add period) in each area.

Approved Concentrations

Each concentration requires 18 semester hours, with each course completed with a grade of “C” or higher. Twelve of the hours must be in upper-division courses. Students should check for new information about concentrations on the Web at www.east.asu.edu/ecollege or contact an East College advisor at 480/727-1515.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

East College Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Curriculum and Instruction*	Ph.D.	Exercise and wellness education	Interdisciplinary Committee on Curriculum and Instruction
Exercise and Wellness	M.S.	—	Department of Exercise and Wellness
Nutrition	M.S.	—	Department of Nutrition

* Doctoral courses for this interdisciplinary program administered by ASU Main are offered at ASU East.

Faculty of Applied Psychology

www.east.asu.edu/ecollege/appliedpsych

480/727-1515

CNTR 78

Roger W. Schvaneveldt, Faculty Head

Professor: Schvaneveldt

Assistant Professor: Gray

APPLIED PSYCHOLOGY—B.S.

This major offers a traditional psychology core leading to graduate school preparation and/or to applications in human factors with emphasis on human-computer interaction, aviation, or manufacturing. Although most careers in psychology require graduate training, there are some employment opportunities for B.S. students in applied settings. For example, there is a need for individuals who can help deal with problems of usability of products and systems. The Applied Psychology program offers courses and experiences to prepare students for these positions. The rigor of the major also provides strong preparation for further graduate study in psychology. The program serves students in other ASU East programs such as manufacturing engineering technology, aeronautical management technology, information management technology, and business administration.

Graduation Requirements

The completion of 120 semester hours—including First-Year Composition, General Studies (see “General Studies,” page 83), and major requirements—leads to the B.S. degree. The major allows for at least 24 semester hours of electives. The major requirements for the B.S. degree in Applied Psychology consist of a 25-hour core of psychology courses, 12 hours in applied psychology, and 18 hours of related course work.

Core Courses (25 hours). Core courses provide a general background in the basic scientific areas of psychology and provide a culminating experience to integrate the varied studies.

PGS 101 Introduction to Psychology <i>SB</i>	3
PGS 350 Social Psychology <i>SB</i>	3
PSY 230 Introduction to Statistics <i>CS</i>	3
PSY 290 Research Methods <i>L/SG</i>	4
PSY 323 Sensation and Perception	3
PSY 324 Memory and Cognition	3
PSY 325 Physiological Psychology	3
PSY 477 Applied Psychology Capstone Experience*	3
or HON 493 Honors Thesis <i>L</i> (3)	
Total	25

* This PSY course is offered only by ASU East. All other PSY courses listed above are offered by both campuses.

Applied Psychology Courses (12 hours). Students work with an advisor to select courses in Applied Psychology emphasizing human-computer interaction (HCI), aviation, training, manufacturing, or methods. Course work must include a minimum of four of the following courses:

AMT 410 Aviation Safety and Human Factors	3
PGS 471 Psychological Testing	3
PSY 320 Learning and Motivation.....	3
PSY 330 Statistical Methods <i>CS</i>	3
PSY 360 Cognitive Science*	3
PSY 390 Experimental Psychology <i>L</i>	3
PSY 437 Human Factors <i>L</i>	3
PSY 438 Human-Computer Interaction*	3
PSY 439 Training and Skill Acquisition*	3
PSY 440 Industrial/Organizational Psychology*.....	3
PSY 494 Special Topics	1-4

* This PSY course is offered only by ASU East. All other PSY courses listed above are offered by both campuses.

Sample 12-hour Course Sets

Aviation

- PSY 437 Human Factors
- PSY 438 Human-Computer Interaction
- PSY 440 Industrial/Organizational Psychology
- AMT 410 Aviation Safety and Human Factors

Human-Computer Interaction

- PSY 437 Human Factors
- PSY 438 Human-Computer Interaction
- PSY 440 Industrial/Organizational Psychology
- PSY 494 Special Topics

Manufacturing

- PSY 437 Human Factors
- PSY 438 Human-Computer Interaction

- PSY 439 Training and Skill Acquisition
- PSY 440 Industrial/Organizational Psychology

Methods

- PSY 330 Statistical Methods
- PSY 360 Cognitive Science
- PSY 390 Experimental Psychology
- PGS 471 Psychological Testing

Training

- PSY 320 Learning and Motivation
- PSY 437 Human Factors
- PSY 439 Training and Skill Acquisition
- PSY 440 Industrial/Organizational Psychology

Related Course Work

BIO course with a lab	4
Computer skills course.....	3
MAT 210 Brief Calculus <i>MA</i>	3
or a higher MAT course (3)	
Writing skills course	3
Courses selected in consultation with an advisor	5
Total	18

For more information about program requirements and courses, call an East College advisor at 480/727-1515, send e-mail to east.college@asu.edu, or access the Web site at www.east.asu.edu/ecollege/appliedpsych.

For PGS courses and additional PSY courses, see ["Department of Psychology," page 455](#).

PSYCHOLOGY (PSY)

The courses listed are offered only by ASU East. For more PSY courses that may be offered by ASU East, see "Department of Psychology" under "College of Liberal Arts and Sciences."

E PSY 360 Cognitive Science. (3)

once a year

Examines cognition from the varied perspectives of philosophy, linguistics, psychology, computer science (artificial intelligence), and neuroscience. Lecture, discussion. Prerequisite: PSY 324.

E PSY 438 Human-Computer Interaction. (3)

once a year

Theories, methods, and findings concerning the usability of computer systems and the design of effective user interfaces. Lecture, discussion, projects. Prerequisite: PSY 437.

E PSY 439 Training and Skill Acquisition. (3)

once a year

Theories, methods, and findings concerning the acquisition of skilled performance and the design of effective training systems. Lecture, discussion, projects. Prerequisite: PSY 437.

E PSY 440 Industrial/Organizational Psychology. (3)

once a year

Examines personnel selection, performance assessment, job and workplace design, job satisfaction, organizational behavior, management systems, and industrial safety. Lecture, discussion, projects. Prerequisite: PSY 230 (or an equivalent statistics course).

E PSY 448 Human Factors in Transportation. (3)

selected semesters

Examines human performance and human-machine design issues in aviation and ground transportation. Lecture, lab. Pre- or corequisite: PSY 323.

E PSY 449 Human Factors in Sport. (3)

selected semesters

Introduces the needs of special populations and the agencies that work with challenged individuals. Lecture, lab. Pre- or corequisites: PSY 320, 323.

E PSY 477 Applied Psychology Capstone Experience. (3)

fall, spring, summer

Applied psychology from a systems perspective. Requires a report based on research and/or applied work as a culminating experience. Lecture, discussion, projects. Prerequisite: senior standing.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56](#).

Faculty of Business Administration

www.east.asu.edu/ecollege/businessadmin

480/727-1515

CNTR 76

Roger W. Hutt, Faculty Head

Professors: Daneke, Edwards, Kagan, Marquardt, Shultz, Thor

Associate Professors: Hutt, Patterson, Richards

Assistant Professor: Manfredo

BUSINESS ADMINISTRATION—B.S.

The B.S. degree in Business Administration offers a survey of contemporary business disciplines and additional depth in at least three disciplines. The curriculum enables students to gain essential business competencies, knowledge of business disciplines and methods, and appreciation for contemporary business environments and cultures. Students prepare for careers in business, industry, or government, as well as for career advancement and entrepreneurial enterprises. This program operates under the umbrella of the ASU Main College of Business AACSB International accreditation, but it is offered through East College.

Requirements for the Business Administration major consist of 30 hours of lower-division core and skill courses, 34 hours of upper-division core courses, and nine hours of advanced business electives. All of the upper-division business courses (with the exception of nine hours) must be taken at ASU East.

Business Administration Core

E ACC 316 Management uses of Accounting	3
E BUS 394 Professional Development.....	1
E CIS 394 ST: Information Management	3
E ECN 394 ST: Current Issues in Economics.....	3
E FIN 300 Fundamentals of Finance.....	3
E IBS 300 Principles of International Business <i>G</i>	3
E LES 305 Legal, Ethical, and Regulatory Issues	3
E MGT 300 Organizational Management Leadership.....	3
E MGT 463 Strategic Management	3
E MKT 300 Principles of Marketing	3
E SCM 300 Global Supply Operations	3

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

EAST COLLEGE

E TWC 447 Business Reports <i>L</i>	3
Total	34

Students who complete the major requirements may also choose to take additional business courses, related courses in ASU East industry-specific business programs (Agribusiness, Information and Management Technology, and Aeronautical Management Technology), or special optional nine-semester-hour extensions of the basic major in our industry-specific programs.

For the latest information about application, admissions, program requirements, and courses, call an East College advisor at 480/727-1515, or access the Web site at www.east.asu.edu/ecollege/businessadmin.

Minor in Small Business

The minor in small business is in the process of transferring from the College of Business, ASU Main, to the faculty of Business Administration in East College at ASU East. For more information see [“Minor in Small Business,” page 181](#).

B.I.S. Concentration in Small Business (B.I.S. Majors Only)

The requirements for the small business concentration are identical to those for the minor in Small Business listed on [181](#). For B.I.S. degree requirements, see [“Bachelor of Interdisciplinary Studies,” page 114](#).

Faculty of Education

www.east.asu.edu/ecollege/elementaryed

480/727-1103
COMM2 101

Bette S. Bergeron, Faculty Head

Professor: Bergeron

Senior Lecturer: Wenhart

Lecturers: Gryder, Hopper

ELEMENTARY EDUCATION—B.A.E.

Program Overview

The Elementary Education program at ASU East is unique in its focus on intensive field experiences, practical application of current theory, and emphasis on technology. The newly revised curriculum is also focused on and directly aligned with Arizona’s standards for teachers. Courses are arranged sequentially and taken with peer cohorts in four semester-long blocks. Each semester Elementary Education students are immersed in field experiences that directly link with course discussions and assignments. Course instructors have taught in a variety of K–8 settings and can therefore augment class experiences with practical applications. Current educational technologies are

incorporated into course delivery and assignments. Additionally, students have the opportunity to choose between the Elementary Education program at the ASU East campus or participate in one of the campus’s district-based school partnerships.

Graduation Requirements

A total of 120 semester hours is required for graduation with a minimum of 45 semester hours of upper-division credit. As part of the undergraduate degree program, students will complete ASU General Studies (see [“General Studies” section, page 83](#)) requirements. In addition, Elementary Education students are required to complete 18 semester hours in an academic specialization, which is tailored to an individual student’s academic strengths (e.g., math, science, social studies, English). The remaining program hours, which specifically focus on the teaching profession, are outlined below. Students must first be admitted to the ASU East Elementary Education program before enrolling in the Professional Preparation Program courses (Blocks I–IV).

Foundations (15 semester hours)*

ECD 314 The Developing Child	3
EDP 310 Educational Psychology <i>SB</i>	3
MCE 446 Understanding the Culturally Diverse Child <i>C</i>	3
MTE 180 Theory of Elementary Mathematics	3
SPE 311 Orientation to Education of Exceptional Children <i>SB</i> ...	3

* For foundation courses, see [“College of Education,” page 185](#).

Professional Preparation Program*

Block I (11–12 hours)

EDC 320 Integrated Learning Experience I: Learning Climate	2
EDC 330 Literacy I: Emerging Literacy and Phonemic Awareness	3
EDC 340 Schooling and Social Context <i>L</i>	3
EDC 350 Educational Technology I: Applications	1
EDC 351 Educational Technology II: Instruction and Evaluation	1
EDC 352 Educational Technology III: Design	1
EDC 474 Field Experience	0–1

Block II (11–12 hours)

EDC 325 Integrated Learning Experience II: Instructional Design and Implementation	2
EDC 335 Literacy II: Intermediate Literacy and Phonetic Principles	3
EDC 345 Math Methods for the Elementary Classroom	3
EDC 355 Accommodating Instruction for Diverse Learners	3
EDC 474 Field Experience	0–1

Block III (11–12 hours)

EDC 420 Integrated Learning Experience III: Assessment	2
EDC 430 Literacy III: Interventions	3
EDC 440 Science Methods for the Elementary Classroom	3
EDC 450 Social Studies Methods for the Elementary Classroom	3
EDC 474 Field Experience	0–1

Block IV (12–14 hours)

EDC 425 Integrated Learning Experience IV: Professional Knowledge	2
EDC 484 Student Teaching in the Elementary School	10–12

* Block courses can only be taken upon admission to the Elementary Education program.

Postbaccalaureate Program. Individuals who hold a bachelor's degree from an accredited institution are encouraged to participate in the Elementary Education program as non-degree graduate students. Postbaccalaureate students complete the same professional preparation program courses as outlined above, which are augmented by the students' unique life and work experiences.

For more information, visit CNTR 82, or call 480/727-1103.

Application. Applications for the ASU East Elementary Education programs are due October 15 for spring admission, and May 15 for fall admission. Students eligible for admission must meet the following criteria:

1. admission to ASU East;
2. a minimum cumulative GPA of 2.50;
3. completion of at least 56 semester hours at the time of admission (undergraduate degree-seeking students); or, completion of a bachelor's degree from an accredited institution (postbaccalaureate students);
4. evidence of competence in written English.

Applications include two letters of recommendation and a résumé outlining work with school-age children and/or their families. Students should call the ASU East Teacher Education Office at 480/727-1103 for complete admission packet information and eligibility requirements.

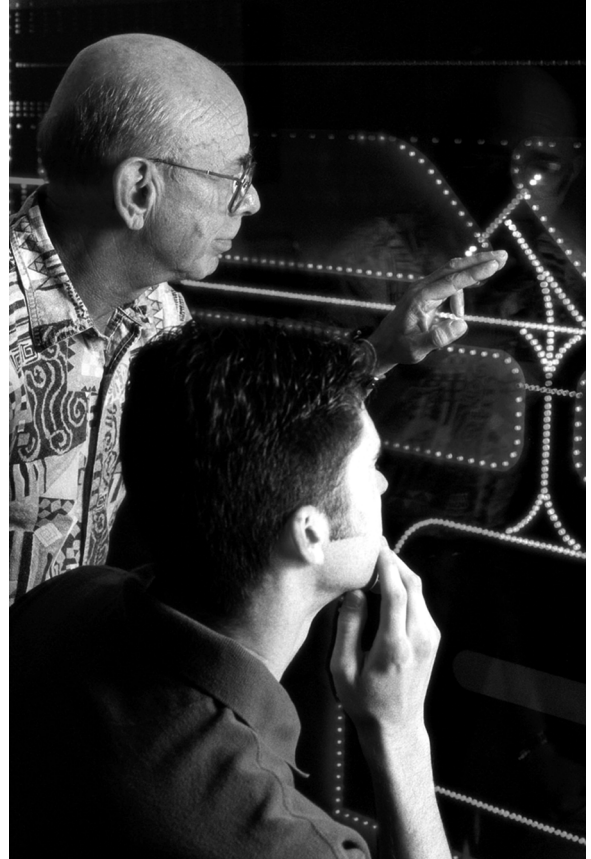
State Certification. Students who successfully complete the undergraduate or postbaccalaureate routes to Elementary Education teacher preparation at ASU East are recommended for K–8 certification in the State of Arizona pending the completion of all other requirements mandated by the state. These additional requirements include, but are not limited to, successful completion of all appropriate areas of the Arizona Education Proficiency Assessment and course work in the United States and Arizona constitutions. Because of the possibility that requirements for state certification may change, students are urged to maintain close contact with their education advisor.

Advising Information. It is important for all students to work closely with an ASU East academic advisor to ensure that their overall curriculum is coherent and best reflects their unique academic talents. For the latest information about application, admissions, program requirements, and courses, access the Web site at www.east.asu.edu/ecollege/elementaryed, or call the ASU East Teacher Education Office at 480/727-1103.

ELEMENTARY EDUCATION (EDC)

EDC 320 Integrated Learning Experience I: Learning Climate. (2)
fall and spring
Explores factors contributing to a positive and productive classroom learning environment. Interactive forum.

EDC 325 Integrated Learning Experience II: Instructional Design and Implementation. (2)
fall and spring
Design and implementation of developmentally appropriate instruction, and the alignment of instruction with district and state academic standards. Interactive forum. Prerequisite: EDC 320.



Consultant Ron Jones (left) and student Mark Bibby discuss effective use of lighting on the airport lighting simulator.

Dave Tevis photo

EDC 330 Literacy I: Emerging Literacy and Phonemic Awareness. (3)
fall and spring

Development of language from birth to age 8, and appropriate strategies for promoting growth in speaking, listening, reading, and writing. Applied inquiry. Corequisite: EDC 474.

EDC 335 Literacy II: Intermediate Literacy and Phonetic Principles. (3)
fall and spring

Strategies for teaching literacy in intermediate elementary classrooms, the application of phonetic principles to instruction, and integrating literacy across disciplines. Applied inquiry. Prerequisite: EDC 330. Corequisite: EDC 474. Pre- or corequisite: EDC 325.

EDC 340 Schooling and Social Context. (3)
fall and spring

Seminar addressing foundational issues in education, including the culture of schooling, current social contexts, and educational law. Interactive forum.

General Studies: L

EDC 345 Math Methods for the Elementary Classroom. (3)
fall and spring

Developmentally appropriate practices for teaching and assessing mathematics in grades K–8. Applied inquiry. Fee. Prerequisite: MTE 180. Corequisite: EDC 474. Pre- or corequisite: EDC 325.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

EDC 350 Educational Technology I: Applications. (1)

fall and spring

Module focused on basic technological skills needed for managing classroom instruction. Lab.

EDC 351 Educational Technology II: Instruction and Evaluation. (1)

fall and spring

Module focused on technology as an instructional medium, evaluation, and effective classroom use. Lab. Prerequisite: EDC 350.

EDC 352 Educational Technology III: Design. (1)

fall and spring

Module focused on instructional design utilizing a variety of technologies, including multimedia. Lab. Prerequisite: EDC 351.

EDC 355 Accommodating Instruction for Diverse Learners. (3)

fall and spring

Identifying and accommodating learners with special needs, including classroom adaptations in instruction and assessment. Forum, practicum. Prerequisite: SPE 311. Corequisite: EDC 474. Pre- or corequisite: EDC 325.

EDC 420 Integrated Learning Experience III: Assessment. (2)

fall and spring

Principles related to classroom assessment, including the alignment of assessment to curriculum, test interpretation, and a variety of assessment techniques. Interactive forum. Prerequisite: EDC 325.

EDC 425 Integrated Learning Experience IV: Professional Knowledge. (2)

fall and spring

Explores issues related to professional knowledge, including interdisciplinary instruction and the impact of the community on students' learning. Interactive forum. Prerequisite: EDC 420. Corequisite: EDC 484.

EDC 430 Literacy III: Interventions. (3)

fall and spring

Strategies for accommodating students struggling with learning, with a focus on the areas of literacy acquisition and assessment. Forum, practicum. Prerequisites: EDC 335, 355. Corequisite: EDC 474. Pre- or corequisite: EDC 420.

EDC 440 Science Methods for the Elementary Classroom. (3)

fall and spring

Developmentally appropriate practices for teaching and assessing sciences in grades K–8. Applied inquiry. Fee. Prerequisites: EDC 325, 345. Corequisite: EDC 474. Pre- or corequisite: EDC 420.

EDC 450 Social Studies Methods for the Elementary Classroom. (3)

fall and spring

Developmentally appropriate practices for teaching and assessing social studies in grades K–8. Applied inquiry. Prerequisites: EDC 325, 335. Corequisite: EDC 474. Pre- or corequisite: EDC 420.

EDC 474 Field Experience. (0–1)

fall and spring

Applies course content in a K–8 school. Emphasizes observation, classroom management, planning and delivery of instruction, and assessment. Practicum. Corequisite: all methods courses in the teacher preparation program must be taken with Field Experience.

EDC 484 Student Teaching in the Elementary School. (10–12)

fall and spring

Supervised teaching in the area of specialization. Capstone internship in curriculum, instruction, and classroom management. Internship. Prerequisites: 2.50 GPA; completion of professional course sequence; approval of ASU East teacher preparation office. Corequisite: EDC 425.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

Department of Exercise and Wellness

www.east.asu.edu/ecollege/wellness

480/727-1945

CLRB

William J. Stone, Chair

Professors: Burkett, Corbin, Stone

Associate Professor: Swan

Assistant Professors: Jones, Phillips, Tudor-Locke

Lecturer: Woodruff

EXERCISE AND WELLNESS—B.S.

The B.S. degree in Exercise and Wellness is designed to prepare professionals and scholars in exercise and physical activity leadership and management, as well as health and wellness promotion and education. Exercise and Wellness students study physical activity and other healthy lifestyles as they relate and contribute to good health and wellness. Areas of study include the kinesiological and physiological foundations of physical activity, nutrition, stress management, social/cultural issues, and factors involved in health behavior change. Students are exposed to the latest research and practices designed to enhance fitness and wellness, including both laboratory and field experiences. One unique aspect of the Exercise and Wellness program is an outstanding internship program that provides pre-professional experience in all segments of the fitness and wellness industry and health professions throughout the metropolitan Phoenix area.

Career opportunities range broadly across several sectors of the fitness and wellness industry and health professions, including worksite (corporate) health promotion/fitness, clinical/medical programs, community agencies and programs, and private health and fitness clubs. The degree is ideal preparation for advanced study in such health professions as cardiopulmonary rehabilitation, athletic training, physical therapy, and also graduate study in exercise and wellness.

Graduation Requirements

A total of 120 semester hours is required for graduation with a minimum of 45 semester hours of upper-division credit. As part of the undergraduate degree program, students complete ASU General Studies requirements. For a list of courses that meet ASU General Studies requirements, see [“General Studies Courses,” page 85.](#)

Exercise and Wellness students are required to complete the following courses:

Required courses

EXW 300 Foundations of Exercise and Wellness L.....	3
EXW 310 Computer Skills and Technology for Exercise and Wellness CS	3

EXERCISE AND WELLNESS (EXW)

EXW 342 Health Behavior Change	3
EXW 450 Cultural and Social Issues in Exercise and Wellness <i>SB, C</i>	3
EXW 484 Exercise and Wellness Internship.....	6
NTR 241 Human Nutrition	3
Total	21

Each EXW core course has specific prerequisite courses that must be taken before taking the respective core course. These prerequisite courses include the following:

BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
BIO 202 Human Anatomy and Physiology II.....	4
CHM 101 Introductory Chemistry <i>SQ</i>	4
or any equivalent chemistry	
COM 225 Public Speaking <i>L</i>	3
PGS 101 Introduction to Psychology <i>SB</i>	3
Total	18

All prerequisite and EXW courses must be completed with a minimum grade of “C.” Additional requirements for the major are described below.

EXW 212 Instructional Competency Laboratory	6
EXW 315 Physiological Foundations of Movement	3
EXW 320 Program Development and Leadership.....	3
EXW 330 Kinesiological Foundations of Movement.....	3
EXW 400 Stress Management for Wellness <i>L</i>	3
EXW 420 Exercise Testing	3
EXW 425 Exercise Prescription	3
Elective*.....	3
Total	27

* Three semester hours must be selected from an approved list of concentration electives.

WELLNESS FOUNDATIONS MINOR

The minor in Wellness Foundations is appropriate for students in the BIS degree program. It consists of the following plus all prerequisite courses:

EXW 300 Foundations of Exercise and Wellness <i>L</i>	3
EXW 325 Fitness for Life.....	3
EXW 342 Health Behavior Change	3
EXW 450 Cultural and Social Issues in Exercise and Wellness <i>SB, C</i>	3
EXW electives*.....	6
Total	18

* Six semester hours must be selected from an approved list of EXW electives. See an advisor for a list of approved electives.

GRADUATE PROGRAMS

The faculty in the Department of Exercise and Wellness offer programs leading to the M.S. degree in Exercise and Wellness. The department also participates with the Graduate College and College of Education in the program leading to the Ph.D. degree in Curriculum and Instruction with a concentration in Exercise and Wellness. See the *Graduate Catalog* for requirements.

EXW Note 1. A \$5.00 towel and locker fee is required each semester by students using towel and locker facilities for physical activity courses.

EXW Note 2. Physical activity instruction courses (EXW 105, 205, 305) may not be taken for audit. Excessive absences and/or tardiness are considered disruptive behavior.

EXW 100 Introduction to Health and Wellness. (3)

fall, spring, summer
Current concepts in health, exercise, and wellness. Emphasis placed on personal health, theories, attitudes, beliefs, and behaviors. Cross-listed as EPE 100/HES 100. Credit is allowed only for EPE 100 or EXW 100 or HES 100.

General Studies: SB

EXW 105 Physical Activity Instruction: Beginning. (1)

fall and spring
Beginning instruction in a variety of physical activities such as aerobics, aquatics, racquet sports, physical conditioning, and golf. “Y” grade only. May be repeated for credit. 3 hours per week. Activity. Fee. See EXW Notes 1, 2.

EXW 205 Physical Activity Instruction: Intermediate. (1)

fall and spring
Intermediate-level instruction in a variety of physical activities. Continuation of EXW 105. “Y” grade only. May be repeated for credit. 3 hours per week. Activity. Fee. See EXW Notes 1, 2.

EXW 212 Instructional Competency Laboratory. (2)

fall and spring
Methods of instructing and leading fitness activities including aerobic, resistance, and flexibility activities. May be repeated for credit. Lab. See EXW Note 1. Prerequisite: Exercise and Wellness major.

EXW 215 Physical Activity and Healthy Lifestyles. (1)

fall and spring
Applies principles of physical activity to personal fitness testing and program planning for people of all ages. Telecampus course. Not open to Exercise and Wellness majors or to students who have credit for EXW 325.

EXW 280 Global Issues in Exercise and Wellness. (3)

spring
Historical overview of health promotion and wellness models as they relate to minority, gender, social, cultural, economic, international, and environmental issues.

General Studies: G

EXW 300 Foundations of Exercise and Wellness. (3)

fall and spring
Analyzes research in various disciplines which contribute to health promotion and wellness.

General Studies: L/SB

EXW 301 Concepts of Fitness and Wellness. (1)

fall and spring
Guidelines for achieving health benefits of physical activity and other healthy lifestyles. Telecampus course. Not open to Exercise and Wellness majors or to students who have credit for EXW 325.

EXW 305 Physical Activity Instruction: Advanced. (1)

fall and spring
Advanced-level instruction in a variety of physical activities. Continuation of EXW 105. May be repeated for credit. “Y” grade only. 3 hours per week. Activity. Fee. See EXW Notes 1, 2.

EXW 310 Computer Skills and Technology for Exercise and Wellness. (3)

fall
Use of computers to statistically analyze data and design presentations of findings. Design of health promotion educational applications and presentations. Lecture, lab. Prerequisite: MAT 117.

General Studies: CS

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

EAST COLLEGE

EXW 311 Special Populations in Exercise and Wellness. (3)

fall

Introduces the challenged population and surveys the agencies that work with special populations.

EXW 315 Physiological Foundations of Movement. (3)

fall

Studies human movement with emphasis on physiological function of the body in response to physical activity and fitness training. Lecture, lab. Fee. Prerequisites: BIO 201, 202.

EXW 320 Program Development and Leadership. (3)

fall

Principles of planning, organizing, promoting, and leading fitness and wellness programs. Prerequisites: COM 225; Exercise and Wellness major.

EXW 325 Fitness for Life. (3)

fall and spring

Physical fitness and benefits of exercise with emphasis on self-evaluation and personalized program planning for a lifetime. Not open to Exercise and Wellness majors or to students who have credit for EXW 215 or 301.

EXW 330 Kinesiological Foundations of Movement. (3)

spring

Studies and considers human movement with emphasis on kinesiology principles and their application to movement and fitness. Lecture, lab. Prerequisites: BIO 201, 202.

EXW 342 Health Behavior Change. (3)

fall

Examines major theories of health behavioral change. Develops intervention strategies and techniques employed to facilitate health behavioral change. Prerequisite: PGS 101.

EXW 380 Body Image and Wellness. (3)

spring

Explores body image in American culture from physical, psychological, historical, and societal perspectives. Prerequisites: NTR 241; PGS 101.

EXW 400 Stress Management for Wellness. (3)

fall

Examines the stress response and management from a behavioral perspective as it pertains to individuals or groups. Prerequisite: PGS 101.

General Studies: L

EXW 420 Exercise Testing. (3)

fall and spring

Theoretical basis and practical application of pre-exercise screening, exercise testing, estimates of energy expenditure, and interpretation of results. Lecture, lab. Fee. Prerequisites: EXW 315; current CPR certification.

EXW 425 Exercise Prescription. (3)

spring

Theoretical basis for and application of general principles of exercise prescription to various ages, fitness levels, and health states. Prerequisites: EXW 320, 330. Pre- or corequisite: EXW 420.

EXW 442 Physical Activity in Health and Disease. (3)

spring

Examines the role of physical activity and fitness in the development of morbidity and mortality throughout the human life span. Prerequisite: EXW 315.

General Studies: L

EXW 450 Cultural and Social Issues in Exercise and Wellness. (3)

spring

Examines contemporary cultural and social issues in physical activity. Focus on theories of social behavior, racial, ethnic, and cultural differences. Prerequisite: PGS 101.

General Studies: SB, C

EXW 460 Resistance Training Application and Theory. (3)

fall

Fosters critical thinking as it applies to resistance training theory. Pre- or corequisite: EXW 315.

EXW 484 Exercise and Wellness Internship. (6)

fall, spring, summer

Supervised practicum experience in approved exercise and wellness/health promotion agencies. Field work. Prerequisites: EXW 315, 320, 420. Pre- or corequisite: EXW 425.

EXW 500 Research Methods. (3)

fall

Introduces the basic aspects of research, including problem selection, literature review, instrumentation, data handling, methodology, and writing the report.

EXW 501 Research Statistics. (3)

spring

Statistical procedures; sampling techniques, hypothesis testing, and experimental designs as they relate to research publications.

EXW 505 Applied Exercise and Wellness Laboratory Techniques. (3)

spring

Investigative techniques used in the applied exercise testing/prescription laboratory. Emphasizes cardiorespiratory assessment, energy balance, body composition, and electrocardiography. Lecture, lab. Fee.

EXW 534 Sports and Fitness Conditioning. (3)

fall

Bases of sports and fitness conditioning, including aerobic and anaerobic power, strength, flexibility, and analysis of conditioning components for sports and fitness.

EXW 536 Physiological Aspects of Physical Activity and Chronic Disease. (3)

fall

Role of physiological mechanisms associated with acute and long-term physical activity and its influence on chronic disease and wellness.

EXW 542 Health Promotion. (3)

spring

Theory and research concerning fitness and wellness programs in nutrition, physical activity, smoking cessation, and stress management.

EXW 544 Fitness/Wellness Management. (3)

spring

Development of the fitness/wellness industry. Planning, organizing, promoting, and managing fitness/wellness programs.

EXW 575 Teaching Lifetime Fitness. (3)

spring

Organizing and implementing physical fitness programs in the schools with emphasis on individual problem solving.

EXW 591 Seminar. (1–12)

selected semesters

EXW 599 Thesis. (1–12)

selected semesters

EXW 642 Exercise Epidemiology. (3)

spring

Physical activity, exercise, and physical fitness and the development of chronic disease.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Faculty of Multimedia Writing and Technical Communication

www.east.asu.edu/ecollege/multimedia

480/727-1190

CNTR 80

Barry M. Maid, Faculty Head

Professor: Maid

Associate Professor: Barchilon

MULTIMEDIA WRITING AND TECHNICAL COMMUNICATION—B.S.

In the Multimedia Writing and Technical Communication program, students learn how to produce, to design, and to manage information using both traditional and leading edge technologies.

Students learn

1. to communicate, both orally and in writing, across audiences and cultures;
2. issues of ethics in technical communications;
3. awareness of the global nature of technical communication—both culturally and economically;
4. the ability to evaluate print, oral, and electronic sources;
5. understanding of appropriate technical genres;
6. the ability to demonstrate technical editing skills in all work;
7. the ability to incorporate appropriate visual elements and design in written documents and oral presentations; and
8. the ability to work in appropriate media.

The program serves students who wish to pursue careers as technical writers, technical editors, Web page and intranet page designers, multimedia designers, desktop publishers, publications managers, and information designers.

GRADUATION REQUIREMENTS

To graduate with a B.S. degree in Multimedia Writing and Technical Communication, students must complete a minimum of 120 semester hours, including university graduation requirements and requirements of the major.

Multimedia Writing and Technical Communication Core

TWC 301 General Principles of Multimedia Writing L	3
TWC 401 Principles of Technical Communication L	3
TWC 411 Principles of Visual Communication L	3
TWC 421 Principles of Writing with Technology L	3
TWC 431 Principles of Technical Editing L	3
TWC 490 Capstone	3
Total	18

Major Electives (15 hours). The remaining hours will be electives in the major (TWC) at least six of which need to be in genre courses, such as TWC 443 Proposal Writing or TWC 447 Business Reports. An Internship (TWC 484) or supervised work experience is strongly recommended.

For information about program requirements and courses, access the Web at www.east.asu.edu/ecollege, or call an East College advisor at 480/727-1515.

Related Area (12 hours). Students select a related area consisting of 12 semester hours of study in one other discipline. At least nine of these 12 hours must be in the upper division. Suggested disciplines might be, but are not limited to, applied psychology, business administration, or com-

puter graphics. Students, with the help of an advisor, may also develop a coherent interdisciplinary related area.

BACHELOR OF APPLIED SCIENCE—B.A.S.

A Bachelor of Applied Science is also offered with a concentration in multimedia writing and technical communication. The B.A.S. degree is a “capstone” degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare them for future career opportunities and professional advancement.

Admission. Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree or equivalent from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

Degree Requirements. In addition to the A.A.S. degree, the B.A.S. in Applied Science through East College consists of 60 semester hours of upper-division (300-level and above) courses, with 30 semester hours in residence.

Assignable credit	6
B.A.S. core	15
General Studies	19
MWTC concentration	20
Total	60

General Studies Curriculum (19 hours). The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (L, CS, and awareness areas) are met with courses in the core or concentration. General Studies courses focus on contextual learning.

L	3
MA	3
HU	3
HU or SB	3
SB	3
SG	4
Total	19

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.



Bryan Jones (left), Russell Martin, and Robert Poister create a prototype wheelchair in a Manufacturing and Aeronautical Engineering Technology course.

Tim Trumble photo

Assignable Credit (6 hours). Assignable credit allows space in the curriculum for prerequisite courses needed for students to succeed in the program. The courses are determined by the student and an advisor.

B.A.S. Core (15 hours). The area core is focused on management and organization, professional communication, qualitative analysis, and computer competency.

Multimedia Writing and Technical Communication concentration (20 hours). In consultation with an advisor, students will select 20 hours of upper-division TWC courses.

CERTIFICATE PROGRAMS

An undergraduate Multimedia Writing and Technical Communication Certificate is available and requires 18 semester hours.

For students who have already completed a baccalaureate degree, a Postbaccalaureate Certificate in Multimedia Writing and Technical Communication is available that also requires 18 semester hours.

For more information about both certificate programs, call the East College advisor at 480/727-1515, or access the Web site at www.east.asu.edu/ecollege/multimedia.

MULTIMEDIA WRITING AND TECHNICAL COMMUNICATION (TWC)

TWC 194 Special Topics. (1–4)
selected semesters

TWC 200 Impact of Communications Technology on Society. (3)
fall and spring
Organizational issues and development of technical communication. Activities include research, evaluations, and presentation of oral arguments in support of positions. Prerequisites: both ENG 101 and 102 or only ENG 105.

General Studies: L

TWC 294 Special Topics. (1–4)
selected semesters

TWC 301 General Principles of Multimedia Writing. (3)
fall and spring

Introduces writing in a variety of media, understanding the consequences of integrating media, and effective editing techniques. Prerequisite: First-Year Composition.

General Studies: L

TWC 351 Technical Writing and Editing. (3)
fall and spring

Effective style, format, and organization of technical material; editing principles and practices; copyediting versus substantive editing; and document management. Prerequisite: ENG 102.

TWC 400 Technical Communications. (3)
fall, spring, summer

Planning and preparing technical publications and oral presentations based on directed library research related to current technical topics. Prerequisites: completion of first-year English requirements; a General Studies L course; senior standing with a major in College of Technology and Applied Sciences.

General Studies: L

TWC 401 Principles of Technical Communication. (3)
fall and spring

Basic information design principles to produce effective written, oral, and electronic technical communication. Understanding of rhetorical and audience analysis. Pre- or corequisite: TWC 301.

General Studies: L

TWC 403 Writing for Professional Publication. (3)
selected semesters

Analyzes the market and examines the publication process, including the roles of the author, editor, and reviewer. Pre- or corequisite: TWC 401.

TWC 411 Principles of Visual Communication. (3)
fall and spring

Basic principles of visual communication in print and electronic media. Understanding graphic and document design, including typography and color. Pre- or corequisite: TWC 401.

General Studies: L

TWC 421 Principles of Writing with Technology. (3)
fall and spring

Understanding historical and social impact of technology on writing, with emphasis on multimedia design, computer-mediated communication, and hypertext. Pre- or corequisite: TWC 401.

General Studies: L

TWC 431 Principles of Technical Editing. (3)
fall and spring

Basic principles of technical editing (for print and electronic media) including copyediting, reviews, standards, style, and project management. Pre- or corequisite: TWC 401.

General Studies: L

TWC 443 Proposal Writing. (3)
once a year

Develops persuasive strategies and themes for researching and writing professional proposals. Pre- or corequisite: TWC 401.

TWC 444 Manual and Instructional Writing. (3)
once a year

Design and development of a user manual, writing instructions, improving graphics and page design, and usability testing. Pre- or corequisite: TWC 401.

TWC 445 Computer Documentation. (3)
once a year

Introduces writing documentation for the computer industry. Pre- or corequisite: TWC 401.

TWC 446 Technical and Scientific Reports. (3)*once a year*

Introduces strategies, formats, and techniques of presenting information to technical and scientific audiences. Pre- or corequisite: TWC 401.

*General Studies: L***TWC 447 Business Reports. (3)***once a year*

Introduces strategies, formats, and techniques of presenting information to business and other workplace audiences. Pre- or corequisite: TWC 401.

*General Studies: L***TWC 484 Internship. (3)***fall and spring*

Applies classroom work in a supervised workplace environment. Pre- or corequisite: TWC 411 or 421 or 431.

TWC 490 Capstone. (3)*fall and spring*

Development of a professional portfolio, creation of a "culminating document," and synthesis of undergraduate experience. Prerequisite: instructor approval.

TWC 494 Special Topics. (1–4)*selected semesters***TWC 501 Principles of Technical Communication. (3)***fall and spring*

Basic information design principles to produce effective written, oral, and electronic technical communication. Understanding of rhetorical and audience analysis. Pre- or corequisite: graduate standing.

TWC 503 Writing for Professional Publication. (3)*selected semesters*

Analyzes the market and examines the publication process, including the roles of the author, editor, and reviewer. Pre- or corequisite: TWC 501.

TWC 511 Principles of Visual Communication. (3)*fall and spring*

Basic principles of visual communication in print and electronic media. Understanding graphic and document design, including typography and color. Pre- or corequisite: TWC 501.

TWC 521 Principles of Writing with Technology. (3)*fall and spring*

Understanding historical and social impact of technology on writing, with emphasis on multimedia design, computer-mediated communication, and hypertext. Pre- or corequisite: TWC 501.

TWC 531 Principles of Technical Editing. (3)*fall and spring*

Basic principles of technical editing for print and electronic media, including copyediting, reviews, standards, style, and project management. Pre- or corequisite: TWC 501.

TWC 543 Proposal Writing. (3)*once a year*

Develops persuasive strategies and themes for researching and writing professional proposals. Pre- or corequisite: TWC 501.

TWC 544 Manual and Instructional Writing. (3)*once a year*

Design and development of a user manual, writing instructions, improving graphics and page design, and usability testing. Pre- or corequisite: TWC 501.

TWC 545 Computer Documentation. (3)*once a year*

Introduces writing documentation for the computer industry. Pre- or corequisite: TWC 501.

TWC 546 Technical and Scientific Reports. (3)*once a year*

Introduces strategies, formats, and techniques of presenting information to technical and scientific audiences. Pre- or corequisite: TWC 501.

TWC 547 Business Reports. (3)*once a year*

Introduces strategies, formats, and techniques of presenting information to business and other workplace audiences. Pre- or corequisite: TWC 501.

TWC 584 Internship. (3)*fall and spring*

Applies classroom work in a supervised workplace environment. Pre- or corequisites: TWC 511, 521, 531.

TWC 598 Special Topics. (1–4)*selected semesters*

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Nutrition

www.east.asu.edu/ecollege/nutrition

480/727-1728

HSC 1386

Linda A. Vaughan, Chair

Professors: Johnston, Vaughan

Assistant Professors: Hampl, Hutchins

Senior Lecturer: Martin

Lecturer: Dixon

NUTRITION—B.S.

The B.S. degree in Nutrition offers three concentrations: dietetics, human nutrition, and food and nutrition management. The dietetics concentration provides students with a comprehensive range of nutrition, foods, and science courses that meet the academic (didactic) requirements necessary to become a registered dietitian. This concentration has been granted full accreditation as a Didactic Program in Dietetics (DPD) by the Commission on Accreditation for Dietetics Education of the American Dietetic Association. Graduates of a DPD may apply for Dietetic Internships to establish eligibility to write the Dietetic Registration examination.

The human nutrition concentration provides a sound foundation in the basic sciences and nutrition, but no foods courses are required. This program is often used by students who, while not seeking the credential of Registered Dietitian, are working towards a career in nutrition research or completing a premedical/pre dental program of study. The food and nutrition management concentration provides a number of nutrition, foods, and business courses and is offered to students with an interest in food production, nutrition program management, and food/nutrition marketing.

Accreditation. The B.S. degree in Nutrition with a concentration in dietetics has been granted full accreditation as a Didactic Program in Dietetics (DPD) by the Commission on

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

EAST COLLEGE

Accreditation for Dietetics Education of the American Dietetic Association. For more information, call 312/899-0040, or write

COMMISSION ON ACCREDITATION FOR
DIETETICS EDUCATION
AMERICAN DIETETIC ASSOCIATION
216 W JACKSON BLVD
CHICAGO IL 60606-6995

Dietetics Concentration. The following NTR courses are required of all students in the dietetics concentration:

NTR 142 Applied Food Principles	3
NTR 241 Human Nutrition	3
NTR 341 Introduction to Planning Therapeutic Diets	3
NTR 343 Food Service Purchasing.....	3
NTR 344 Nutrition Services Management <i>L</i>	3
NTR 350 Nutrition Counseling.....	3
NTR 400 Nutrition and Health Promotion.....	3
NTR 440 Advanced Human Nutrition I.....	3
NTR 441 Advanced Human Nutrition II	3
NTR 444 Medical Nutrition Therapy.....	3
NTR 445 Quantity Food Production.....	3
NTR 446 Human Nutrition Assessment Lecture/Laboratory	3
NTR 448 Community Nutrition <i>L</i>	3
Total	39

In addition to the required NTR courses, the following related courses are required in order to complete the academic requirements of the Didactic Program in dietetics:

BCH 361 Principles of Biochemistry.....	3
BCH 367 Elementary Biochemistry Laboratory	1
BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
BIO 202 Human Anatomy and Physiology II.....	4
CHM 113 General Chemistry <i>SQ</i>	4
CHM 116 General Chemistry <i>SQ</i>	4
CHM 231 Elementary Organic Chemistry <i>SQ</i> ¹	3
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> ¹	1
MIC 205 Microbiology <i>SG</i> ²	3
MIC 206 Microbiology Laboratory <i>SG</i> ²	1
Statistics course.....	3
Technical writing course	3
Total	34

¹ Both CHM 231 and 235 must be taken to secure *SQ* credit.

² Both MIC 205 and 206 must be taken to secure *SG* credit.

Additional supporting courses in the social sciences are required for completion of the DPD and must be selected in consultation with the Nutrition academic advisor.

Human Nutrition Concentration. The following NTR courses are required of all students in the human nutrition concentration:

NTR 142 Applied Food Principles	3
NTR 241 Human Nutrition	3
NTR 341 Introduction to Planning Therapeutic Diets	3
NTR 440 Advanced Human Nutrition I.....	3
NTR 441 Advanced Human Nutrition II	3
NTR 444 Medical Nutrition Therapy.....	3
NTR 446 Human Nutrition Assessment Lecture/Laboratory	3
Total	21

An additional nine semester hours from the Department of Nutrition are required to complete this concentration. A maximum of three semester hours of Independent Study may be used to satisfy this requirement. Students select these courses in consultation with the Nutrition academic advisor.

In addition to the required NTR courses, the following related courses are required to complete the academic requirements of this concentration:

Food and Nutrition Management Concentration. The following NTR courses are required of all students in the food and nutrition management concentration:

NTR 100 Introductory Nutrition.....	3
or NTR 241 Human Nutrition (3)	
NTR 142 Applied Food Principles	3
NTR 300 Computer Applications in Nutrition.....	3
NTR 343 Food Service Purchasing.....	3
NTR 344 Nutrition Services Management <i>L</i>	3
NTR 445 Quantity Food Production.....	3
Total	18

An additional twelve semester hours from the Department of Nutrition are required to complete this concentration. A maximum of three semester hours of Independent Study may be used to satisfy this requirement. Students select these courses in consultation with the Nutrition academic advisor.

In addition to the required NTR courses, the following related courses are required to complete the academic requirements of this concentration:

CHM 101 Introductory Chemistry <i>SQ</i>	4
MIC 205 Microbiology <i>SG</i> ¹	3
MIC 206 Microbiology Laboratory <i>SG</i> ¹	1
Business or technical writing course.....	3
Management (AGB 310 or MGT 301, 380, or 394).....	3
Marketing (AGB 320 or MKT 300 or 394)	3
Other agribusiness or business courses ²	6
Total	23

¹ Both MIC 205 and 206 must be taken to secure *SG* credit.

² Courses taken to fulfill the final six credit business requirement should be taken from courses with the following prefixes: ACC, AGB, BUS, COB, CIS, CSE, ECN, FIN, HSA, IBS, MGT, MKT, and QBA. Students select these courses in consultation with the Nutrition academic advisor.

MINORS

The faculty of the Department of Nutrition also offers minors in Food and Nutrition Management and Human Nutrition, each requiring 18 semester hours. At least 12 of the 18 must be in upper-division courses.

Food and Nutrition Management. The Food and Nutrition Management minor requires that students take the following courses:

NTR 100 Introductory Nutrition.....	3
or NTR 241 Human Nutrition (3)	
NTR 142 Applied Food Principles	3
NTR 300 Computer Applications in Nutrition.....	3
NTR 343 Food Service Purchasing.....	3

NTR 344 Nutrition Services Management <i>L</i>	3
NTR 445 Quantity Food Production	3
Total	18

Human Nutrition. The Human Nutrition minor requires that students take the following courses:

NTR 241 Human Nutrition	3
NTR 341 Introduction to Planning Therapeutic Diets	3
NTR 440 Advanced Human Nutrition I	3
NTR 441 Advanced Human Nutrition II	3
NTR 444 Medical Nutrition Therapy	3
Total	15

One additional upper-division (or graduate) course must be selected from among the following:

NTR 348 Cultural Aspects of Food <i>C</i>	3
NTR 350 Nutrition Counseling	3
NTR 446 Human Nutrition Assessment Lecture/Laboratory	3
NTR 448 Community Nutrition <i>L</i>	3
NTR 450 Nutrition in the Life Cycle I <i>SB</i>	3
NTR 451 Nutrition in the Life Cycle II	3
NTR 532 Current Research in Nutrition	3
NTR 598 Special Topics	3

NUTRITION (NTR)

NTR 100 Introductory Nutrition. (3)

fall, spring, summer

Basic concepts of human nutrition. Recent controversies in nutrition and how food choices affect personal health.

NTR 142 Applied Food Principles. (3)

fall and spring

Applied scientific principles of food preparation and production. 2 hours lecture, 3 hours lab. Fee.

NTR 241 Human Nutrition. (3)

fall, spring, summer

Principles of human nutrition. Emphasizes nutrient metabolism and the relationships between diet and disease. Prerequisite: CHM 101 (or its equivalent).

NTR 300 Computer Applications in Nutrition. (3)

spring

Introduces nutrition and food software, including dietary assessment and analysis, food inventory and control, and telecommunications. Lecture, computer lab. Prerequisites: NTR 100 (or 241), 341 strongly recommended; basic computer literacy.

NTR 341 Introduction to Planning Therapeutic Diets. (3)

fall and summer

Cultural, health, and economic aspects of diet planning. Assessment of food and diet composition. Review of common therapeutic diets. Fee. Prerequisites: NTR 100 (or 241) and 142 (or their equivalents).

NTR 343 Food Service Purchasing. (3)

fall

Introduces purchasing systems, bid processes, receiving and storage procedures, and regulatory agencies involved in the food service industry. Prerequisite: NTR 142.

NTR 344 Nutrition Services Management. (3)

fall and spring

Organization, administration, and management of food and nutrition services in hospitals and other institutions. Possible field trips. Prerequisites: NTR 100 (or 241) and 142 (or their equivalents).

General Studies: L

NTR 348 Cultural Aspects of Food. (3)

spring and summer

Origins, development, and diversity of food preferences and dietary habits; food patterns and attitudes of global populations and U.S. immigrants. Prerequisite: NTR 100 or 241 (or its equivalent).

General Studies: C

NTR 350 Nutrition Counseling. (3)

fall and spring

Counseling techniques in nutrition; interpersonal and communication skills in clinical and community sites; nutrition education for individuals and populations. Lecture, lab. Prerequisites: NTR 100 (or 241) and 142 (or their equivalents).

NTR 400 Nutrition and Health Promotion. (3)

fall and spring

Role of nutrition in health promotion; application of academic knowledge in field practicum; components of professional development. Lecture, practicum. Prerequisites: NTR 341, 440 (or 441 or 444); senior standing in dietetics or human nutrition.

NTR 440 Advanced Human Nutrition I. (3)

fall

Metabolic reactions and interrelationships of vitamins, minerals, and water. Prerequisites: BIO 202 and CHM 231 and NTR 241 (or their equivalents).

NTR 441 Advanced Human Nutrition II. (3)

spring

Metabolic reactions and interrelationships of carbohydrate, lipid, and protein. Prerequisites: BCH 361 and BIO 202 and NTR 241 (or their equivalents).

NTR 442 Experimental Foods. (3)

fall and spring

Food product development techniques, food evaluation and testing, and investigation of current research into food composition. 2 hours lecture, 3 hours lab. Fee. Prerequisites: CHM 231; NTR 142.

NTR 444 Medical Nutrition Therapy. (3)

spring and summer

Principles of medical nutrition therapy for prevention and treatment of disease and promotion of health. Prerequisites: BIO 201 and 202 and NTR 241 (or their equivalents).

NTR 445 Quantity Food Production. (3)

fall and spring

Standardized methods of quantity food preparation, operation of institutional equipment, institutional menu planning, quantity food experiences. Lecture, lab, possible field trips. Fee. Prerequisites: NTR 100 (or 241) and 344 (or their equivalents).

NTR 446 Human Nutrition Assessment Lecture/Laboratory. (3)

fall and spring

Clinical and biochemical evaluation of nutritional status. 2 hours lecture, 3 hours lab. Fee. Prerequisites: BCH 361, 367; NTR 440 (or 441).

NTR 448 Community Nutrition. (3)

fall and spring

Food-related behaviors; organization and delivery of nutrition services; program design, implementation, and evaluation strategies; nutrition assessment of populations. Prerequisite: NTR 241 (or its equivalent).

General Studies: L

NTR 450 Nutrition in the Life Cycle I. (3)

fall

Emphasizes nutritional needs and problems during pregnancy, lactation, infancy, and childhood. Prerequisite: NTR 100 or 241 (or its equivalent).

General Studies: SB

NTR 451 Nutrition in the Life Cycle II. (3)

spring

Nutritional requirements and nutrition-related disorders of adolescence, middle adulthood, and later life. Prerequisite: NTR 100 or 241 (or its equivalent).

NTR 500 Research Methods in Nutrition. (3)

fall

Experimental design; methods of data collection, laboratory analyses, and statistical analyses; development of thesis proposal. Lecture, lab. Fee. Prerequisites: a course each in advanced nutrition, biochemistry, and statistics.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

EAST COLLEGE

NTR 531 Recent Developments in Nutrition. (1)

fall and spring

Selected topics addressing current issues in nutrition research. Prerequisites: a course each in advanced nutrition and biochemistry.

NTR 532 Current Research in Nutrition. (3)

spring

Vitamins and minerals. Prerequisites: a course each in advanced nutrition and biochemistry.

NTR 540 Advanced Micronutrient Metabolism. (3)

fall

Metabolism of vitamins and minerals, primarily as applied to humans, with research literature emphasized. Prerequisites: a course each in basic nutrition and biochemistry.

NTR 541 Advanced Macronutrient Metabolism. (3)

spring

Metabolism of protein, fat, and carbohydrate, primarily as applied to humans, with research literature emphasized. Prerequisites: a course each in basic nutrition and biochemistry.

NTR 542 Advanced Food Product Development. (3)

fall and spring

Food product development techniques, food evaluation and testing, and investigation of current research into food composition. 2 hours lecture, 3 hours lab. Fee. Prerequisites: CHM 231 and NTR 142 (or their equivalents).

NTR 544 Therapeutic Nutrition. (3)

spring and summer

Current theories of the nutritional prevention or treatment of various diseases. Prerequisites: a course each in basic nutrition, introduction to diet therapy, and physiology.

NTR 545 Recent Developments in Institutional Feeding. (3)

fall and spring

Current practices in institutional feeding, including supervised practicum with local quantity food operation. 1 hour lecture, 6 hours lab. Fee. Prerequisites: NTR 142 and 344 (or their equivalents).

NTR 546 Assessment Techniques in Nutrition. (3)

fall and spring

Clinical and biochemical evaluation of nutritional status. 2 hours lecture, 3 hours lab. Fee. Prerequisites: a course each in advanced nutrition, biochemistry, and physiology.

NTR 548 Nutrition Program Development. (3)

fall and spring

Planning, development, implementation, and evaluation of community nutrition programs, including the process of grant applications. Prerequisites: a course each in basic nutrition and sociology.

NTR 550 Advanced Maternal and Child Nutrition. (3)

fall

In-depth review of metabolic characteristics and nutritional needs of the pregnant woman, lactating woman, infant, and child. Prerequisites: a course each in basic nutrition, biochemistry, and physiology.

NTR 551 Advanced Geriatric Nutrition. (3)

spring

In-depth review of metabolic characteristics and nutritional requirements of the elderly. Prerequisites: a course each in basic nutrition, biochemistry, and physiology.

NTR 580 Dietetics Practicum. (3-9)

fall, spring, summer

Structured practical experience in the Dietetic Internship, supervised by practitioners with whom the student works closely. Practicum. Prerequisite: acceptance into the Dietetic Internship.

NTR 591 Seminar. (1-12)

selected semesters

Topics may include the following:

- Recent Developments in Food and Nutrition. (1)

NTR 592 Research. (1-12)

selected semesters

NTR 593 Applied Project. (1-12)

selected semesters

NTR 594 Conference and Workshop. (1-12)

selected semesters

NTR 598 Special Topics. (3)

fall and spring

In-depth review of recent research in areas including nutrition and exercise, nutrition and immunology, energy balance, vegetarianism, nutritional pathophysiology. Fee. Prerequisites: a course each in advanced nutrition, biochemistry, and physiology.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.



ASU East Student Union fountain

Dave Tevis photo

College of Technology and Applied Sciences

www.east.asu.edu/ctas

Albert L. McHenry, Ph.D., Dean

PURPOSE

The College of Technology and Applied Sciences (CTAS) helps students develop knowledge and skill in technological fields that qualify them for career positions and leadership responsibility in industry, government, and commercial enterprise. Each student is guided to select a major that addresses short-term employment goals through state-of-the-art technological preparation. Long-term career aspirations are supported through the development of a strong base in mathematics, science, engineering, and technical principles, coupled with a solid foundation in liberal arts and a commitment to lifelong learning.

Engineering technology programs offer professional preparation through a B.S. degree that stresses state-of-the-art technological applications. Special emphasis is placed on the development of knowledge and skill in applied mathematics, natural sciences, and engineering principles with formal laboratory experiences. This mixed educational approach provides the basis for both employment and a long-term career evolution.

The other CTAS technology programs provide the opportunity for students to develop knowledge and skill in solving broad-scale industrial problems, operating modern technological systems, and managing personnel in the implementation of processes and production. Programs of study focus on the latest technologies in areas such as aviation flight training and management, environmental technology management, graphic information technology, fire service management, and industrial management.

Each student is encouraged to participate in creative activities through a close relationship with a faculty mentor. Learning through execution of the scientific method, using both inductive and deductive processes in applied research activities, is essential for both faculty and students.

ORGANIZATION

The College of Technology and Applied Sciences is composed of the following four academic units:

- Department of Aeronautical Management Technology
- Department of Electronics and Computer Engineering Technology
- Department of Information and Management Technology
- Department of Manufacturing and Aeronautical Engineering Technology

DEGREE PROGRAMS

See the [“College of Technology and Applied Sciences Baccalaureate Degrees and Majors” table, page 656](#). For graduate degrees, see the [“College of Technology and](#)

[Applied Sciences Graduate Degrees and Majors” table, page 657](#).

The College of Technology and Applied Sciences offers programs leading to the B.S. degree and B.A.S. degree. The college also offers the Master of Science in Technology (M.S.T.) degree. For more information on courses, faculty, and programs in the M.S.T. degree, see the *Graduate Catalog*.

ACCREDITATION

Undergraduate B.S. degree programs in Aeronautical Engineering Technology, Electronics Engineering Technology, and Manufacturing Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. For additional information, call 410/347-7700 or write

TECHNOLOGY ACCREDITATION COMMISSION OF
THE ACCREDITATION BOARD FOR
ENGINEERING AND TECHNOLOGY INC
111 MARKET PLACE SUITE 1050
BALTIMORE MD 21202-7102

Both the professional flight and the air transportation management concentrations in the Department of Aeronautical Management Technology are fully accredited by the Council on Aviation Accreditation. For more information call 334/844-2431, send e-mail to caa@auburn.edu, or write

COUNCIL ON AVIATION ACCREDITATION
3410 SKYWAY DRIVE
AUBURN AL 36830

ADMISSION—B.S. DEGREE

The College of Technology and Applied Sciences admits first-year students who meet the undergraduate admission requirements of Arizona State University. See [“Undergraduate Admission,” page 58](#). High school precalculus, physics, and chemistry are recommended. Transfer applicants must meet the university requirements for transfer students as specified under [“Transfer Credit,” page 61](#), with the exception that Arizona resident transfer students must have a 2.25 GPA.

Students admitted to a B.S. degree program in CTAS begin study under one of two student classifications, professional or preprofessional.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

College of Technology and Applied Sciences Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Aeronautical Engineering Technology*	B.S.	—	Department of Manufacturing and Aeronautical Engineering Technology
Aeronautical Management Technology*	B.S.	Air transportation management, professional flight	Department of Aeronautical Management Technology
Applied Science	B.A.S.	Aviation maintenance management technology, aviation management technology, computer systems administration, digital media management, digital publishing, emergency management, fire service management, instrumentation, manufacturing technology and management, microcomputer systems, municipal operations management, operations management, semiconductor technology, software technology applications, technical graphics	Bachelor of Applied Science Advisory Committee
Computer Engineering Technology*	B.S.	Computer hardware technology, embedded systems technology, software technology	Department of Electronics and Computer Engineering Technology
Electronics Engineering Technology*	B.S.	Electronic systems, microelectronics, telecommunications	Department of Electronics and Computer Engineering Technology
Industrial Technology	B.S.	Environmental technology management, graphic information technology, industrial technology management	Department of Information and Management Technology
Manufacturing Engineering Technology*	B.S.	Manufacturing engineering technology, mechanical engineering technology	Department of Manufacturing and Aeronautical Engineering Technology

* This major requires more than 120 semester hours to complete.

Professional Status

First-year students (new freshmen) are admitted to CTAS with professional status if they meet the general aptitude criteria for admission and have no deficiencies in the basic competency requirements for admission. First-year students admitted upon completion of the GED are admitted with professional status if they have also achieved the minimum ACT or SAT scores required for undergraduate admission to the university.

Students transferring from other ASU colleges are admitted to CTAS with professional status if they have no remaining admissions deficiencies and meet the required GPA.

Transfer students from other institutions must meet the minimum admission requirements for college transfer students as described under "[Transfer Credit](#)," page 61. The CTAS also requires resident transfer students to have a cumulative GPA of 2.25.

All international students must have a minimum 500 TOEFL score to be admitted with professional status.

Preprofessional Status

All other students are admitted with preprofessional status and may apply for professional status after they have removed the deficiency that disallows awarding professional status. Students with preprofessional status may not register

for 300- and 400-level courses in the college until they have been awarded professional status. See an advisor for details.

Transfer Credit

Credit for courses taken at a community college or another four-year institution is awarded according to the guidelines under "[Transfer Credit](#)," page 61. Students who are transferring from an Arizona community college and have been in continuous residence may continue under the catalog in effect at the time of their entrance into the community college. Students should be aware that some course work that transfers to ASU may not be applicable toward CTAS degree requirements. Students should confer with an advisor. The College of Technology and Applied Sciences maintains a cooperative agreement with most Arizona community colleges and with selected out-of-state colleges and universities to structure programs that are directly transferable into the technology programs at ASU East. For assistance in the transfer from Arizona community colleges, transfer guides are available at www.asu.edu/provost/articulation.

Courses taken more than five years before admission to a CTAS degree program are not normally accepted for transfer credit at the option of the department in which the applicant wishes to enroll. Courses completed within the five

College of Technology and Applied Sciences Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Technology	M.S.Tech.	Aeronautical engineering technology, manufacturing engineering technology, mechanical engineering technology	Department of Manufacturing and Aeronautical Technology
		Aviation human factors, aviation management technology	Department of Aeronautical Management Technology
		Computer systems engineering technology, electronic systems engineering technology, instrumentation and measurement technology, microelectronics engineering technology	Department of Electronics and Computer Engineering Technology
		Environmental technology management, fire service administration, information technology, management of technology	Department of Information and Management Technology
		Global technology and development, security engineering technology	College of Technology and Applied Sciences

years preceding admission are judged as to their applicability to the student’s curriculum.

ADMISSION—B.A.S. DEGREE

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

ADVISING

New incoming and transfer students should seek initial advising from the academic advisor in the Dean’s Office. CTAS students are then assigned faculty advisors who assist them with planning a program of study in the department of their major. The college requires that students consult with advisors before registering each semester. Advisors should be made aware of any employment obligations or special circumstances that may affect a student’s ability to successfully handle a full course load. CTAS students may register for a maximum of 19 semester hours per semester. Any student wishing to take more than the maximum must petition the CTAS Standards Committee and have an approval on file before registering for an overload.

GRADUATION REQUIREMENTS

Students must meet all university graduation requirements given in [“University Graduation Requirements,” page 79](#), as well as degree requirements of their major in the College of Technology and Applied Sciences. For detailed information on the degree requirements of a major in CTAS, refer to that department’s individual description.

COLLEGE STANDARDS

Pass/Fail Grades

The College of Technology and Applied Sciences does not offer pass/fail grades. Courses graded on a pass/fail basis do not count toward degree credit in CTAS. Students may request credit for pass/fail courses by petitioning the CTAS Standards Committee.

Entry into Upper-Division Courses (B.S. Degree)

Before enrolling in courses at the 300 level and above, CTAS students must be in the professional status within the college. Students who are not in good academic standing must petition the CTAS Standards Committee. Students enrolled in another ASU college may not register for any 300- and 400-level CTAS courses unless those courses are required in the degree program and the students have the proper course prerequisites.

ACADEMIC STANDARDS

Retention. A student is expected to make satisfactory progress toward completion of degree requirements to continue enrollment in the College of Technology and Applied Sciences. Any one of the following conditions is considered unsatisfactory progress and results in the student’s being placed on probationary status:

1. a semester with a GPA less than or equal to 1.50;
2. two successive semesters with GPAs less than 2.00; or
3. an ASU cumulative GPA less than 2.00.

A student on probation is subject to disqualification if (1) a semester GPA of 2.25 is not attained and the cumulative GPA is below 2.00 at the end of the probationary semester or (2) the student is placed on probation for two consecutive semesters and is unable to achieve the standard GPAs stated in number one.

Students on academic probation are not allowed to register for more than 13 semester hours. Probationary students may not register for the semester following the semester in which they were declared probationary without a special permit from an advisor in the dean’s office. Special permits are given only after the registrar records grades for the current semester.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83](#).

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

Disqualification. During a semester on academic probation, a student who fails to meet the retention standards is disqualified. Students may request a review of their disqualification status by contacting the CTAS associate dean in the Academic Center Building (CNTR), room 10. Any disqualified student who is accepted by another college at ASU may not register for courses in CTAS unless the courses are required in the new major. Disqualified students who register for courses in CTAS may be withdrawn from these courses any time during the semester.

Reinstatement. The college does not accept an application for reinstatement until the disqualified student has remained out of the college for at least a 12-month period. Merely having remained in disqualified status for this period of time does not, in itself, constitute a basis for reinstatement. Proof of ability to do satisfactory college work in the chosen discipline is required; for example, completing pertinent courses in the discipline at a community college with higher-than-average grades.

STUDENT RESPONSIBILITIES

Course Prerequisites. Students should consult the *Schedule of Classes* and the catalog for course prerequisites. Students who register for courses without the designated pre-

requisites may be withdrawn without their consent at any time before the final examination. The instructor, the chair of the department, or the dean of the college may initiate such withdrawals. In such cases, students do not receive monetary reimbursement. Such withdrawals are considered to be unrestricted as described under [“Unrestricted Course Withdrawal,” page 73](#), and do not count against the number of restricted withdrawals allowed.

SPECIAL PROGRAMS

Academic Recognition. Students completing baccalaureate degree requirements receive the appropriate honors designations on their diplomas consistent with the requirements specified by the university.

Students in the college are encouraged to seek information concerning entry into honor societies that enhance their professional stature. Tau Alpha Pi is the engineering technology honor society, and Alpha Eta Rho is available for aeronautical management technology students.

Barrett Honors College. The College of Technology and Applied Sciences participates in the programs of the Barrett Honors College, which provides enhanced educational experiences to academically superior undergraduate students. Participating students can major in any academic program. For more information see [“The Barrett Honors College,” page 118](#).

Scholarships. Information and applications for academic scholarships for continuing students may be obtained by contacting departmental offices. Other scholarships may be available through the university Student Financial Assistance Office.

ROTC Students. Students pursuing a commission through either the Air Force or Army ROTC program must take from 12 to 20 semester hours of courses in the Department of Aerospace Studies or Department of Military Science. To preclude excessive overloads, these students should plan on at least one additional semester to complete degree requirements. Because of accreditation requirements, aerospace studies (AES) or military science (MIS) courses are not accepted in the engineering technology majors.

ENGINEERING TECHNOLOGY CORE (ETC)

ETC 100 Languages of Technology. (4)

fall and spring

Introduces computer-aided design, programming, modeling, and technical documentation. Lecture, lab.

General Studies: CS

ETC 191 First-Year Seminar. (1–3)

selected semesters

ETC 194 Special Topics. (1–4)

selected semesters

ETC 211 Applied Engineering Mechanics: Statics. (3)

fall and spring

Vectors, forces and moments, force systems, equilibrium, analysis of basic structures and structural components, friction, centroids, and moments of inertia. Prerequisites: MAT 260; PHY 111, 113.

ETC 340 Applied Thermodynamics and Heat Transfer. (3)

fall and spring

Thermodynamic systems and processes, first and second laws of thermodynamics, properties of pure substances, and applications to heat engines and special systems. Fundamentals of conduction, radiation, and convection. Prerequisites: MAT 261; PHY 112, 114.



Welcome Week activities at ASU East

Tim Trumble photo

ETC 492 Honors Directed Study. (1–6)
selected semesters

ETC 493 Honors Thesis. (1–6)
selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

GLOBAL TECHNOLOGY AND DEVELOPMENT (GTD)

See the *Graduate Catalog* for the GTD courses.

SECURITY ENGINEERING TECHNOLOGY (SET)

See the *Graduate Catalog* for the SET courses.

Department of Aeronautical Management Technology

eastair.east.asu.edu

480/727-1381

SIM 205

William K. McCurry, Chair

Professor: Gesell

Associate Professors: Jackson, Karp, McCurry, Turney

Assistant Professor: Pearson

Lecturer: O'Brien

PURPOSE

Graduates are prepared for entry into the aviation and aerospace industry in productive, professional employment or, alternatively, for graduate study. Curricula emphasize principles underlying the application of technical knowledge as well as current technology, preparing the graduate to adapt to the rapid and continual changes in aviation and aerospace technology.

ADMISSION

New and transfer students who have been admitted to the university and who meet the requirements for admission to the College of Technology and Applied Sciences may be admitted without separate application to the Department of Aeronautical Management Technology. In the professional flight concentration, students are cleared for enrollment in flight courses on a competitive basis. Transfer credits are reviewed by department faculty advisors. To be acceptable for department credit, transfer courses must be equivalent in both content and level of offering.

DEGREES

The faculty in the Department of Aeronautical Management Technology offer a B.S. degree in Aeronautical Management Technology with concentrations in professional

flight and air transportation management. A B.A.S. degree in Applied Science is also offered with concentrations in aviation maintenance management technology and aviation management technology.

A Master of Science in Technology degree is offered for graduate study with concentrations in aviation management technology and aviation human factors. For more information, see the *Graduate Catalog*.

AERONAUTICAL MANAGEMENT TECHNOLOGY—B.S.

The Aeronautical Management Technology curricula are designed to provide a thorough technical background combined with an interdisciplinary general university education. The graduate is prepared to assume responsibilities in a wide area of managerial and technically related areas of aviation. The student gains a background in aircraft structures, reciprocating and turbine engines, aircraft performance and design, management skills, business principles, systems analysis, and a variety of course work specific to aircraft flight, airport operations, and air transportation systems. The degree offers two concentrations: professional flight and air transportation management, both of which have been accredited by the Council on Aviation Accreditation. The concentrations are described separately on the following pages.

All degree requirements are shown on curriculum check sheets for the concentrations that are available by visiting the department or by accessing the department Web site at eastair.east.asu.edu. Requirements include First-Year Composition, university General Studies (see [“General Studies,” page 83](#)), and the Aeronautical Management Technology Core. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. Refer to individual concentration degree requirements for additional required courses. Students must complete each Aeronautical Management Technology course with a grade of “C” or higher.

Aeronautical Management Technology Core

AMT 101 Introduction to Aeronautical Management Technology	1
AMT 182 Private Pilot Ground School	3
AMT 201 Air Traffic Control	3
AMT 220 Aviation Meteorology	3
AMT 280 Aerospace Structures, Materials, and Systems	4
AMT 287 Aircraft Powerplants	4
AMT 308 Air Transportation G	3
AMT 350 Aircraft Design, Performance, and Avionics	3
AMT 396 Aviation Professional	1
AMT 410 Aviation Safety and Human Factors	3
AMT 442 Aviation Law/Regulations.....	3
ETC 100 Languages of Technology CS	4
TWC 400 Technical Communications L	3
Total	38

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See [“General Studies,” page 83.](#)

Professional Flight Concentration

Flight training is certified by the Federal Aviation Administration. Students in the professional flight concentration must pass an FAA medical examination before flying solo. While this physical examination is not required for admission to the program, it must be completed before flying solo as the medical certificate becomes the student pilot certificate. An FAA Class I medical examination is required to complete the certificates and ratings necessary to meet graduation requirements. It is recommended that a medical examination be completed by an aviation medical examiner of the student’s choice before the start of classes.

Professional flight combines academic studies and flight training to prepare graduates for a wide variety of positions within the air transportation industry, including general, airline, and military aviation. Ground school and flight training are available, allowing the student to obtain private pilot, commercial pilot, and flight instructor certificates and also the instrument pilot, instrument instructor, and multiengine pilot ratings.

This curriculum concentrates on flying plus the technical management and computer-related applications necessary to operate in the high-density environment of modern airspace. The program also emphasizes critical thinking, analytical skills, and oral and written communication skills. A career in professional flight leads to the development, administration, and enforcement of safety regulations, including airworthiness and operational standards in civil aviation.

While enrolled at ASU, students do not receive college credit for flight activity or instruction received at flight schools other than those entities with which the university has currently contracted for such instruction. Consideration is given for flight experience received before enrollment at the university through the private pilot certificate only.

Flight instruction costs are not included in university tuition and fees. The estimated cost of flight training is \$40,000 in addition to normal university costs.

Degree Requirements

Professional flight students are required to complete 128 semester hours with a 2.25 cumulative GPA, including a minimum of 50 semester hours of upper-division courses. All degree requirements are shown on the student’s curriculum check sheet.

Concentration Requirements

In addition to the required courses for First-Year Composition, university General Studies (see [“General Studies,” page 83](#)), and the Aeronautical Management Technology core, the following additional courses are required for the professional flight management concentration:

AMT 100 Flight Safety I	1
AMT 200 Flight Safety II	2
AMT 214 Commercial/Instrument Ground School I	3
AMT 300 Flight Safety III	2
AMT 322 Commercial/Instrument Ground School II	3
AMT 382 Air Navigation	3
AMT 385 Flight Instructor Ground School	3
AMT 387 Multiengine Pilot Ground School	1
AMT 392 Flight Instructor Instrument Ground School	3
AMT 400 Flight Safety IV	1
AMT 408 National Aviation Policy	3

AMT 482 Airline Instrument Procedures	3
AMT 489 Airline Administration	3
AMT 496 Airline Aircraft Systems Capstone	3
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
PGS 101 Introduction to Psychology	3
STP 420 Introductory Applied Statistics	3
Technical electives or internship	6
Total	49

Suggested Course Pattern for Freshmen

First Semester

AMT 100 Flight Safety I	1
AMT 101 Introduction to Aeronautical Management Technology	1
AMT 182 Private Pilot Ground School	3
AMT 220 Aviation Meteorology	3
ENG 101 First-Year Composition	3
MAT 260 Technical Calculus I <i>MA</i>	3
Total	14

Second Semester

AMT 201 Air Traffic Control	3
AMT 214 Commercial/Instrument Ground School I	3
ENG 102 First-Year Composition	3
ETC 100 Languages of Technology <i>CS</i>	4
PHY 111 General Physics <i>SQ*</i>	3
PHY 113 General Physics Laboratory <i>SQ*</i>	1
Total	17

* Both PHY 111 and 113 must be taken to secure SQ credit.

Air Transportation Management Concentration

The air transportation management concentration is designed to prepare graduates for managerial and supervisory positions throughout the air transportation industry. An in-depth technical education is included along with broad exposure to business and management courses. This program of study is interdisciplinary in nature and prepares the aeronautical career-oriented student for positions such as air traffic control specialist, air carrier manager, airport manager, and general aviation operations manager.

Degree Requirements

Air transportation management students are required to complete 128 semester hours with a 2.00 cumulative GPA, including a minimum of 50 semester hours of upper-division courses. All degree requirements are shown on the student’s curriculum check sheet.

Concentration Requirements

In addition to the required courses for First-Year Composition, university General Studies (see [“General Studies,” page 83](#)), and the Aeronautical Management Technology core, the following additional courses are required in the airway science management concentration:

ACC 230 Uses of Accounting Information I	3
AMT 408 National Aviation Policy	3
AMT 444 Airport Management and Planning	3
AMT 489 Airline Administration	3
AMT 491 Aviation Management Capstone	3
ECN 111 Macroeconomic Principles <i>SB</i>	3
or ECN 112 Microeconomic Principles <i>SB</i> (3)	
IMC 346 Management Dynamics	3

DEPARTMENT OF AERONAUTICAL MANAGEMENT TECHNOLOGY

ITM 343 Occupational Safety and Ergonomics	3
ITM 430 Ethical Issues in Technology.....	3
ITM 452 Industrial Human Resource Management.....	3
ITM 456 Introduction to Organized Labor	3
ITM 480 Organizational Effectiveness.....	3
PGS 101 Introduction to Psychology.....	3
STP 420 Introductory Applied Statistics	3
Technical electives or internship.....	7
Total	49

Suggested Course Pattern for Freshmen

First Semester

AMT 101 Introduction to Aeronautical Management Technology.....	1
AMT 182 Private Pilot Ground School	3
AMT 220 Aviation Meteorology	3
ENG 101 First-Year Composition.....	3
MAT 260 Technical Calculus I <i>MA</i>	3
Total	13

Second Semester

AMT 201 Air Traffic Control	3
ENG 102 First-Year Composition.....	3
ETC 100 Languages of Technology <i>CS</i>	4
PHY 111 General Physics <i>SQ*</i>	3
PHY 113 General Physics Laboratory <i>SQ*</i>	1
General Studies elective.....	3
Total	17

* Both PHY 111 and 113 must be taken to secure SQ credit.

APPLIED SCIENCE—B.A.S.

The Bachelor of Applied Science degree is a “capstone” degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare students for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

Degree Requirements

The B.A.S. degree in the College of Technology and Applied Sciences consists of 60 semester hours of upper-division (300 level and above) courses, with 30 hours in residence.

A.A.S. degree	60
Assignable credit.....	6
B.A.S. core.....	15
General Studies	19
Technical concentration	20
Total	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (L, CS, and awareness areas) are met with courses in the core concentration. General Studies courses focus on contextual learning.

L	3
MA	3
HU.....	3
HU or SB	3
SB.....	3
SG	4
Total	19

Assignable Credit

Assignable credit allows space in the curriculum for pre-requisite courses needed to succeed in the program. The courses are determined by the student and the advisor.

B.A.S. Core

The area core is focused on management and organization, professional communication, quantitative analysis, and computer competency.

GIT 494 ST: Computer Systems Applications	3
IMC 346 Management Dynamics	3
or ITM 344 Industrial Organization (3)	
or ITM 452 Industrial Human Resource	
Management (3)	
IMC 470 Project Management	3
STP 420 Introductory Applied Statistics <i>CS</i>	3
TWC 400 Technical Communications <i>L</i>	3
Total	15

Technical Concentrations

Aviation Maintenance Management Technology. This concentration is for those students who have completed an airframe and powerplant certification as part of their A.A.S. degree. Students receive an orientation in management practices that prepares them for progressively more responsible positions in the field of aviation maintenance management.

Aviation Management Technology. This concentration is for those students who have received training and education in some aspect of the air transportation industry (other than aviation maintenance), such as flight certificates and ratings as part of their A.A.S. degree. Students receive an orientation in management practices that prepares them for progressively more responsible positions in the field of aviation management.

STUDENT ORGANIZATIONS

The department hosts the local chapter of Alpha Eta Rho, an international professional aviation fraternity open to all students with an interest in aviation. The American Association for Airport Executives is open to all students with an interest in airport management. The Student Advisory Council is a leadership organization that facilitates student communication with faculty, departmental leaders, and university administrative personnel. The Precision Flight Team competes in regional and national flying safety competitions. The Women in Aviation International organization is open to all students.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

AERONAUTICAL MANAGEMENT TECHNOLOGY (AMT)

AMT Note 1. Flight instruction costs are not included in university tuition and fees.

AMT 100 Flight Safety I. (1)

fall, spring, summer

Supervised private pilot flight training and flight safety briefings. Requires continuous enrollment until completion of the FAA Private Pilot Certificate. Lecture, lab. Fee. See AMT Note 1. Pre- or corequisites: both AMT 182 and 220 (or their equivalents).

AMT 101 Introduction to Aeronautical Management Technology. (1)

fall and spring

Facilitates entry into Aeronautical Management Technology programs. Emphasizes *General Catalog* and concentration requirements, registration, careers, and ASU East facilities.

AMT 182 Private Pilot Ground School. (3)

fall, spring, summer

Ground school preparation for Private Pilot Certificate. Aerodynamics, navigation, performance, and regulations. Lecture, lab. Corequisite: AMT 220.

AMT 194 Special Topics. (1–4)

selected semesters

AMT 200 Flight Safety II. (2)

fall, spring, summer

Supervised commercial instrument flight training and safety briefings. Requires continuous enrollment until completion of FAA Commercial Pilot Certificate with Instrument Rating. Lecture, lab. Fee. See AMT Note 1. Prerequisites: AMT 100; Private Pilot Certificate. Pre- or corequisite: AMT 214 or 322.

AMT 201 Air Traffic Control. (3)

fall

Ground and air operations; weather services communications and routing; flight plans, IFR operations, departures and arrivals; and airport conditions and emergencies. Prerequisite: AMT 182.

AMT 214 Commercial/Instrument Ground School I. (3)

fall and spring

Ground school leading to FAA Instrument Pilot Rating/Commercial Pilot Certificate (part 1 of 2). 10 hours ground trainer included. Lecture, lab. Fee. Pre- or corequisites: AMT 182, 220.

AMT 220 Aviation Meteorology. (3)

fall, spring, summer

Evaluation, analysis, and interpretation of atmospheric phenomena. Low- and high-altitude weather from the pilot's viewpoint. Corequisite: AMT 182.

AMT 280 Aerospace Structures, Materials, and Systems. (4)

fall

Basic aerodynamics, incompressible/compressible airflow, wind tunnel testing, wing theory; analysis of aircraft structures; properties and applications of materials, and aircraft systems. Lecture, lab. Fee. Prerequisites: PHY 111, 113.

AMT 287 Aircraft Powerplants. (4)

spring

Theory and performance analysis of gas turbine and reciprocating aircraft engines. Engine accessories, systems, and environmental control. Lecture, lab. Prerequisites: PHY 111, 113.

AMT 300 Flight Safety III. (2)

fall, spring, summer

Supervised instructor flight training and safety briefings. Requires continuous enrollment until completion of FAA Flight Instructor Certificate with Instrument Instructor Rating. Lecture, lab. Fee. See AMT Note 1. Prerequisite: AMT 200. Pre- or corequisite: AMT 385.

AMT 308 Air Transportation. (3)

fall

Studies the historical and international development of air transportation and its social, political, and economic impact upon global interrelationships. Prerequisite: junior standing.

General Studies: G

AMT 322 Commercial/Instrument Ground School II. (3)

spring

Ground school leading to FAA Instrument Pilot Rating/Commercial Pilot Certificate (part 2 of 2). 10 hours ground trainer included. Lecture, lab. Fee. Prerequisite: AMT 100 or instructor approval. Pre- or corequisite: AMT 214.

AMT 350 Aircraft Design, Performance, and Avionics. (3)

spring

Fundamentals of aircraft design, turboprop and turbojet performance, principles of electricity, AC/DC circuits, and operation of transport category aircraft avionics systems. Lecture, lab. Prerequisites: AMT 280, 287.

AMT 360 Introduction to Helicopter Technology. (3)

selected semesters

Introduces the working functions of modern rotary wing aircraft, rotary wing flight theory, aerodynamics, controls, flight, and power requirements. Prerequisites: PHY 111, 113.

AMT 370 Air Freight Operations. (3)

selected semesters

Air freight operations in National Aviation System; ramp operations, loading, weight and balance, and administration of airside and ground-side operations. Prerequisite: junior standing.

AMT 382 Air Navigation. (3)

spring

Theory and application of modern advanced navigation and flight instrument systems. Introduces crew resource management in multi-place cockpits. Lecture, lab. Prerequisite: AMT 322. Pre- or corequisite: AMT 200 or instructor approval.

AMT 385 Flight Instructor Ground School. (3)

fall and spring

Ground school in preparation for the FAA Flight Instructor Certificate. Lecture, lab. Pre- or corequisite: AMT 200.

AMT 387 Multiengine Pilot Ground School. (1)

fall and spring

Ground school preparation for the FAA Multiengine Rating. Lecture, lab. Fee. See AMT Note 1. Prerequisite: AMT 200 or instructor approval.

AMT 391 Multiengine Instructor Ground School. (2)

selected semesters

Ground school preparation for the FAA Multiengine Flight Instructor Rating. Lecture, lab. See AMT Note 1. Prerequisites: AMT 300, 387, 400.

AMT 392 Flight Instructor Instrument Ground School. (3)

fall and spring

Ground school preparation for the FAA Instrument Flight Instructor Rating. Lecture, lab. See AMT Note 1. Prerequisites: AMT 200, 385.

AMT 395 Multiengine Land, Airplane Flight Instructor Rating. (1)

selected semesters

Normal and emergency flight operations. Instruction techniques and procedures for light multiengine land, airplane. Requires CFIAME Rating for course completion. Lecture, lab. See AMT Note 1. Prerequisite: AMT 391.

AMT 396 Aviation Professional. (1)

fall and spring

Career focus for management and flight students, including internships, résumé writing, interviews, and employment search in aviation industry. Prerequisite: junior standing.

AMT 400 Flight Safety IV. (1)

fall, spring, summer

Multiengine and crew training and safety briefings. Requires continuous enrollment until completion of rating and multicrew training. Lecture, lab. Fee. See AMT Note 1. Prerequisite: AMT 300. Pre- or corequisite: AMT 387.

AMT 408 National Aviation Policy. (3)

fall

Examines aviation and airspace policies and policy process, including agencies involved in formulation, implementation, and evaluation of aviation policy. Prerequisite: junior standing.

AMT 409 Nondestructive Testing and Quality Assurance. (1)

selected semesters

Purpose of inspection and quality assurance. Theory and application of nondestructive inspection methods. Application of pertinent standards, specifications, and codes. Lecture, lab. Cross-listed as AET 409. Credit is allowed for only AET 409 or AMT 409. See AMT Note 1. Prerequisite: AMT 280 or MET 230.

AMT 410 Aviation Safety and Human Factors. (3)

fall

Aviation accident prevention, human factors, life support, fire prevention, accident investigation, and crash survivability. Development and analysis of aviation safety programs. Prerequisites: junior standing; completion of 1 semester of General Studies L requirement.

AMT 412 Air Transportation Research. (1)

fall

Surveys practical research methodology in use in the air transportation industry. Topics include planning and design considerations.

AMT 419 Aviation Logistical Management. (3)

spring

Surveys FAA requirements for personnel and facilities. Topics include parts supply, quality control, product liability, pricing, profitability, and administration. Lecture, lab. Prerequisite: junior standing.

AMT 442 Aviation Law/Regulations. (3)

fall

Aviation within context of U.S. Common Law system. Public law, administrative rule making, sovereignty, enforcement, and case law analysis. Prerequisite: junior standing.

AMT 444 Airport Management and Planning. (3)

spring

Orientation to administration and management of modern public airports, including overview of planning, funding, and development of airport facilities. Prerequisite: junior standing.

AMT 482 Airline Instrument Procedures. (3)

fall

Advanced instrument flight using airline instrument procedures and airline crew and cockpit resource management. Lecture, lab. Prerequisites: a combination of AMT 200 and 322 and 382 or only instructor approval.

AMT 484 Aeronautical Internship. (1–12)

fall, spring, summer

Work experience assignment with aerospace industry commensurate with student's program. Special project guidance by industry with university supervision. Prerequisites: advisor approval; junior standing.

AMT 489 Airline Administration. (3)

spring

Administrative organizations, economics of airline administration, operational structure, and relationship with federal government agencies. Prerequisite: junior standing.

AMT 491 Aviation Management Capstone. (3)

spring

Integration and overview of management tools, current business problems and topics related to aviation industry. Group project with industry and government and business partners. Prerequisite: senior standing.

AMT 494 Special Topics. (1–4)

selected semesters

AMT 496 Airline Aircraft Systems Capstone. (3)

spring

Commercial airline aircraft systems and flight procedures. Includes theoretical education for large, commercial passenger aircraft. Lecture, lab. Prerequisite: senior standing.

AMT 498 Pro-Seminar. (1–7)

selected semesters

AMT 499 Individualized Instruction. (1–3)

selected semesters

AMT 521 Air Transportation Regulation. (3)

selected semesters

Reviews evolutionary history of government regulations. Explores alternatives for economic, safety, social, and administrative regulatory reform in air transportation. Prerequisite: AMT 444 or 489 (or its equivalent).

AMT 523 Aviation Systems Management. (3)

selected semesters

Systems theory applied to intermodal transportation networks. Survey of air and ground transportation infrastructure, institutional frameworks, and intermediaries promoting connections between modes. Prerequisite: AMT 444 or 489 (or its equivalent).

AMT 525 Airport Planning and Design. (3)

selected semesters

Completion of various phases of airport master planning process. Provides guidance for logical and timely development of airports. Project work groups assigned. Prerequisite: AMT 444 or 489 (or its equivalent).

AMT 527 Airline Management Strategies. (3)

selected semesters

Since deregulation, airlines have undergone profound changes through mergers, consolidation, and acquisition. In-depth look at airline management strategies for the 21st century. Prerequisite: AMT 444 or 489 (or its equivalent).

AMT 528 International Aviation. (3)

selected semesters

Major issues of international aviation, historical review of institutional framework. Bilateral route agreements, freedom versus sovereignty, current legal and political arrangements. Prerequisite: AMT 444 or 489 (or its equivalent).

AMT 529 Fixed-Base Operations Management. (3)

selected semesters

Examines FBO role in the national aviation system. Organization of flight line operations, aircraft maintenance, and administration for multiple aircraft types. Prerequisite: AMT 444 or 489 (or its equivalent).

AMT 541 Aviation Physiology. (3)

selected semesters

Surveys human physiology and human performance principles related to modern aircraft and aircraft systems operating in multiple environments. Prerequisite: AMT 410 (or its equivalent).

AMT 543 Ergonomics in High-Technology Environments. (3)

selected semesters

Examines ergonomic design principles regarding man-machine interface requirements of high-technology workstations. Emphasizes computer workstation design issues. Prerequisite: AMT 410 (or its equivalent).

AMT 545 Human Factors in Aviation. (3)

selected semesters

Overview of human role in aviation. Issues, problems of unsafe acts and attitudes in human behavior. Human engineering capabilities and limitations. Prerequisite: AMT 410 (or its equivalent).

AMT 546 Crew Resource Management/Line-Oriented Flight Training. (3)

selected semesters

Evaluates in-depth, multicrew coordination issues for commercial aviation pilots. Stresses importance of critical thinking, decision making, integrated resource utilization. Prerequisite: AMT 410 (or its equivalent).

AMT 547 Modern Human Factors Design Issues. (3)

selected semesters

Research and discussion of current human factors issues. State-of-the-art analyses of information regarding rapidly evolving designs and applications. Prerequisite: AMT 410 (or its equivalent).

AMT 549 Human Factors Research. (3)

selected semesters

Aviation human factors research principles applied and tested in operational settings. Group projects assigned in conjunction with industry partners. Prerequisite: AMT 410 (or its equivalent).

AMT 580 Practicum. (1–12)

selected semesters

AMT 584 Internship. (1–12)

selected semesters

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

AMT 590 Reading and Conference. (1–12)

selected semesters

AMT 591 Seminar. (1–12)

selected semesters

Topics may include the following:

- Transportation Systems Pro-Seminar

AMT 592 Research. (1–12)

selected semesters

AMT 593 Applied Project. (1–12)

selected semesters

AMT 595 Continuing Registration. (1)

selected semesters

AMT 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Airport Systems

AMT 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

Department of Electronics and Computer Engineering Technology

www.east.asu.edu/ctas/ecet

480/727-1029

TECH 101

Timothy E. Lindquist, Chair

Professors: Lindquist, McHenry, Munukutla, Robertson

Associate Professors: Koehnemann, Macia, Millard, Sundararajan, Zeng

Assistant Professor: Gannod

Senior Lecturer: Whitehouse

PURPOSE

The Department of Electronics and Computer Engineering Technology prepares graduates to apply scientific and engineering knowledge, methods, and techniques in support of technological applications in electronics and computer engineering activities and processes.

The engineering technology curriculum is applications oriented and builds upon a background of applied science and mathematics, including the concepts and applications of calculus. Graduates are prepared to produce practical, workable, and safe solutions to technologically challenging problems. Graduates are employed in the electronics and computer industries with responsibilities such as designing, installing and operating technical systems, analyzing and (re) engineering systems that embed computer hardware and software for unique applications, developing and producing products, managing manufacturing processes, and providing customer support for technical products and systems.

DEGREES

The faculty in the Department of Electronics and Computer Engineering Technology offer the B.S. degree in Electronics Engineering Technology (B.S./EET) and the B.S. degree in Computer Engineering Technology (B.S./CET).

For students holding an A.A.S. degree, the department offers the B.A.S. degree with a major in Applied Science. Five concentrations are available: computer systems administration, instrumentation, microcomputer systems, semiconductor technology, and software technology applications.

A Master of Science in Technology degree program with concentrations in electronics engineering technology, computer systems engineering technology, instrumentation and measurement technology, and microelectronics engineering technology is available for qualified B.S. graduates. See the *Graduate Catalog* for more information.

Electronics Engineering Technology—B.S.

Students interested in the B.S. degree in Electronics Engineering Technology may choose to specialize in one of the following three concentrations: electronic systems, microelectronics, and telecommunications.

The *electronic systems* concentration is aimed at preparing persons for careers in control, electronics, instrumentation, and power systems applications. This concentration allows a student to develop a broad-based knowledge of electrical/electronic fundamentals with an applications perspective.

The *microelectronics (UET)* concentration combines applied electronics, monolithic and hybrid integrated circuit processing and applications, device and component fabrication, and manufacturing. The objective of this concentration is to prepare persons to assume positions in the area of microelectronics manufacturing with immediately applicable knowledge as well as to develop a strong foundation of electronic fundamentals and methods. Graduates of this concentration secure positions in processing, manufacturing operations, and applications areas in industry as members of the diverse scientific engineering team.

The *telecommunications* concentration encompasses the fundamentals of information and signal processing, modern bandwidth-efficient digital radio analysis with RF and microwave circuits and systems. Applications include telephone pulse code modulation, cable TV, fiber optic links, and satellite transmission circuits and systems.

The departmental curriculum is organized into two categories, technical studies and General Studies. Technical studies consist of core areas and the concentration specialty area. General Studies consist of courses selected to meet the university General Studies requirement (see [“General Studies,” page 83](#)) as well as the math/science requirement of TAC of ABET. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses.

A minimum of 50 upper-division hours is required, including at least 24 semester hours of EET, CET, or UET upper-division hours to be taken at ASU. A minimum of 128 semester hours with a 2.00 cumulative GPA is required for graduation. Complete program of study guides with typical four-year patterns are available from the department.

DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING TECHNOLOGY

The General Studies portion of the B.S./EET curriculum has been carefully structured to meet the specific requirements of the university and to include the content required by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, the professional accrediting agency for such curricula.

**ELECTRONICS ENGINEERING TECHNOLOGY—
B.S. DEGREE REQUIREMENTS**

In addition to the courses listed for First-Year Composition and university General Studies, the following courses are required.

ENGINEERING TECHNOLOGY CORE

The following courses are required as part of the engineering technology core:

ETC 100 Languages of Technology <i>CS</i>	4
ETC 211 Applied Engineering Mechanics: Statics	3
ETC 340 Applied Thermodynamics and Heat Transfer	3
Total	10

Electronics Engineering Technology Core and Major Requirements

CET 100 Object-Oriented Software Development I	3
CET 150 Digital Systems I <i>CS</i>	4
CET 350 Digital Systems II	4
CET 354 Microcomputer Architecture and Programming	4
EET 208 Electric Circuit Analysis I	4
EET 301 Electric Circuit Analysis II	4
EET 310 Electronic Circuits I	4
EET 372 Communication Systems	4
EET 396 Professional Orientation*	1
EET 407 Energy Conversion and Applications	4
EET 410 Electronic Circuits II	4
UET 331 Electronic Materials	3
UET 415 Electronic Manufacturing Engineering Principles	3
Total	46

* Students must take EET 396 the semester in which they are enrolled in the 87th hour of credit (ASU plus transfer hours). If the 87th hour occurs in summer session, students should take EET 396 the prior spring semester.

Electronics Engineering Technology Concentrations

Electronic Systems

CET 383 Shell and Script Programming with UNIX	3
EET 406 Control System Technology	4
EET 430 Instrumentation Systems	4
EET 460 Power Electronics	4
Approved technical electives	7
Total	22

Microelectronics

CHM 116 General Chemistry <i>SQ</i>	4
UET 416 Monolithic Integrated Circuit Devices	3
UET 417 Monolithic Integrated Circuit Laboratory	2
UET 418 Hybrid Integrated Circuit Technology	4
UET 421 Applied Device Physics	3
UET 432 Semiconductor Packaging and Heat Transfer	3
Approved technical elective	3
Total	22

Telecommunications

CET 473 Digital/Data Communications	4
EET 304 Transmission Lines in Computer Networks	3
EET 401 Digital Signal Processing for Multimedia	3
EET 470 Communication Circuits	4
Approved technical electives	7
Total	21

**Electronics Engineering Technology
Program of Study
Typical First- and Second-Year Sequence**

First Year

First Semester

CET 150 Digital Systems I <i>CS</i>	4
ENG 101 First-Year Composition	3
MAT 170 Precalculus <i>MA</i>	3
PHY 111 General Physics <i>SQ</i> ¹	3
PHY 113 General Physics Laboratory <i>SQ</i> ¹	1
Total	14

Second Semester

ENG 102 First-Year Composition	3
ETC 100 Languages of Technology <i>CS</i>	4
MAT 260 Technical Calculus I <i>MA</i>	3
PHY 112 General Physics <i>SQ</i> ²	3
PHY 114 General Physics Laboratory <i>SQ</i> ²	1
HU, SB, or awareness area course	3
Total	17

Second Year

First Semester

CET 256 C Programming for Engineering Technology	3
CHM 113 General Chemistry <i>SQ</i>	4
ECN 111 Macroeconomic Principles <i>SB</i>	3
EET 208 Electric Circuit Analysis I	4
MAT 261 Technical Calculus II <i>MA</i>	3
Total	17

Second Semester

EET 301 Electric Circuit Analysis II	4
ETC 211 Applied Engineering Mechanics: Statics	3
MAT 262 Technical Calculus III <i>MA</i>	3
L1 course	3
HU, SB, or awareness area course	3
Total	16

¹ Both PHY 111 and 113 must be taken to secure *SQ* credit.

² Both PHY 112 and 114 must be taken to secure *SQ* credit.

**COMPUTER ENGINEERING TECHNOLOGY—
B.S. DEGREE REQUIREMENTS**

Students interested in the B.S. degree in Computer Engineering Technology (B.S./CET) may choose to specialize in one of the following three concentrations: computer hardware technology, embedded systems technology, and software technology.

The *computer hardware technology* concentration is designed to provide students with an opportunity to develop

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

broad-based knowledge and skills in digital systems, interfacing techniques and computer hardware applications.

The *embedded systems technology* concentration prepares students for the application, interconnection, design, analysis, and realization of systems that involve both software and hardware components. This concentration balances the hardware concerns of computer engineering with the processes and technologies involved in producing reliable software solutions.

The *software technology* concentration prepares students for careers in software applications in the context of an industry in which software solutions are increasingly distributed, using object-oriented languages and frameworks, and in which the Internet, Web and wireless technologies play an important role.

Each student must satisfy the courses listed for First-Year Composition and the university General Studies requirement. In addition, the following courses are required.

Lower-Division Core

CET 100 Object-Oriented Software Development I	3
CET 150 Digital Systems I CS	4
CET 200 Object-Oriented Software Development II	3
EET 208 Electric Circuit Analysis I	4
ETC 100 Languages of Technology CS	4
Core total	18

Major

CET 326 Programming Languages for Technology with C/C++ and Visual BASIC	4
CET 350 Digital Systems II	4
CET 354 Microcomputer Architecture and Programming	4
CET 383 Shell and Script Programming with UNIX	3
CET 456 Assembly Language Applications	3
EET 396 Professional Orientation	1
UET 415 Electronic Manufacturing Engineering Principles	3
Total	22

Computer Hardware Technology Concentration

CET 452 Digital Logic Applications	4
CET 457 Microcomputer Systems Interfacing	4
CET 473 Digital/Data Communications	4
CET 486 Hardware Description Languages: VHDL	3
EET 301 Electric Circuit Analysis II	4
EET 310 Electronic Circuits I	4
EET 372 Communication Systems	4
EET 401 Digital Signal Processing for Multimedia	3
EET 422 Electronic Switching Circuits	4
Technical electives	7
Total	41

Embedded Systems Technology Concentration

CET 230 Applied Data Structures	3
CET 386 Operating Systems Principles	3
CET 420 Foundations of Distributed Web-Based Applications in Java	3
CET 452 Digital Logic Applications	4
CET 457 Microcomputer Systems Interfacing	4
CET 458 Digital Computer Networks	3
CET 473 Digital/Data Communications	4
CET 486 Hardware Description Languages: VHDL	3
EET 301 Electric Circuit Analysis II	4
EET 401 Digital Signal Processing for Multimedia	3
Technical electives	7
Total	41

Software Technology Concentration

CET 230 Applied Data Structures	3
CET 386 Operating Systems Principles	3
CET 400 Software Engineering Technology	3
CET 420 Foundations of Distributed Web-Based Applications in Java	3
CET 425 Server Software Programming	3
CET 427 Distributed Objects with Java and CORBA	3
CET 433 Database Technology	3
CET 458 Digital Computer Networks	3
CET 488 Systems Administration of UNIX	3
CET 489 Network Administration with TCP/IP	3
Technical electives	11
Total	41

Computer Engineering Technology Program of Study Typical First- and Second-Year Sequence

First Year

First Semester

ENG 101 First-Year Composition	3
ETC 100 Languages of Technology CS	4
MAT 170 Precalculus MA	3
PHY 111 General Physics SQ ¹	3
PHY 113 General Physics Laboratory SQ ¹	1
Total	14

Second Semester

CET 100 Object-Oriented Software Development I	3
ENG 102 First-Year Composition	3
MAT 260 Technical Calculus I MA	3
PHY 112 General Physics SQ ²	3
PHY 114 General Physics Lab SQ ²	1
Total	13

Second Year

First Semester

CET 150 Digital Systems I CS	4
CET 200 Object-Oriented Software Development II	3
CET 256 C Programming for Engineering Technology	3
CHM 113 General Chemistry SQ	4
MAT 261 Technical Calculus II MA	3
Total	17

Second Semester

CET 230 Applied Data Structures	3
CET 350 Digital Systems II	4
ECN 111 Macroeconomic Principles SB	3
EET 208 Electric Circuit Analysis I	4
MAT 243 Discrete Mathematical Structures or MAT 262 Technical Calculus III MA (3)	3
Total	17

¹ Both PHY 111 and 113 must be taken to secure SQ credit.

² Both PHY 112 and 114 must be taken to secure SQ credit.

APPLIED SCIENCE—B.A.S.

The Bachelor of Applied Science degree is a “capstone” degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare them for future career opportunities and professional advancement.

DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING TECHNOLOGY

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

Degree Requirements

The B.A.S. degree in the College of Technology and Applied Sciences consists of 60 semester hours of upper-division (300-level and above) courses, with 30 hours in residence.

A.A.S. degree.....	60
Assignable credit.....	6
B.A.S. core.....	15
General Studies.....	19
Technical concentration.....	20
Total.....	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (L, CS, and awareness areas) are met with courses in the core or concentration. General Studies courses focus on contextual learning.

L.....	3
MA.....	3
HU.....	3
HU or SB.....	3
SB.....	3
SG.....	4
Total.....	19

Assignable Credit

Assignable credit allows space in the curriculum for prerequisite courses needed to succeed in the program. The courses are determined by the student and the advisor.

B.A.S. Core

The area core focuses on management and organization, professional communication, quantitative analysis, and computer competency.

CET 420 Foundations of Distributed Web-Based Applications in Java.....	3
EET 494 ST: Data Analysis.....	3
GIT 352 Technical Presentations.....	3
IMC 346 Management Dynamics.....	3
TWC 400 Technical Communications <i>L</i>	3
Total.....	15

Technical Concentrations

Computer Systems Administration. This concentration is designed to broaden and provide more in-depth knowledge in computer networks. Graduates from this concentration will be prepared to specify, install, maintain, and administer various computer networking systems.

Instrumentation. This concentration studies instrumentation, power systems, and computer systems. The curriculum prepares the graduate to specify and prepare solutions for a wide variety of electrical and electronic instrumentation

systems. Graduates from this concentration are primed for technical leadership positions in the various segments of the electronics industry.

Microcomputer Systems. This concentration prepares graduates for product specification and marketing positions in microcomputer applications. The B.A.S. degree provides additional technical skills in microcomputer systems to prepare graduates for responsible and productive positions in the support of computer systems.

Semiconductor Technology. This concentration prepares graduates for careers in the semiconductor industry. The B.A.S. degree provides graduates with an understanding of integrated circuit processing, mask making, packaging, and the software tools used in this industry.

Software Technology Applications. This concentration prepares graduates for careers in the software industry. The B.A.S. degree furnishes additional technical expertise in software technology to prepare graduates to design, specify, and provide software solutions for industry and the consumer market. This concentration also prepares graduates for computer systems and network administration careers.

COMPUTER ENGINEERING TECHNOLOGY (CET)

CET 100 Object-Oriented Software Development I. (3)

fall

Basic concepts of object-oriented analysis, design, and programming using Java. Basic Java variables, expressions, arrays, statements, methods, and classes. Prerequisite: ETC 100.

CET 150 Digital Systems I. (4)

fall and spring

Number systems, Boolean algebra, combinational logic, K-maps, flip-flops, sequential circuits, state machines, and minimization techniques.

General Studies: CS

CET 191 First-Year Seminar. (1–3)

selected semesters

CET 200 Object-Oriented Software Development II. (3)

fall and spring

Object modeling with class and interaction diagrams; inheritance and run-time binding; introduces frameworks with Java collections and windowing. Prerequisite: CET 100.

CET 230 Applied Data Structures. (3)

fall

Introduces data structures: strings, stacks, queues, binary trees, recursion, searching, and sorting. Prerequisite: CET 100.

CET 256 C Programming for Engineering Technology. (3)

fall, spring, summer

Applied and practical problem solving using the C programming language. Prerequisite: ETC 100.

CET 294 Special Topics. (1–4)

selected semesters

CET 326 Programming Languages for Technology with C/C++ and Visual BASIC. (4)

fall

Programming language design and implementation concepts through programming C/C++, Visual BASIC; execution, run-time management, data control, pointers, templates, multiple inheritance. Lecture, lab. Prerequisite: CET 100.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

CET 350 Digital Systems II. (4)

fall

Analysis and design of synchronous and asynchronous state machines. Introduces VHDL. Lecture, lab. Prerequisite: CET 150.

CET 354 Microcomputer Architecture and Programming. (4)

fall and spring

Microcomputer architecture, assembly language programming, I/O considerations, exception and interrupt handling. Introduces interfacing. Prerequisite: CET 150.

CET 383 Shell and Script Programming with UNIX. (3)

fall and spring

UNIX operating system programming of shells, environment and 4th-generation languages and tools, such as sed, awk, perl, grep, make. Lecture, lab. Prerequisite: CET 200 or 326.

CET 386 Operating Systems Principles. (3)

spring

Fundamentals of operating systems, process management, scheduling and synchronization techniques, memory and file management, protection and security issues. Prerequisite: CET 256.

CET 400 Software Engineering Technology. (3)

spring

Software life-cycle models; project management; team development environments; software specification, design, implementation techniques and tools, validation, and maintenance; user documentation. Prerequisite: senior standing in Technology.

CET 401 Digital Signal Processing for Multimedia. (3)

fall

Applies DSP techniques to multimedia. Digital filter analysis and design. Time and frequency techniques. Computer applications. Cross-listed as EET 401. Credit is allowed for only CET 401 or EET 401. Prerequisites: EET 301; MAT 262.

CET 420 Foundations of Distributed Web-Based Applications in Java. (3)

fall and spring

Principles underlying design and implementation of distributed software components; sockets, protocols, threads, XML, serialization, reflection, security, and events. Lecture, lab. Prerequisites: CET 200, 386.

CET 425 Server Software Programming. (3)

once a year

Design and implementation of software servers, threaded socket servers, servers for distributed Web-based applications; security for the Web. Prerequisite: CET 420 or instructor approval.

CET 427 Distributed Objects with Java and CORBA. (3)

spring

Managing network objects with RMI and CORBA; frameworks for naming, discovering, and invocation, such as JNDI, JINI, and Jav-aSpaces. Prerequisite: CET 420 or instructor approval.

CET 428 Web-Client User Interface Programming. (3)

fall

Client-server model for window interfaces. Java Swing, Applets, markup and scripting languages; Web tools and related technologies. Prerequisite: CET 420 or instructor approval.

CET 433 Database Technology. (3)

fall

Introduces database technologies and DBMS, data models, and languages. Prerequisites: CET 230, 420.

CET 452 Digital Logic Applications. (4)

spring

Design of sequential machines using system design techniques and complex MSI/LSI devices with lab. Prerequisite: CET 350.

CET 456 Assembly Language Applications. (3)

fall

Programming using BIOS and DOS routines. High-level language interfacing. Disk operations, TSR routines, and device drivers. Prerequisite: CET 354.

CET 457 Microcomputer Systems Interfacing. (4)

spring

Applications of microcomputer hardware and software. Special purpose controllers, interface design. Lecture, lab. Prerequisites: CET 354; CSE 183; EET 310.

CET 458 Digital Computer Networks. (3)

once a year

Network technology, topologies, protocols, control techniques, reliability, and security. Prerequisite: CET 354.

CET 473 Digital/Data Communications. (4)

fall

Signals, distortion, noise, and error detection/correction. Transmission and systems design. Interface techniques and standards. Lecture, lab. Prerequisites: CET 354; EET 372.

CET 484 Internship. (1–12)

selected semesters

CET 486 Hardware Description Languages: VHDL. (3)

spring

Introduces hardware description languages using VHDL. Techniques for modeling and simulating small digital systems using a VHDL simulator. Prerequisites: CET 350, 383.

CET 488 Systems Administration of UNIX. (3)

fall

Administration of UNIX, its processes, system calls, kernel, file structure, and interprocess communication using command line tools. Lecture, lab. Prerequisites: CET 383, 386.

CET 489 Network Administration with TCP/IP. (3)

spring

Writing C programs and shell scripts to create, control, and administer computer networks. Installation and maintenance of computer networks. Lecture, lab. Prerequisites: CET 383, 458, 473.

CET 490 Reading and Conference. (1–12)

selected semesters

CET 492 Honors Directed Study. (1–6)

selected semesters

CET 493 Honors Thesis. (1–6)

selected semesters

CET 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Computer Project

CET 498 Pro-Seminar. (1–7)

selected semesters

CET 499 Individualized Instruction. (1–3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

ELECTRONICS ENGINEERING TECHNOLOGY (EET)

EET 191 First-Year Seminar. (1–3)

selected semesters

EET 208 Electric Circuit Analysis I. (4)

fall and spring

Electrical models, AC/DC steady-state analysis of first and second order systems. Circuit theorems. Three-phase circuits. Lecture, lab. Pre- or corequisite: MAT 261.

EET 294 Special Topics. (1–4)

selected semesters

EET 301 Electric Circuit Analysis II. (4)

fall and spring

Analysis of continuous-time signals and linear systems of using Laplace and Fourier response of circuits. Lecture, lab. Prerequisite: EET 208. Pre- or corequisite: MAT 262.

EET 304 Transmission Lines in Computer Networks. (3)

spring

Theory and application of transmission lines in high-speed computer networks. Signal propagation and impedance matching. Lecture, lab, computer labs. Prerequisite: EET 301.

EET 310 Electronic Circuits I. (4)

fall and spring

Multistage amplifier, analysis, and design using models and computer simulation. Lecture, lab. Prerequisite: EET 208.

DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING TECHNOLOGY

EET 372 Communication Systems. (4)

fall and spring

Systems analysis and design of AM, FM, PCM, and SSB communication systems. Noise and distortion performance of communication systems. Lecture, lab. Pre- or corequisites: EET 301, 310.

EET 394 Special Topics. (1–4)

selected semesters

EET 396 Professional Orientation. (1)

fall and spring

Technical, professional, economic, and ethical aspects of electronics/computer engineering technology practice and industrial organization. Lecture, projects. Prerequisite: junior standing.

EET 401 Digital Signal Processing for Multimedia. (3)

fall

Applies DSP techniques to multimedia. Digital filter analysis and design. Time and frequency techniques. Computer applications. Cross-listed as CET 401. Credit is allowed for only CET 401 or EET 401. Prerequisites: EET 301; MAT 262.

EET 406 Control System Technology. (4)

spring

Control system components, analysis of feedback control systems, stability, performance, and application. Lecture, lab, computer simulations. Prerequisites: EET 301; MAT 262.

EET 407 Energy Conversion and Applications. (4)

fall

Electricity, magnetism, mechanics, heat and units, and three-phase circuits. Electrical machines, transformers, generation, transmission, and distribution of electrical energy. Lecture, lab. Prerequisite: EET 208.

EET 410 Electronic Circuits II. (4)

fall and spring

Analysis and design of OP-amps, power amplifiers, and digital logic families. Feedback design using frequency response. Computer analysis and design. Lecture, lab. Prerequisites: EET 301, 310.

EET 422 Electronic Switching Circuits. (4)

once a year

Analysis and design of electronic circuits operating in a switching mode. Waveshaping, timing, and logic. Computer simulation. Lecture, lab. Prerequisites: CET 350; EET 301, 310.

EET 430 Instrumentation Systems. (4)

fall

Measurement principles and instrumentation, techniques. Signal and error analysis. Lecture, lab. Prerequisites: EET 301, 310.

EET 460 Power Electronics. (4)

spring

Analyzes circuits for control and conversion of electrical power and energy. Lecture, lab. Prerequisites: EET 301, 310, 407.

EET 470 Communication Circuits. (4)

spring

Analysis and design of passive and active communication circuits. Coupling networks, filters, and impedance matching. Modulation and demodulation techniques. Computer solutions. Lecture, lab. Prerequisites: EET 372; MAT 262.

EET 482 Industrial Practice: Internship/Co-op. (1–4)

fall, spring, summer

Specially assigned or approved activities in electronic industries or institutions. Requires report. May be repeated for up to a maximum of 10 credits. Prerequisites: Electronics Engineering Technology major; junior or senior standing.

EET 484 Internship. (1–12)

selected semesters

EET 490 Electronics Project. (1–4)

fall, spring, summer

Individual or small group projects in applied electronics, with emphasis on laboratory practice or hardware solutions to practical problems. Prerequisite: instructor approval.

EET 492 Honors Directed Study. (1–6)

selected semesters

EET 493 Honors Thesis. (1–6)

selected semesters

EET 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Data Analysis. (3)

EET 498 Pro-Seminar. (1–7)

selected semesters

EET 499 Individualized Instruction. (1–3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

MICROELECTRONICS ENGINEERING TECHNOLOGY (UET)

UET 191 First-Year Seminar. (1–3)

selected semesters

UET 194 Special Topics. (1–4)

selected semesters

UET 294 Special Topics. (1–4)

selected semesters

UET 331 Electronic Materials. (3)

fall

Physical, chemical, electromagnetic, and mechanical properties of electronic materials. Solid-state device characteristics and their material properties. Prerequisites: CHM 113; EET 208; PHY 112, 114.

UET 411 Applied Vacuum Technology. (3)

spring

Fundamentals, applications, and practical aspects of vacuum systems and their uses in semiconductor fabrication. Prerequisite: UET 331.

UET 415 Electronic Manufacturing Engineering Principles. (3)

fall and spring

Electronic equipment design and fabrication principles and practice. Completion of electronics hardware design project and report. Lecture, lab. Fee. Prerequisite: senior standing (113 hours) in Electronics Engineering Technology.

UET 416 Monolithic Integrated Circuit Devices. (3)

fall

Physics and electronics of bipolar and MOS devices used in integrated circuits. Prerequisite: UET 331. Corequisite: UET 417.

UET 417 Monolithic Integrated Circuit Laboratory. (2)

fall

Laboratory practice in the fabrication of integrated circuits. Lab. Prerequisite: UET 331. Corequisite: UET 416.

UET 418 Hybrid Integrated Circuit Technology. (4)

spring

Layout, fabrication, design, and manufacture of thin and thick film hybrid circuits. Lecture, lab. Prerequisites: EET 310; UET 331.

UET 421 Applied Device Physics. (3)

fall

Band structures of solids, physics of current carriers in solids, pn junctions, MOS and bipolar transistors. Prerequisite: senior standing in the department.

UET 424 Integrated Circuit Mask-Making Technology. (3)

fall

Fundamentals, applications, and techniques for the fabrication of integrated circuit masks. Prerequisite: UET 331.

UET 426 Software Tools for the Semiconductor Industry. (3)

spring

Introduces software tools commonly used in the semiconductor industry, such as SUPREM IV, PSPICE, VIEWLOGIC, and ICED. Prerequisite: UET 331.

UET 428 Semiconductor Packaging and Heat Transfer. (3)

spring

Packaging theory and techniques; hermetic and plastic assembly; thermal management; electrical characteristics and reliability. Prerequisites: ETC 340 and UET 331 (or their equivalents).

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

UET 437 Integrated Circuit Testing. (3)

spring
Principles, techniques, and strategies employed at wafer level and final product testing, both destructive and nondestructive. Prerequisite: UET 416.

UET 484 Internship. (1–12)

selected semesters

UET 485 Digital Testing Techniques. (3)

once a year
Hardware/software aspects of digital testing technology; systems, board, and logic testing and equipment. Lecture, lab. Prerequisites: CET 350; EET 310.

UET 492 Honors Directed Study. (1–6)

selected semesters

UET 493 Honors Thesis. (1–6)

selected semesters

UET 494 Special Topics. (1–4)

selected semesters

UET 498 Pro-Seminar. (1–7)

selected semesters

UET 499 Individualized Instruction. (1–3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

Department of Information and Management Technology

www.east.asu.edu/ctas/imt

480/727-1781

TECH 102

Thomas E. Schildgen, Chair

Professors: Duff, Hild, Sadowski, Schildgen

Associate Professors: Grossman, Hirata, Humble, Matson, Olson, Peterson

Assistant Professor: Kime

Senior Lecturer: Wilson

Lecturers: Dolin, Harris, Lestar

PURPOSE

The mission of the department is to prepare graduates who are able to develop and communicate technological solutions to industrial problems, to manage systems operations, to improve and evaluate products, to provide customer support, and to facilitate technology transfer in industry and government. Increased complexity and sophistication have created great demand for those individuals who possess a working knowledge of the technical phases of planning, testing, production, and fabrication of consumer and industrial products and equipment. Technology includes the application of science, systematic methods, procedures, machines, communication protocols, and materials control

for the development, improvement, and implementation of state-of-the-art solutions to industrial problems.

DEGREES

The faculty in the Department of Information and Management Technology offer the B.S. degree in Industrial Technology, with concentrations in the following areas: environmental technology management, industrial technology management, and graphic information technology.

For students holding an A.A.S. degree the department offers the B.A.S. degree in Applied Science, with concentrations in digital media management, digital publishing, emergency management, fire service management, operations management, municipal operations management, and technical graphics.

A Master of Science in Technology degree is offered for graduate study. The department offers four concentrations for the graduate degree: environmental technology management, fire service administration, graphic information technology, and management of technology. For more information about the graduate program, see the *Graduate Catalog*.

INDUSTRIAL TECHNOLOGY—B.S.

The curriculum consists of First-Year Composition, university General Studies, and technical courses. Note that all three General Studies awareness areas are required. Consult with an advisor for an approved list of courses. The technical part of the curriculum includes a required Information and Management core, program concentration course work, and technical electives selected with approval of an advisor.

Information and Management Technology students are required to complete a minimum of 120 semester hours with a 2.00 cumulative GPA, including a minimum of 50 semester hours of upper-division courses to graduate.

Information and Management Core*

ETC 100 Languages of Technology CS	4
GIT 233 Digital Publishing	3
IMC 331 Quality Assurance	3
IMC 346 Management Dynamics	3
IMC 396 Professional Orientation.....	1
IMC 470 Project Management	3
Total	17

* These courses are for the industrial technology management and graphic information technology concentrations.

Environmental Technology Management Concentration

The environmental technology management concentration prepares graduates to manage such challenging problems in industry as regulatory compliance, hazardous materials management, pollution prevention, and international environmental standards for manufacturing. The curriculum is designed to provide a unique blend of critical scientific, technical, and management skills; degree requirements encompass the development of a broad background in the natural sciences and mathematics, social and behavioral sciences, management theory, regulatory issues, and applied sciences. The program is purposely structured to facilitate transfer students who are searching for a degree program that builds upon a strong technical background and focuses on the environmental issues faced by industry.

Certificate Program in Hazardous Materials and Waste Management. The Certificate Program in Hazardous Materials and Waste Management is designed to provide current and prospective employees of industry and government with a comprehensive and practical curriculum of study in hazardous materials management. The certificate program features instruction by ASU faculty, attorneys, and professionals who work in the specific area in which they teach. Participation in the certificate program is available in three options: a certificate program for nondegree students, a B.S. degree in Industrial Technology with a Certificate in Hazardous Materials and Waste Management, and a Master of Science in Technology degree with a Certificate in Hazardous Materials and Waste Management. Students must complete seven selected courses (five required and two electives) and earn a grade of “C” or higher to receive the certificate. Except for the introductory course, ETM 501 Principles of Hazardous Materials and Waste Management, the remainder of the courses may be taken in any sequence.

Industrial Technology Management Concentration. The industrial technology management concentration prepares students for supervisory and administrative positions in industry, manufacturing, and public service organizations. Course work includes accounting, data analysis, economics, effective decision making, finance, international business, legal and ethical studies, marketing, operations management, and safety. Emphasis is placed on health and safety within the workplace.

The industrial technology management program may be articulated with a broad range of community college technical courses. Community college specializations in areas such as aeronautics, construction, electronics, fire science, police science, graphic information technology, hazardous materials and waste management, computer graphics, safety and health, human resource management, production management, and manufacturing may form a technical specialty area within the industrial technology management option. Consultation with an advisor is required to coordinate the course selection for transfer to this option.

Graphic Information Technology Concentration. The graphic information technology concentration prepares students for technical and management positions in the diverse graphic communication and information technology industries: digital printing and publishing; technical/digital media production; management of graphic information assets; quality assurance of graphic products; planning and evaluation of print, Internet, multimedia, and computer-based communications. This is an intensive 120-semester-hour graphic technology program of study emphasizing theory and hands-on laboratory practice. Students develop skills to plan and execute graphic solutions using visualization and sketching, engineering graphic standards, technical document design, higher-level graphic programming languages, computer drawing and illustration, multimedia and three-dimensional modeling, project management, quality assurance, and e-commerce practices.

The Graphic Information Technology Facility (GITF), located in the Technology Center, provides internship opportunities and exposes students to current production technology, problem-solving skills, cost analysis, and human resource issues. Graduates are able to present technical solutions using graphics in print and Internet publications, engineering documents, media-rich presentations, interactive training and instruction, models, and animations. Typical career opportunities include graphic operations management, sales and marketing, information technology support in graphics-related industries, graphic systems analysis, digital publishing (both print and online), and computer graphics content planning and creation.

APPLIED SCIENCE—B.A.S.

The Bachelor of Applied Science degree is a “capstone” degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare them for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

Degree Requirements

The B.A.S. degree in the College of Technology and Applied Sciences consists of 60 semester hours of upper-division (300 level and above) courses, with 30 hours in residence.

A.A.S. degree	60
Assignable credit.....	6
B.A.S. core.....	15
General Studies	19
Technical concentration	20
<hr/>	
Total	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (L, CS, and awareness areas) are met with courses in the core or concentration. General Studies courses focus on contextual learning.

L.....	3
MA.....	3
HU.....	3
HU or SB	3
SB.....	3
SG	4
<hr/>	
Total	19

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See “General Studies,” page 83.

Assignable Credit

Assignable credit allows space in the curriculum for pre-requisite courses needed to succeed in the program. The courses are determined by the student and the advisor.

B.A.S. Core

The area core focuses on management and organization, professional communication, quantitative analysis, and computer competency.

GIT 335	Computer Systems Technology	3
IMC 346	Management Dynamics	3
ITM 452	Industrial Human Resource Management.....	3
	or IMC 470 Project Management (3)	
MET 401	Quality Assurance	3
	or STP 420 Introductory Applied Statistics CS (3)	
TWC 400	Technical Communications <i>L</i>	3
Total		15

Technical Concentrations

Operations Management Technology. The purpose of this technical concentration is to prepare supervisors for management functions in industry, manufacturing, and public service organizations. The B.A.S. degree provides the management and supervision content required for industry and governmental agencies.

Digital Media Management. This concentration prepares graduates for technical positions in industries implementing, planning, and producing interactive communications, integrated media, and multimedia for design, training, and marketing. Prospective students with A.A.S. degrees in areas such as multimedia, printing and publishing, commercial graphics, desktop publishing, or computer illustration may be interested in pursuing a digital media management concentration.

Technical Graphics. This concentration prepares graduates for positions in industries implementing technical and engineering graphics in computer-aided design and computer integrated manufacturing. A.A.S. degrees in drafting and design, computer-aided design, computer integrated manufacturing technology, mechanical technology, architectural technology, or construction technology may provide an excellent foundation for a technical graphics concentration.

Digital Publishing. This concentration prepares graduates for lead technical and entry-level management positions in the printing and publishing industry. A.A.S. degrees in multimedia, printing and publishing, commercial art, desktop publishing, or computer illustration may find that this technical concentration provides excellent opportunities.

Emergency Management. The concentration prepares graduates for positions in industry, municipal departments, and government agencies. The curriculum addresses the established Federal Emergency Management Administration (FEMA) guidelines, on-site emergency response contingency planning, first responder scene management, logistical analysis, and communications protocol.

Fire Service Management. This concentration prepares graduates for positions in industry, municipal departments, and governmental agencies. The curriculum addresses services delivered by fire departments, fire service personnel development, zoning, planning, inspections, and arson investigations.

Municipal Operations Management. This concentration prepares students for supervisory and management functions within municipalities, public service organizations, or businesses that provide services to the public sector. The curriculum addresses quality assurance, ethical issues, leadership practices, operations management, project management, marketing, finance, public sector management, and organizational effectiveness.

GRAPHIC INFORMATION TECHNOLOGY (GIT)

GIT 135 Graphic Communications. (3)

fall and spring

Introduces the technologies involved in the design, image generation, transmission, and industrial production of multiple images for consumer utilization. Lecture, lab, field trips.

GIT 194 Special Topics. (1–4)

selected semesters

GIT 210 Creative Thinking and Design Visualization. (3)

fall and spring

Fundamental methods, concepts, and techniques of creative thinking, design visualization, and problem solving. Also includes communication, cultural, and societal influences. Lecture, lab. Prerequisite: ETC 100.

GIT 212 Computer-Aided Design and Drafting (CADD). (3)

fall and spring

CADD for product design, representation, and documentation; includes projection theory, descriptive geometry, graphics analysis, drafting standards, and precision dimensioning techniques. Lecture, lab. Prerequisite: ETC 100 (or its equivalent).

General Studies: CS

GIT 215 Introduction to Graphics Programming. (3)

fall

Introduces analyzing, planning, and executing graphic programs using industry-standard programming tools. Lecture, lab. Prerequisite: ETC 100 (or its equivalent).

GIT 230 Digital Illustration in Publishing. (3)

fall and spring

Raster and vector illustration in publishing. Lecture, lab. Pre- or corequisite: GIT 135.

GIT 233 Digital Publishing. (3)

fall and spring

Introduces software and hardware used for digital publishing and informatics. Lecture, lab. Pre- or corequisites: GIT 135, 210.

GIT 237 Web Content Design. (3)

spring

Introduces design principles for visual content on the World Wide Web; raster, vector, fonts, portable documents, color palettes, file formats. Lecture, lab. Prerequisite: GIT 135 (or its equivalent). Pre- or corequisite: GIT 233.

GIT 312 3D Computer Graphics Modeling and Representation. (3)

fall

3D solid modeling applications: concepts, techniques, data structures, modeling strategies, assemblies, geometric representation. Lecture, lab. Prerequisite: GIT 212.

General Studies: CS

GIT 313 Technical Illustration and Photorealistic Rendering. (3)

fall

Computer-generated graphics for technical illustration and design presentation: axonometric and perspective drawing; shading, shadowing,

DEPARTMENT OF INFORMATION AND MANAGEMENT TECHNOLOGY

materials and textures; photorealistic rendering for PostScript output. Lecture, lab. Prerequisite: GIT 212.

GIT 314 Multimedia Design, Planning, and Storyboards. (3)

spring

Creative and conceptual process of content selection, planning, designing, flowcharting, storyboarding, proposing, configuring, prototyping, and presenting multimedia projects. Lecture, lab. Prerequisite: GIT 237.

GIT 333 Printing Technology. (3)

spring

Theory and application of sheet and web press technology for offset-lithography, flexography, screen process, and digital printing. Lecture, lab. Pre- or corequisite: GIT 135.

GIT 334 Image Capture and Manipulation. (3)

fall

Theory and application of image capture techniques used for all copy formats and conversion processes required for reproduction or dissemination. Lecture, lab. Prerequisite: GIT 233.

GIT 335 Computer Systems Technology. (3)

selected semesters

Survey of computer-based technology covering hardware, software, storage, networking, internet, telecommunications, and information systems. Lecture, lab. Prerequisite: junior standing.

GIT 337 Web Content Design. (3)

fall and spring

Introduces design principles for visual content on the World Wide Web; raster, vector, fonts, portable documents, color palettes, file formats. Lecture, lab. Pre- or corequisite: GIT 233.

GIT 352 Technical Presentations. (3)

spring

Technologies for planning, creating, and delivering individual and group presentations. Prerequisites: ENG 102; GIT 233.

GIT 394 Special Topics. (1–4)

selected semesters

GIT 411 Computer Animation. (3)

fall and spring

2D and 3D computer animation methods: project planning, scripting, storyboards, advanced modeling, lighting, materials mapping, and motion. Lecture, lab. Prerequisites: GIT 312, 334.

GIT 412 Multimedia Authoring, Scripting, and Production. (3)

fall and spring

Production of multimedia projects using industry-standard authoring applications: project management, client considerations, and project documentation; user interface design, interactivity, media, and databases. Lecture, lab. Prerequisite: GIT 314.

GIT 413 Professional Portfolio Design and Presentation. (3)

spring

Digital media portfolio design and production: planning, audience analysis, media selection, authoring, media formats, production, copy-right considerations, marketing, and delivery. Lecture, lab. Prerequisites: GIT 314, 334.

GIT 414 Web Site Design and Internet/Web Technologies. (3)

spring

Web site design, authoring, standards, protocols, tools, and development techniques for commercial client-sided Web-based graphic information systems. Lecture, lab. Prerequisites: GIT 334, 337.

GIT 415 Computer Graphics: Business Planning and Management. (3)

spring

Implementation planning: feasibility and application studies; needs assessment and operational analysis techniques; organization, managerial, and technology considerations; business plan development. Lecture, lab, field trips. Prerequisite: senior standing in Information Technology (graphic information technology concentration).

GIT 417 Advanced Internet Programming. (3)

fall

Uses industry-standard programming languages and techniques to create interactive graphic information Web sites and applications. Lecture, lab. Prerequisite: GIT 414.

GIT 432 Graphic Industry Business Practices. (3)

selected semesters

Business practices related to press/prepress/Web industries; trade customs, cost analysis, marketing and management approaches. Lecture, lab, field trips. Prerequisite: GIT 414.

GIT 435 Web Management and E-commerce. (3)

spring

Internet Web site management, security, online databases, and new e-commerce business models. Lecture, lab. Prerequisite: GIT 414.

GIT 436 Gravure Technology. (3)

spring

In-depth study of the market profile and production sequences related to the gravure method of printing. Prerequisite: GIT 135.

GIT 437 Color Reproduction Systems. (3)

fall

Scientific analysis for the engineering of color reproduction systems and color models used in the graphics industry. Prerequisite: GIT 334.

GIT 441 Graphic Information Systems. (3)

selected semesters

Graphic information systems common to the workplace: graphic user interfaces for online databases, geographic, industrial, architectural, and management applications. Lecture, lab. Prerequisite: senior standing in Information Technology (graphic information technology concentration).

GIT 450 Digital Workflow in Graphic Industries. (3)

fall

Analyzes digital production systems for input, assembly, and output of graphic information to print and Web, including networking and job tracking. Lecture, lab. Prerequisite: GIT 334.

GIT 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Computer Systems Applications. (3)

GIT 510 Computer Graphics Programming: Design, Customization, and Development. (3)

selected semesters

Advanced design, development, and documentation of graphic application programs. Lecture, lab.

GIT 512 Multimedia-Based Education and Training. (3)

fall

Creative design, planning, development, documentation, and production of technology-based learning and multimedia-based education and training materials and programs. Lecture, lab. Prerequisite: GIT 412.

GIT 537 Current Issues in Quality Assurance. (3)

selected semesters

Directed group study of selected issues relating to quality assurance in the printing, publishing, and information industry.

GIT 538 Personnel Development for the Graphics Industry. (3)

selected semesters

Employee training and development specific to production and management in the graphics industry.

GIT 590 Reading and Conference. (1–12)

selected semesters

GIT 598 Special Topics. (1–4)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56](#).

ENVIRONMENTAL TECHNOLOGY MANAGEMENT (ETM)

ETM 301 Environmental Management. (3)

fall

Focuses on knowledge and skills necessary to manage environmental programs. Perspectives include regulatory, individual, corporate, and consulting. Pre- or corequisites: CHM 113; MAT 170.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83](#).

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

ETM 302 Water and Wastewater Treatment Technology. (4)

selected semesters

Explores the development of treatment technologies. Addresses regulatory standards. Emphasizes theory and practice of system design, laboratory analysis standards and procedures. Lecture, lab. Pre- or corequisite: ETM 301.

ETM 303 Environmental Regulations. (3)

fall and spring

Explores environmental laws, regulations, and directives. Addresses air, land, and water. Prerequisite: ETM 301.

ETM 360 Introduction to Emergency Management. (3)

fall

Emergency management theories. Comprehensive emergency management. Mitigation, preparedness, response, and recovery. Post-disasters and policy formation. Current FEMA all-hazards approach.

ETM 362 Managing Natural and Technological Disasters. (3)

spring

Federal, state, and local responses to emergencies. Management of mass casualties, evacuation, sheltering, and terrorism; declaration of emergency procedures.

ETM 363 Computer Applications in Emergency Management. (3)

spring

Explores specific computer programs which are currently in use for contingency planning, tracking chemical inventories, and response resources. Cross-listed as FSM 363. Credit is allowed for only ETM 363 or FSM 363.

ETM 364 Toxicology and Biohazards in Emergency Management. (3)

fall

Introduces poisons. Dose response routes of exposure and toxicokinetics. Diseases associated with natural disasters. Clinical presentation of treatments.

ETM 401 Hazardous Waste Management. (3)

fall and spring

Definition of hazardous waste, RCRA classification, and OSHA criteria. Overview of requirements and methods of waste management. Prerequisite: ETM 301.

ETM 402 Unit Treatment Technologies. (3)

spring

Addresses various treatment technologies for contaminated air, water, and soil. Emphasizes design based upon medium, type of contamination, and concentration. Prerequisite: ETM 302.

ETM 406 Environmental Chemistry. (3)

fall and spring

Examines reactions, transport, and fates of hazardous chemicals in water, soil, air, and living organisms. Prerequisites: both CHM 113 and 115 or only CHM 114; MAT 170.

ETM 407 Occupational Hygiene. (3)

spring

Overview of occupational health hazards, including recognition, evaluation, and control. Includes regulatory status and health standards. Prerequisites: CHM 101 (or 113 or 114); MAT 170.

ETM 424 Comprehensive Emergency Management. (3)

summer

Addresses theory and management techniques for emergency preparedness, including mitigation, preparedness, response, and recovery. Pre- or corequisite: ETM 301.

ETM 426 Environmental Issues. (3)

spring

Explores the science and policy implications of contemporary problems that threaten the environment. Pre- or corequisites: CHM 113; MAT 170.

ETM 428 International Environmental Management. (3)

summer

Emphasizes technological and economic pressures experienced by developing countries. Prerequisite: ETM 301.
General Studies: G

ETM 460 Incident Management Systems and Emergency Operations Center. (3)

fall

Covers IMS, terminology, players, and management philosophy. EOC setup, activation, operation, and termination. EOC funding and politics. Cross-listed as FSM 460. Credit is allowed for only ETM 460 or FSM 460.

ETM 461 Contingency Planning. (3)

selected semesters

Provides understanding of techniques for in-house or on-site planning as well as community planning.

ETM 468 Simulation and Exercising. (3)

selected semesters

Requirements, planning, conduct, and critique of exercises related to emergency planning. Emphasizes realism using moulage and props.

ETM 494 Special Topics. (1–4)

spring

Topics may include the following:

- **Bioremediation. (3)**
Technical-regulatory and policy issues emanating from minetailing and animal waste. Lecture, case studies.

ETM 501 Principles of Hazardous Materials and Waste Management. (3)

fall

Foundation for courses in curriculum. Topics include definitions of toxic and hazardous substances and wastes, RCRA classification, and OSHA criteria. Pre- or corequisites: both CHM 113 and 115 or only CHM 114.

ETM 502 Regulatory Framework for Toxic and Hazardous Substances. (3)

fall

Examines federal, state, and local regulations for hazardous materials and wastes. Includes history and trends in regulatory development. Prerequisite: ETM 501.

ETM 503 Principles of Toxicology. (3)

spring

Interaction of chemicals with life and environment. Mechanisms of toxic action, dose-response relationships, toxicity testing models, predictive toxicology, and epidemiology. Prerequisites: both CHM 113 and 115 or only CHM 114.

ETM 504 Technology for Storage, Treatment, and Disposal of Hazardous Materials. (3)

fall

Current and state-of-the-art technologies and future trends for storage, treatment, and disposal of hazardous materials and waste. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501.

ETM 505 Quantitative Analysis and Practical Laboratory Techniques. (3)

fall and spring

EPA methodologies for sampling and analysis of soils and water. Includes quality assurance and regulatory requirements. Lab is arranged off site. Prerequisites: CHM 114 (or 113 and 115), 231; MAT 170.

ETM 506 Chemistry of Hazardous Materials. (3)

fall

Chemistry and toxicology of hazardous chemicals. Topics include proper handling, storage, transportation, and disposal. Prerequisites: both CHM 113 and 115 or only CHM 114; MAT 170. Corequisite: CHM 231.

ETM 507 Industrial Hygiene. (3)

selected semesters

Emphasizes chemical hazards in industrial settings. Topics include recognizing and measuring hazards, control techniques, and regulatory standards. Prerequisites: both CHM 113 and 115 or only CHM 114; MAT 170.

ETM 522 Air Pollution and Toxic Chemicals. (3)

fall

Examines issues in the measurement analysis and control of toxic chemicals in air pollution. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501; MAT 170.

ETM 523 Soils and Groundwater Contamination. (3)

fall

Theoretical and practical hydrogeology as it applies to cleaning up contamination. Investigative techniques, monitoring, risk assumptions, and assessment methodology. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501; MAT 170. Corequisite: CHM 231.

ETM 524 Emergency Preparedness, Response, and Planning for Hazardous Materials. (3)

summer

In-house or on-site emergency response contingency planning. Preemergency assessment, resources for cooperation, equipment requirements, and coordination with other agencies. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501; MAT 170.

ETM 525 Risk Assessment for Hazardous Materials. (3)

spring

Applies the risk assessment process in situations ranging from hazardous facilities regulation to toxic substances in the environment. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501; MAT 170.

ETM 526 Current Environmental Technology Issues. (3)

fall

In-depth study of current issues in environmental technology facing both the private and public sectors.

ETM 527 Environmental/Resources Regulations Concepts. (3)

spring

Develops environmental regulations from common law to statutory requirements. Emphasizes Superfund, hazardous materials, toxics, and liability contracts. Pre- or corequisite: ETM 501.

ETM 592 Research. (1–12)

selected semesters

ETM 598 Special Topics. (1–4)

spring

Topics may include the following:

- **Advanced Bioremediation. (3)**
Management and policy issues related to bioremediation of mining and animal waste and replacement of chemical control with biological methods. Lecture, case studies.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

FIRE SERVICE ADMINISTRATION (FSA)

See the *Graduate Catalog* for the FSA courses.

FIRE SERVICE MANAGEMENT (FSM)

FSM 304 Fire Personnel Management. (3)

fall

Promotion, personnel development, career and incentive systems, validation of physical requirements, managerial and supervisory procedures.

FSM 305 Quality Emergency Services. (3)

selected semesters

Covers quality issues relating to services delivered by progressive fire departments. Covers management of personnel and resources during organizational change.

FSM 306 Fire Prevention Organization and Management. (3)

selected semesters

Examines and evaluates the techniques, procedures, programs, and agencies involved in preventing fires.

FSM 363 Computer Applications in Emergency Management. (3)

spring

Explores specific computer programs which are currently in use for contingency planning, tracking chemical inventories, and response resources. Cross-listed as ETM 363. Credit is allowed for only ETM 363 or FSM 363.

FSM 400 Human Behavior and the Fire Threat. (3)

selected semesters

Proper ways of conducting post-fire interviews; emphasizes the psychological effects of communications during emergencies.

FSM 421 Political and Legal Consideration in Fire Science. (3)

spring

Study of legal and political considerations that affect the decision making of fire service managers.

FSM 425 Fire Service Administration. (3)

fall

Presents modern management and planning techniques that apply to organizing a fire department.

FSM 460 Incident Management Systems and Emergency Operations Center. (3)

fall

Covers IMS, terminology, players, and management philosophy. EOC setup, activation, operation, and termination. EOC funding and politics. Cross-listed as ETM 460. Credit is allowed for only ETM 460 or FSM 460.

FSM 494 Special Topics. (1–4)

selected semesters

FSM 598 Special Topics. (1–4)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

INFORMATION AND MANAGEMENT CORE (IMC)

IMC 294 Special Topics. (1–4)

selected semesters

IMC 331 Quality Assurance. (3)

spring

Instrumentation and methodologies for materials testing and quality control in various manufacturing processes. Lecture, field trips.

IMC 346 Management Dynamics. (3)

fall and spring

Management challenges and the leadership skills needed to achieve organizational objectives in the changing industrial and technical environments. Prerequisite: junior standing.

IMC 396 Professional Orientation. (1)

fall and spring

Senior advisement, industry presentations, and career counseling.

IMC 470 Project Management. (3)

spring

Introduces techniques for managing small groups within larger organizations, including team building, motivating, planning, tracking activities, and computer tools. Prerequisites: ECN 111; IMC 346; ITM 344.

IMC 498 Pro-Seminar. (1–7)

selected semesters

IMC 499 Individualized Instruction. (1–3)

selected semesters

IMC 584 Internship. (1–3)

fall and spring

IMC 590 Reading and Conference. (1–12)

selected semesters

IMC 592 Research. (1–12)

fall and spring

IMC 593 Applied Project. (1–12)

fall and spring

IMC 595 Continuing Registration. (1)

selected semesters

IMC 599 Thesis. (1–12)

fall and spring

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see ["Omnibus Courses," page 56.](#)

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See ["General Studies," page 83.](#)

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

INDUSTRIAL TECHNOLOGY MANAGEMENT (ITM)

ITM 343 Occupational Safety and Ergonomics. (3)

fall

Health and safety movement, accident theories and effects, OSHA standards and liability, safeguarding, hazards, workers' compensation, ergonomics, and safety. Prerequisite: junior standing.

ITM 344 Industrial Organization. (3)

spring

Industrial organization concepts. Topics relate to industrial relations, governmental regulations, organizational structure, labor relations, human factors, and current industrial practices. Prerequisite: IMC 346.

ITM 345 Public Sector Management. (3)

fall and spring

Management in government and public agencies. Includes mission, planning and organizing to provide services, human resource issues, conflict resolution, coordination. Prerequisite: junior standing.

ITM 402 Legal Issues for Technologists. (3)

fall

American legal system and impact on technology management issues: contracts, torts, intellectual property, white collar crime, anti-trust, environmental, and employment.

ITM 405 Forecasting and Evolution of Technology. (3)

selected semesters

History and evolutionary nature of selected technologies, issues in the management of emerging technologies, and methods of technological forecasting. Prerequisite: IMC 346 (or its equivalent).

ITM 430 Ethical Issues in Technology. (3)

spring

Topics in social responsibility for industrial technology and engineering. Prerequisite: IMC 346.

ITM 440 Introduction to International Business. (3)

spring

International business principles and operations, including partnerships, trade agreements, currency issues, international sales, and cultural differences between countries. Prerequisite: IMC 346.

General Studies: G

ITM 445 Industrial Internship. (1–10)

fall, spring, summer

Work experience assignment in industry commensurate with student's program. Specialized instruction by industry with university supervision. Pass/fail. Prerequisites: advisor approval; junior standing; 2.50 GPA.

ITM 451 Industrial Distribution and Materials Management. (3)

selected semesters

Surveys topics in industrial distribution including, but not limited to, materials handling, purchasing, receiving, warehousing, traffic, inventory control, and shipping. Prerequisite: IMC 346 or ITM 343.

ITM 452 Industrial Human Resource Management. (3)

fall

Concepts and practices of human resource management in a global industrial environment. Prerequisite: IMC 346.

ITM 453 Safety Management. (3)

selected semesters

Development and management of safety programs, education and training, and relationships within an organization. Prerequisite: ITM 343 or instructor approval.

ITM 455 Industrial Marketing Concepts. (3)

selected semesters

Customer and sales strategies for industrial organizations, including current practice and future planning. Prerequisites: ECN 111; IMC 346; junior standing.

ITM 456 Introduction to Organized Labor. (3)

spring

Introduces labor relations, unions, federations, collective bargaining, grievances, and labor legislation. Prerequisites: IMC 346; ITM 344.

ITM 461 Operations Management. (3)

fall

Introduces supervisory principles as applied to production of goods and services. Prerequisites: IMC 346; ITM 344.

ITM 480 Organizational Effectiveness. (3)

spring

Human aspects of supervisory behavior in the industrial setting and how they influence efficiency, morale, and organizational practices. Prerequisite: IMC 346.

ITM 494 Special Topics. (1–4)

selected semesters

ITM 502 Financial Management. (3)

selected semesters

Examines corporate financial and managerial accounting systems, budgeting, and financial policy, using microcomputers to analyze, forecast, and report information.

ITM 503 Marketing Management. (3)

selected semesters

Modern methods and industrial case studies of planning, pricing, promoting, and distributing goods and services in the global marketplace. Prerequisites: ITM 480 (or its equivalent); instructor approval.

ITM 504 Law and Ethics for Technical Professionals. (3)

selected semesters

Analyzes legal and ethical framework for making managerial decisions in the corporate environment of engineering- and technology-related industries.

ITM 520 Strategic Management of Technology. (3)

selected semesters

Analyzes entrepreneurial dynamics and technology development, methods of research and development management, new technology implementation, and start-up organization. Prerequisites: ITM 480 (or its equivalent); instructor approval.

ITM 540 International Management. (3)

selected semesters

Practices and procedures for effective management of multinational business organizations, including partnerships, joint ownerships, and global subsidiaries.

ITM 548 Statistical Methods for Research. (3)

selected semesters

Multivariate statistical techniques to analyze research data. Uses statistical software and applications. Prerequisite: STP 420 (or its equivalent).

ITM 549 Research Techniques and Applications. (3)

fall and spring

Selection of research problems, analysis of literature, individual investigations, preparing reports, and proposal writing. Prerequisite: STP 420 (or its equivalent).

ITM 550 Industrial Training and Development. (3)

selected semesters

Training techniques and learning processes. Planning, developing, evaluating, and managing industrial and governmental programs. Prerequisite: ITM 480.

ITM 552 Global Management Philosophies. (3)

selected semesters

Analyzes and compares significant supervision philosophies developed in various industrial nations and their potential application in the United States.

ITM 560 Managerial Decision Making. (3)

fall

Analyzes common decision-making biases and techniques to overcome them. Uses both subjective quantitative decision tools and computerized decision aids.

ITM 570 Advanced Project Management. (3)

spring

Planning, organizing, coordinating, and controlling staff and project groups to accomplish the project objective.

ITM 593 Applied Project. (1–12)

selected semesters

ITM 598 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Quantitative Research Analysis

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

**Department of Manufacturing
and Aeronautical
Engineering Technology**

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SIM 295

Scott G. Danielson, Chair

Professor: Collins

Associate Professors: Biekert, Danielson, Nam, Palmgren, Rajadas, Rogers

Assistant Professor: Post

PURPOSE

The mission of the Department of Manufacturing and Aeronautical Engineering Technology is to emphasize applied engineering practice in the manufacturing and aerospace fields through four-year degree programs in Manufacturing Engineering Technology and Aeronautical Engineering Technology. This is accomplished by the application of math and science principles to the solution of technical problems in a lecture/laboratory environment. The goal of the Manufacturing Engineering Technology program is to prepare students for employment in areas such as materials, mechanics, design, manufacturing processes, automation, and quality control. The department actively supports the student chapter of the Society of Manufacturing Engineers. The purpose of the Aeronautical Engineering Technology program is to prepare students for employment in areas such as aircraft and aerospace vehicle design, and manufacturing, applied thermodynamics, fluid mechanics and aerodynamics, propulsion, and wind tunnel testing. For more information, access www.east.asu.edu/ctas/maet on the Web.

ACCREDITATION

The B.S. degree in Manufacturing Engineering Technology and the B.S. degree in Aeronautical Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (See **"Accreditation,"** page 655, for more information.)

DEGREES

The Department of Manufacturing and Aeronautical Engineering Technology offers the B.S. degree in Manufacturing Engineering Technology and the B.S. degree in Aeronautical Engineering Technology.

For students holding an A.A.S. degree, the department offers the B.A.S. degree with a concentration in manufacturing technology and management.

A Master of Science in Technology degree is offered for graduate study. See the *Graduate Catalog* for more information.

B.S. Degree Requirements

All degree requirements for the program are shown on curriculum check sheets. Requirements include First-Year Composition, University General Studies (see **"General Studies,"** page 83), and the Engineering Technology Core. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. To graduate, students are required to complete a minimum of 128 semester hours with a 2.00 cumulative GPA, including at least 50 semester hours of upper-division courses.

Manufacturing Engineering Technology—B.S.

The B.S. degree in Manufacturing Engineering Technology requires 128 semester hours as specified below:

Engineering technology core	14
First-Year Composition	6
General Studies/department requirements	45
Manufacturing Engineering Technology major	52
Selected concentration	11
Total	128

The following courses constitute the Manufacturing Engineering Technology major and are required of all manufacturing engineering technology students. Refer to the specific concentrations for additional requirements.

Manufacturing Engineering Technology Major

EET 406 Control System Technology	4
MET 231 Manufacturing Processes	3
MET 300 Applied Material Science	4
MET 302 Welding Survey	3
MET 313 Applied Mechanics of Materials	3
MET 314 Applied Mechanics of Materials Laboratory	1
MET 331 Machine Design I	3
MET 341 Manufacturing Analysis	3
MET 344 Casting and Forming Processes	3
MET 345 Advanced Manufacturing Processes	3
MET 396 Manufacturing Professional Orientation	1
MET 401 Quality Assurance	3
MET 416 Applied Computer-Integrated Manufacturing CS	3
MET 443 CNC Computer Programming	3
MET 444 Production Tooling	3
MET 451 Introduction to Automation	3
MET 460 Manufacturing Capstone Project I	3
MET 461 Manufacturing Capstone Project II	3
Total	52

A student participating in the Manufacturing Engineering Technology program may select from two concentrations: manufacturing engineering technology or mechanical engineering technology. Major emphasis is placed on reducing the amount of time required by industry to make the graduate productive in any area of work.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See **"General Studies,"** page 83.

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

Manufacturing Engineering Technology Concentration.

This concentration is designed to prepare technologists with both conceptual and practical applications of processes, materials, and products related to manufacturing industries. Accordingly, this concentration is intended to prepare students to meet the responsibilities in planning the processes of production, developing the tools and machines, and integrating facilities for production or manufacturing.

Required Courses

MET 409 Applied Engineering Economics	3
MET 442 Specialized Production Processes	3
Technical electives	5
Total	11

Mechanical Engineering Technology Concentration.

The primary objective of the mechanical engineering technology concentration is to prepare students for entry-level work in mechanical design and testing, either in engineering or manufacturing departments in product-oriented industries. Students obtain a well-rounded academic background with an emphasis in mechanics and thermal sciences. Required courses are as follows:

AET 415 Gas Dynamics and Propulsion	3
MET 434 Applied Fluid Mechanics	3
MET 438 Machine Design II	3
Approved technical elective	2
Total	11

Aeronautical Engineering Technology—B.S.

The B.S. degree in Aeronautical Engineering Technology requires 128 semester hours as specified below:

Aeronautical Engineering Technology major	63
Engineering technology core	14
First-Year Composition	6
General Studies/department requirements	45
Total	128

The following courses constitute the Aeronautical Engineering Technology major and are required of all Aeronautical Engineering Technology students.

Aeronautical Engineering Technology Major

AET 150 Introduction to Aeronautical Engineering Technology	1
AET 210 Measurements and Testing	3
AET 215 Mechanics of Aerospace Systems	3
AET 300 Aircraft Design I	3
AET 312 Applied Engineering Mechanics: Dynamics	3
AET 396 Aerospace Professional Orientation	1
AET 415 Gas Dynamics and Propulsion	3
AET 417 Aerospace Structures	3
AET 420 Applied Aerodynamics and Wind Tunnel Testing	3
AET 432 Applied Heat Transfer	3
AET 487 Aircraft Design II	3
EET 406 Control System Technology	4
MET 231 Manufacturing Processes	3
MET 300 Applied Material Science	4
MET 313 Applied Mechanics of Materials	3
MET 314 Applied Mechanics of Materials Laboratory	1
MET 331 Machine Design I	3
MET 432 Thermodynamics	3

MET 434 Applied Fluid Mechanics	3
Programming language course	3
Technical electives	7
Total	63

APPLIED SCIENCE—B.A.S.

The Bachelor of Applied Science degree is a “capstone” degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare them for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

Degree Requirements

The B.A.S. degree in the College of Technology and Applied Sciences consists of 60 semester hours of upper-division (300 level and above) courses, with 30 hours in residence. A total of 120 semester hours is required for graduation.

A.A.S. degree	60
Assignable credit	6
B.A.S. core	15
General Studies	19
Technical concentration	20
Total	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (L, CS and awareness areas) are met with courses in the core or concentration. General Studies courses focus on contextual learning.

L	3
MA	3
HU	3
HU or SB	3
SB	3
SG	4
Total	19

Assignable Credit

Assignable credit allows space in the curriculum for prerequisite courses needed to succeed in the program or additional technical electives. The courses are determined by the student and the advisor.

B.A.S. Core

The area core focuses on management and organization, professional communication, quantitative analysis, and computer competency.

IMC 470 Project Management	3
ITM 344 Industrial Organization	3
MET 401 Quality Assurance	3
MET 416 Applied Computer-Integrated Manufacturing CS	3

DEPARTMENT OF MANUFACTURING AND AERONAUTICAL ENGINEERING TECHNOLOGY

TWC 400 Technical Communications L	3
Total	15

Technical Concentration

Manufacturing Technology and Management. This concentration prepares supervisors and other personnel for technical and management positions in the manufacturing industry. The students increase their knowledge of manufacturing and gain insight into other areas, such as management, that support their professional growth.

AERONAUTICAL ENGINEERING TECHNOLOGY (AET)

AET Note 1. Flight instruction costs are not included in university tuition and fees.

AET 150 Introduction to Aeronautical Engineering Technology. (1)

fall
Introduction to the fields of aeronautical engineering and engineering technology.

AET 191 First-Year Seminar. (1–3)

selected semesters

AET 194 Special Topics. (1–4)

selected semesters

AET 210 Measurements and Testing. (3)

fall
Measurement systems, components, system response, and the characteristics of experimental data. Lecture, lab. Prerequisites: MET 230; PHY 112, 114.

AET 215 Mechanics of Aerospace Systems. (3)

spring
Basic physics of flight. Principles and design of aircraft systems and powerplants.

AET 294 Special Topics. (1–4)

selected semesters

AET 300 Aircraft Design I. (3)

fall
Applied aerodynamics, standard atmosphere, speed measurement, infinite and finite wings, airplane performance. Fee. Prerequisites: MAT 260; PHY 112, 114.

AET 310 Instrumentation. (3)

fall
Measurement systems, components, system response, and the characteristics of experimental data. Methods of collecting and analyzing data. Lecture, lab. Prerequisite: MAT 261. Pre- or corequisite: MET 313.

AET 312 Applied Engineering Mechanics: Dynamics. (3)

fall
Masses; motion kinematics; dynamics of machinery. Prerequisites: ETC 211; MAT 261.

AET 394 Special Topics. (1–4)

selected semesters

AET 396 Aerospace Professional Orientation. (1)

fall
Career focus for Aeronautical Engineering Technology students. Familiarization with the aerospace industry. Prerequisite: junior standing.

AET 409 Nondestructive Testing and Quality Assurance. (1)

selected semesters
Purpose of inspection and quality assurance. Theory and application of nondestructive inspection methods. Application of pertinent standards, specifications, and codes. Lecture, lab. Cross-listed as AMT 409. Credit is allowed for only AET 409 or AMT 409. See AET Note 1. Prerequisite: AMT 280 or MET 230.

AET 415 Gas Dynamics and Propulsion. (3)

spring
Introduces compressible flow, internal and external flow, and aerothermodynamic analysis of propulsion systems. Prerequisite: MET 434.

AET 417 Aerospace Structures. (3)

fall
Analysis and design of aircraft and aerospace structures. Shear flow. Semimonocoque structures. Effects of dynamic loading. Prerequisites: AET 300, 312; MET 313.

AET 420 Applied Aerodynamics and Wind Tunnel Testing. (3)

fall
Introduces viscous and inviscid flow and their relationship to aircraft lift and drag. Wind tunnel design and testing. Lecture, lab. Prerequisites: AET 300; MET 434.

AET 432 Applied Heat Transfer. (3)

fall
Heat transfer by conduction, convection, and radiation. Applies heat transfer to engineering design problems. Prerequisite: ETC 340. Pre- or corequisite: MET 434 or instructor approval.

AET 484 Internship. (1–12)

selected semesters

AET 487 Aircraft Design II. (3)

spring
Basic aerodynamics and airplane performance analysis methods applied to practical design project. Prerequisite: AET 300.

AET 492 Honors Directed Study. (1–6)

selected semesters

AET 493 Honors Thesis. (1–6)

selected semesters

AET 494 Special Topics. (1–4)

selected semesters

AET 498 Pro-Seminar. (1–7)

selected semesters

AET 499 Individualized Instruction. (1–3)

selected semesters

AET 500 Research Methods. (1–12)

selected semesters

AET 524 Application of Heat Transfer. (3)

fall
Energy conservation, steady-state and transient conduction, convection transfer, free and forced convection Reynolds analogy, blackbody and environmental radiation. Prerequisite: MET 434 or instructor approval.

AET 525 Advanced Propulsion. (3)

spring
Mechanics and thermodynamics of propulsion systems. Solid, liquid propellant rocket design performance. Electrical nuclear propulsion systems. Space missions. Prerequisites: both AET 415 and 420 (or MET 434) or only instructor approval.

AET 560 Numerical Methods in Engineering Technology. (3)

selected semesters
Analyzes problems in physical sciences, models physical problems, perturbation techniques, curvefitting, data analysis, numerical solutions, ordinary and partial differential equations.

AET 580 Practicum. (1–12)

selected semesters

AET 583 Field Work. (1–12)

selected semesters

AET 584 Internship. (1–12)

selected semesters

AET 590 Reading and Conference. (1–12)

selected semesters

AET 591 Seminar. (1–12)

selected semesters

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "General Studies," page 83.

COLLEGE OF TECHNOLOGY AND APPLIED SCIENCES

AET 592 Research. (1–12)

selected semesters

AET 593 Applied Project. (1–12)

selected semesters

AET 594 Conference and Workshop. (1–12)

selected semesters

AET 595 Continuing Registration. (1)

selected semesters

AET 598 Special Topics. (1–4)

selected semesters

AET 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see [“Omnibus Courses,” page 56.](#)

MANUFACTURING ENGINEERING TECHNOLOGY (MET)

MET 191 First-Year Seminar. (1–3)

selected semesters

MET 194 Special Topics. (1–4)

selected semesters

MET 230 Engineering Materials and Processing. (3)

fall, spring, summer

Materials, their structures, properties, fabrication characteristics, and applications. Material forming, joining, and finishing processes. Automation and quality control.

MET 231 Manufacturing Processes. (3)

fall

Design documentation and material processes on plastics, ferrous and nonferrous materials, emphasizing orthographic projection, geometric dimensioning and tolerances. Lecture, lab. Prerequisite: MAT 117 or 170.

MET 294 Special Topics. (1–4)

selected semesters

MET 300 Applied Material Science. (4)

fall

Principles of materials science emphasizing concepts relevant to manufacturing and use. Discusses metals, polymers, ceramics, and composites. 3 hours lecture, 1 hour lab. Prerequisite: MET 231 or instructor approval.

MET 302 Welding Survey. (3)

fall

Theory and application of industrial welding processes; introductory welding metallurgy and weldment design; SMAW, GTAW, GMAW, oxy-acetylene, and brazing experiences. Lecture, lab. Prerequisite: junior or senior standing.

MET 313 Applied Mechanics of Materials. (3)

spring

Stress, strain, stress-strain relations. Axial, shear, bending, torsional and combined loads and deflections. Prerequisite: ETC 211.

MET 314 Applied Mechanics of Materials Laboratory. (1)

spring

Measurements of loads and deformations relating stress and strain in axial, shear, bending, torsional, and combined loading configurations. 3 hours lab. Pre- or corequisite: MET 313.

MET 331 Machine Design I. (3)

fall

Applies mechanics to design of machine elements and structures. Stress analysis, failure modes, tolerances, cylindrical fits, and shaft design. Prerequisite: MET 313.

MET 341 Manufacturing Analysis. (3)

spring

Organizational and functional requirements for effective production. Analysis of industrial specifications, GDT, costs, and group technology. Writing assembly production plans. Prerequisite: MET 231.

MET 344 Casting and Forming Processes. (3)

spring

Analyzes various forming processes to determine load requirements necessary for a particular metal-forming operation. Information used to select equipment and design tooling. Metal casting processes and design of castings. Introduces powder metallurgy. Prerequisite: MET 300.

MET 345 Advanced Manufacturing Processes. (3)

spring

Material removal processes emphasizing advanced turning, milling, and machinability studies using cutting tools. CNC programming for machining and turning centers. Lecture, lab. Prerequisite: MET 231.

MET 394 Special Topics. (1–4)

selected semesters

MET 396 Manufacturing Professional Orientation. (1)

fall

Career focus for Manufacturing Engineering Technology students. Familiarization with the manufacturing industry. Prerequisite: junior standing.

MET 401 Quality Assurance. (3)

spring

Introduces statistical quality control methods design of experiments, sampling, gage requirements, specifications, quality assurance tools emphasizing CNC-CMM programming. Lecture, lab. Prerequisite: junior standing.

MET 409 Applied Engineering Economics. (3)

spring

Fundamentals of engineering economics in a practical, industry-based approach. Includes effects of depreciation, taxes, inflation, and replacement analysis. Lecture, computer lab experiences.

MET 415 Manufacturing Simulation. (3)

spring

Computer simulation of manufacturing operations. Discrete event simulation models range from individual processes to whole factories. Lecture, computer lab experiences. Prerequisite: MET 345.

MET 416 Applied Computer-Integrated Manufacturing. (3)

fall

Techniques and practices of computer-integrated manufacturing, with emphasis on computer-aided design and computer-aided manufacturing. Prerequisite: MET 345.

General Studies: CS

MET 432 Thermodynamics. (3)

spring

Thermodynamics of mixtures. Combustion process. Applies thermodynamics to power and refrigeration cycles. Prerequisite: ETC 340.

MET 433 Thermal Power Systems. (4)

selected semesters

Analyzes gas power, vapor power, and refrigeration cycles. Components of air conditioning systems. Direct energy conversion. Psychrometry. Analyzes internal combustion engines and fluid machines. Lecture, lab. Prerequisite: MET 432 or instructor approval.

MET 434 Applied Fluid Mechanics. (3)

spring

Fluid statics. Basic fluid flow equations. Viscous flow in pipes and channels. Compressible flow. Applies fluid measurement and flow in conduits. Prerequisite: ETC 340.

MET 435 Alternate Energy Sources. (3)

selected semesters

Alternate energy systems, energy use and its impact on the environment, and demonstrating practical alternative energy sources to fossil fuels. Prerequisite: instructor approval.

MET 436 Turbomachinery Design. (3)

selected semesters

Applies thermodynamics and fluid mechanics to the analysis of machinery design and power cycle performance predictions. Prerequisites: ETC 340; MET 434.

MET 438 Machine Design II. (3)

spring

Applies mechanics to the design of machine elements and structures. Emphasizes basics of gears, springs, brakes, clutches, and bearings. Prerequisite: AET 312; MET 331.

MET 442 Specialized Production Processes. (3)

fall

Nontraditional manufacturing processes, emphasizing EDM, ECM, ECG, CM, PM, HERF, EBW, and LBW. Prerequisite: MET 231.

MET 443 CNC Computer Programming. (3)

fall

Theory and application of N/C languages using CAM software and CNC machine tools. Lecture, lab. Prerequisite: MET 345 or instructor approval.

DEPARTMENT OF MANUFACTURING AND AERONAUTICAL ENGINEERING TECHNOLOGY

MET 444 Production Tooling. (3)

fall

Design and fabrication of jigs, fixtures, and special industrial tooling related to manufacturing methods. Lecture, lab. Prerequisite: MET 345.

MET 451 Introduction to Automation. (3)

spring

Introduces automation. Topics include assembly techniques, fixed and flexible automation systems, robots, material-handling systems, sensors, and controls. Lecture, lab. Prerequisite: MET 345.

MET 452 Implementation of Robots in Manufacturing. (3)

selected semesters

Robotic workcell design, including end effectors, parts presenters, and optimum material flow. Prerequisite: MET 451 or instructor approval.

MET 460 Manufacturing Capstone Project I. (3)

fall

Group project designing, evaluating, and analyzing components, assemblies, and systems. Develop products/manufacturing techniques demonstrating state-of-the-art technology. Lecture, lab. Prerequisites: MET 331, 341; senior standing.

MET 461 Manufacturing Capstone Project II. (3)

spring

Small-group projects applying manufacturing techniques, with emphasis on demonstrating state-of-the-art technology. Lecture, lab. Prerequisite: MET 460 or instructor approval.

MET 484 Internship. (1–12)

selected semesters

MET 492 Honors Directed Study. (1–6)

selected semesters

MET 493 Honors Thesis. (1–6)

selected semesters

MET 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Consumer Manufacturing. (1–3)
- Manufacturing Process Simulation. (1–3)
- Packaging Design. (1–3)

MET 498 Pro-Seminar. (1–7)

selected semesters

MET 499 Individualized Instruction. (1–3)

selected semesters

MET 500 Research Methods. (1–12)

selected semesters

MET 501 Statistical Quality Control Applications. (3)

spring

SPC problem-solving techniques for implementation in industrial setting; design and analysis of experiments. Prerequisite: instructor approval.

MET 502 Specialized Production Processes. (3)

fall

Specialized production processes including lasers, electronic beam, abrasive and water jet, and chemical and thermal processes. Prerequisite: instructor approval.

MET 504 Applications of Production Tooling. (3)

fall

Design and fabrication of fixtures, jigs, templates, and specialized industrial tooling for manufacturing. Lecture, lab. Prerequisite: instructor approval.

MET 507 Manufacturing Enterprise. (3)

fall and spring

Organization and project management of cellular manufacturing methods, including IIT and lean manufacturing. Prerequisite: instructor approval.

MET 509 Applied Engineering Economics. (3)

spring

Fundamentals of engineering economics in a practical, industry-based approach. Includes effects of depreciation, taxes, inflation, and replacement analysis. Lecture, computer lab experiences.

MET 512 Introduction to Robotics. (3)

selected semesters

Introduces industrial robots. Topics include: robot workspace, trajectory generation, robot actuators and sensors, design of end effectors, and economic justification. Application case studies. Prerequisite: instructor approval.

MET 513 Advanced Automation. (3)

fall

Analysis and design of hard and flexible automation systems. Particular attention to material-handling technology. Prerequisite: instructor approval.

MET 514 CNC Computer Programming. (3)

spring

Theory and application of N/C languages using CAM software and CNC machine tools. Lecture, lab. Prerequisite: instructor approval.

MET 515 Manufacturing Simulation. (3)

spring

Computer simulation of manufacturing operations. Discrete event simulation models range from individual processes to whole factories. Lecture, computer lab experiences.

MET 517 Applied Computer-Integrated Manufacturing. (3)

fall

Techniques and practices of computer-integrated manufacturing, with emphasis on computer-aided design and computer-aided manufacturing. Prerequisite: MET 345 or instructor approval.

MET 571 Waste Minimization and Waste Prevention. (3)

spring

Life cycle analysis, selection of environmentally compatible materials, design of waste minimization equipment and operation, economics of waste minimization and prevention. Prerequisite: ETC 340 or instructor approval.

MET 580 Practicum. (1–12)

selected semesters

MET 584 Internship. (1–12)

selected semesters

MET 590 Reading and Conference. (1–12)

selected semesters

MET 591 Seminar. (1–12)

selected semesters

MET 592 Research. (1–12)

selected semesters

MET 593 Applied Project. (1–12)

selected semesters

MET 594 Conference and Workshop. (1–12)

selected semesters

MET 595 Continuing Registration. (1)

selected semesters

MET 598 Special Topics. (1–4)

selected semesters

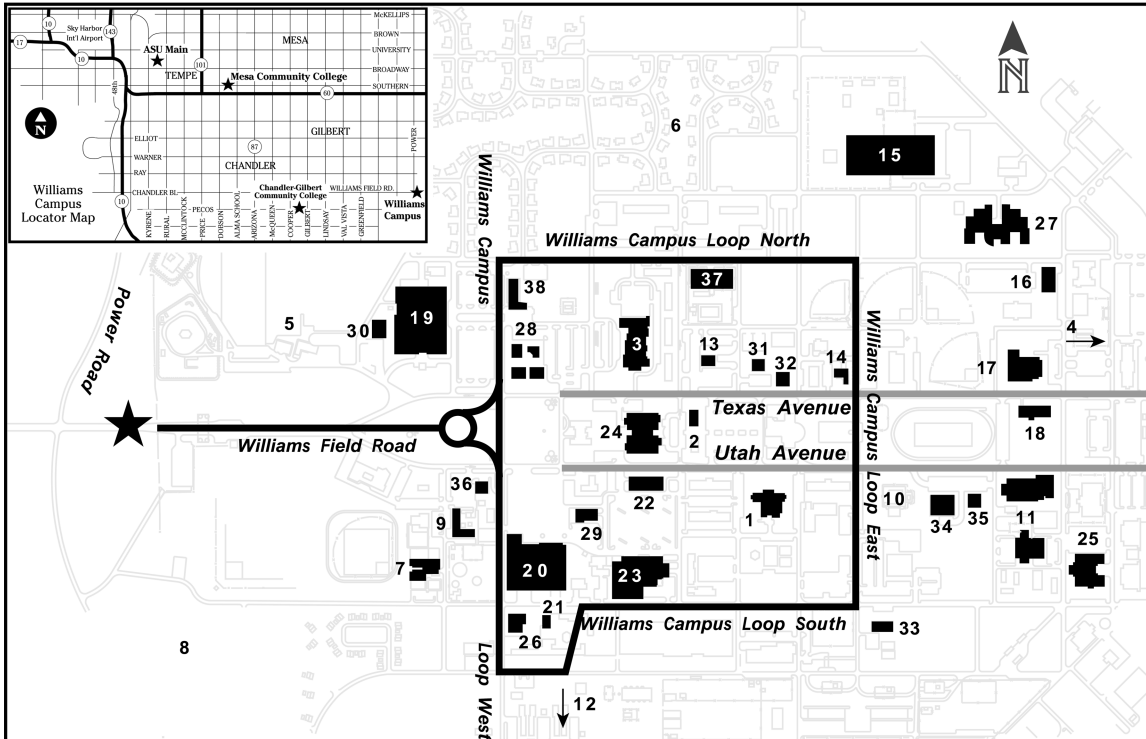
MET 599 Thesis. (1–12)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "[Omnibus Courses](#)," page 56.

L literacy and critical inquiry / MA mathematics / CS computer/statistics/ quantitative applications / HU humanities and fine arts / SB social and behavioral sciences / SG natural science—general core courses / SQ natural science—quantitative / C cultural diversity in the United States / G global / H historical / See "[General Studies](#)," page 83.

ASU East Map



Williams Campus

- 1 Williams Campus Dining Hall (FOOD)
- 2 Williams Campus Housing Office (WCHO)
- 3 Williams Campus Union (UNION)
- 4 Williams Gateway Airport and Flight Line
- 5 Toka Sticks Clubhouse and Golf Course
- 6 North Desert Village
- 7 Child Development Center (CDC)
- 8 West Desert Village
- 9 Facilities Management/DPS (FMDP)
- 10 Swimming Pool (POOL)
- 11 Research Training Laboratory
- 12 South Desert Village
- 13 Williams Express Copy Services (COPY)
- 14 Williams Campus Post Office (WCPO)

Chandler-Gilbert Community College at Williams Campus

- 15 Aviation Technology Center, Embry-Riddle, and University of North Dakota (ATC)
- 16 General Studies Building (GSB)
- 17 Physical Education Center (PEC)
- 18 Science Lab Building (SLB)

ASU East

- 19 Health Sciences Center (HSC)
(ASU East Student Health, VA Clinic)
- 20 Technology Center (TECH)
- 21 Agribusiness Food Science Lab (FDSCI)
- 22 Auditorium (EAUD)
- 23 Future Classroom and Lab Building
- 24 Academic Center Building (CNTR)
- 25 Classroom Building (CLRB)
- 26 TECH 2
- 27 Flight Simulator Building (SIM)
- 28 Morrison School of Agribusiness and Resource Management Complex (1-4)
- 29 Communication (COMM2)
- 30 Professional Golf Management (PGM)
- 31 American Indian Programs (AIP)
- 32 International Projects Unit (INTRP)
- 33 Photovoltaic Testing Lab (SOLAR)
- 34 Physical Activity Center (PAC)
- 35 Exercise Instructional Lab Building (EAW2)
- 36 Administrative Services (ADSVC)
- 37 Tennis Courts (TENNIS)
- 38 Altitude Chamber Building (ALTCH)

ASU East Directory

For the [“ASU Main Directory,”](#) see page 540. For the [“ASU West Directory,”](#) see page 694. For the [“ASU Extended Campus Directory,”](#) see page 713.

Organization	Location	Telephone	Web Address
Agribusiness and Resource Management, Morrison School of	CNTR 20	480/727-1585	www.east.asu.edu/msabr
Environmental Resources	CNTR 20	—	cactus.east.asu.edu
Professional Golf Management	CNTR 20	480/727-1017	www.east.asu.edu/msabr/pgm
American Indian Programs	AIP	480/727-1161 480/727-1075	www.east.asu.edu/aip
Bookstore	CNTR 102	480/727-1146	www.asu.edu/east/admin/business.htm#Bookstore
Campus Union	UNION	480/727-1098	www.asu.edu/east/cls/union.htm
Cashiering Services	CNTR 81	480/727-1081	www.asu.edu/east/admin/business.htm#CashieringServices
Computer Commons, ASU East	CNTR 150	480/727-1118	www.east.asu.edu/infotech/labs
East College	CNTR 92	480/727-1515	www.east.asu.edu/ecollege
Applied Psychology, Faculty of	CNTR	480/727-1515	www.east.asu.edu/ecollege/appliedpsych
Business Administration, Faculty of	CNTR	480/727-1515	www.east.asu.edu/ecollege/businessadmin
Education, Faculty of	COMM2	480/727-1103	www.east.asu.edu/ecollege/elementaryed
Exercise and Wellness, Department of	CLRB	480/727-1945	www.east.asu.edu/ecollege/wellness
Multimedia Writing and Technical Communication, Faculty of	CNTR	480/727-1515	www.east.asu.edu/ecollege/multimedia
Nutrition, Department of	HSC 1386	480/727-1728	www.east.asu.edu/ecollege/nutrition
Fitness Center, Williams Campus	WCFC Bldg	480/988-8400	www.asu.edu/east/cls/recreation.htm
General Information	CNTR Garden Level	480/727-3278	www.east.asu.edu
Housing, Williams Campus	WCHO Bldg	480/727-1700	www.asu.edu/east/cls/housing
Learning Center	CNTR 160	480/727-1452	www.east.asu.edu/learningcenter
Library Services	CNTR 110	480/727-1037	eastlib.east.asu.edu
OASIS (Student Services)*	CNTR Garden Level	480/727-3278	www.east.asu.edu/sta/contact1.html
Printing and Copy Center, Williams Express	BLDG 210	480/727-1600 480/727-1616	www.valleyofthesun.org/printsshop.htm
Provost, Office of the	CNTR 30	480/727-1028	—
Student Health Services	HSC	602/222-6568	www.asu.edu/east/student/stuheal.html
Technology and Applied Sciences, College of	CNTR 10	480/727-1874	www.east.asu.edu/ctas
Aeronautical Management Technology, Department of	SIM 201	480/727-1381	eastair.east.asu.edu
Electronics and Computer Engineering Technology, Department of	TECH 101	480/727-1029	www.east.asu.edu/ctas/ecet
Information and Management Technology, Department of	TECH 102	480/727-1781	www.east.asu.edu/ctas/imt
Manufacturing and Aeronautical Engineering Technology, Department of	SIM 295	480/727-1584	www.east.asu.edu/ctas/maet

* OASIS includes ASU Sun Cards, Office of the Registrar, Student Business Services, Student Financial Assistance, Undergraduate Admissions, and Williams Campus Parking Decals.

ASU East Faculty and Academic Professionals

A

Autore, Donald D. (1959), Professor Emeritus of Technology; B.S.E., University of Michigan; M.S.E., Arizona State University

B

Backus, Charles E. (1968), Professor of Electrical Engineering; Campus Chief Executive Officer and Provost, ASU East; Vice President, ASU; B.S.M.E., Ohio University; M.S., Ph.D., University of Arizona

Barchilon, Marian G. (1989), Associate Professor of Technical Communication; B.A., State University of New York, Binghamton; M.S., Northeastern University

Barrett, Thomas W. (1950), Professor Emeritus of Agribusiness and Resource Management; B.S., Brigham Young University; M.S., Ph.D., Cornell University

Bergeron, Bette S. (2000), Professor of Education; B.S.Ed., University of Maine, Orono; M.S.Ed., Ph.D., Purdue University

Biekert, Russell G. (2001), Associate Professor of Manufacturing and Aeronautical Engineering Technology; B.S., M.S., Southern Illinois University; Ed.D., Arizona State University

Brady, Ward W. (1973), Professor of Environmental Resources; B.S., M.S., Ph.D., Colorado State University

Brock, John H. (1977), Professor of Environmental Resources; B.S., M.S., Fort Hayes State University; Ph.D., Texas A&M University

Brown, Walter C. (1966), Professor Emeritus of Technology; B.S., Northwest Missouri State University; M.Ed., Ed.D., University of Missouri, Columbia

Brownson, Charles W. (1980), Librarian, ASU East Library Services; Director, ASU East Library Services; B.A., South Dakota State University; M.F.A., University of Oregon; M.L.S., University of California, Berkeley

Burdette, Walter E. (1956), Professor Emeritus of Technology; B.S., M.S., Kansas State College of Pittsburg; Ed.D., University of Missouri, Columbia

Burk, Karl W. (1949), Professor Emeritus of Technology; B.A., M.A., Arizona State University; Ed.D., Bradley University

Burkett, Lee N. (1974), Professor of Exercise and Wellness; B.A., M.A., San Diego State University; Ph.D., Washington State University

Busch, Jay S. (2001), Lecturer of General Studies; B.A., Michigan State University; M.A., Arizona State University

C

Carlsen, Paul A. (1978), Professor Emeritus of Technology; B.A.E., M.N.S., Ed.D., Arizona State University

Cavalliere, William A. (1946), Professor Emeritus of Technology; B.A., M.A., Arizona State University

Chalquest, Richard R. (1971), Professor Emeritus of Agribusiness and Resource Management; B.S., D.V.M., Washington State University; M.S., Ph.D., Cornell University

Collins, Donald W. (1989), Professor of Manufacturing and Aeronautical Engineering Technology; B.Arch., Virginia Polytechnic Institute and State University; M.S., Ph.D., University of Illinois, Chicago

Corbin, Charles B. (1982), Professor of Exercise and Wellness; B.S., University of New Mexico; M.S., University of Illinois; Ph.D., University of New Mexico

Cox, Frank E. (1972), Professor Emeritus of Technology; B.S.M.E., Purdue University; M.S.E., Arizona State University

D

D'Angelo, Barbara J. (2001), Assistant Librarian, ASU East Library Services; B.A., Emmanuel College; M.S., University of Illinois, Urbana-Champaign

Daneke, Gregory A. (1982), Professor of Agribusiness and Resource Management; B.A., M.A., Brigham Young University; Ph.D., University of California, Santa Barbara

Danielson, Scott G. (1999), Associate Professor of Manufacturing and Aeronautical Engineering Technology; Chair, Department of Manufacturing and Aeronautical Engineering Technology; B.S., M.S., University of Wyoming; Ph.D., North Dakota State University

Dixon, Kathleen S. (2000), Lecturer of Nutrition; B.S., University of Arizona; M.Ed., Northern Arizona University

Dolin, Penny Ann (1998), Lecturer of Information and Management Technology; B.A., Bard College; M.S., Arizona State University

Duff, Jon M. (1997), Professor of Information and Management Technology; B.S., M.S., Purdue University; Ph.D., Ohio State University

E

Edwards, Mark R. (1978), Professor of Agribusiness and Resource Management; B.S.M.E., United States Naval Academy; M.B.A., D.B.A., Arizona State University

Edwards, Marvin J. (1959), Professor Emeritus of Technology; B.S., M.A., Arizona State University

F

Forde, James N. (1987), Professor Emeritus of Electronics and Computer Engineering Technology; B.S., M.S., University of Arizona; Ph.D., Iowa State University of Science and Technology

G

Gannod, Barbara D. (2001), Assistant Professor of Electronics and Computer Engineering Technology; B.Sc., Calvin College; M.Sc., Ph.D., Michigan State University

Gesell, Laurence E. (1984), Professor of Aeronautical Management Technology; B.A., Upper Iowa University; M.P.A., University of San Francisco; Ph.D., Arizona State University

Gordon, Richard S. (1980), Professor Emeritus of Agribusiness and Resource Management; A.B., University of Rochester; M.A., Harvard University; Ph.D., Massachusetts Institute of Technology

Gray, Robert D. (2001), Assistant Professor of Applied Psychology; B.A., Queen's University (Canada); M.A., Ph.D., York University (Canada)

Green, Douglas M. (1990), Associate Professor of Environmental Resources; B.S., Oregon State University; M.S., North Dakota State University; Ph.D., Oregon State University

Grossman, Gary M. (1994), Associate Professor of Information and Management Technology; B.A., University of the Pacific; M.S., Ph.D., Purdue University

Gryder, Missy (2001), Lecturer of Elementary Education; B.A., M.B.A., Ed.D., Arizona State University

H

Hampl, Jeffrey (1998), Assistant Professor of Nutrition; B.S., Liberty University; M.S., University of Massachusetts, Lowell; Ph.D., University of Nebraska

Harris, Laverne Abe (1999), Lecturer of Information and Management Technology; B.A., M.Tech., Arizona State University

Hefner, Stephen P. (1973), Instructional Professional of Agribusiness and Resource Management, Morrison School of Agribusiness and Resource Management; B.S., Illinois State University; M.S., Arizona State University

Hild, Nicholas R. (1983), Professor of Information and Management Technology; B.S.M.E., M.S.Enve., University of Iowa; Ph.D., Union Graduate School

Hirata, Ernest T. (1974), Associate Professor of Information and Management Technology; B.A., San Diego State College; Ed.D., Arizona State University

Hopper, Lee Ann (2001), Lecturer of Elementary Education; B.S., Texas Tech University; M.A., Arizona State University

Horowitz, Renee B. (1986), Professor Emerita of Information and Management Technology; B.A., Brooklyn College; M.A., Ph.D., University of Colorado

Humble, Jane E. (1989), Associate Professor of Information and Management Technology; B.S.E., M.S.E., Ph.D., Arizona State University

Hutchins, Andrea M. (2001), Assistant Professor of Nutrition; B.S., Kansas State University; M.S., Ph.D., University of Minnesota

Hutt, Roger W. (1975), Associate Professor of Business Administration; B.S., M.B.A., Ohio State University; Ph.D., Michigan State University

J

Jackson, Andrew E. (1995), Associate Professor of Aeronautical Management Technology; B.A., University of Louisville; M.B.A., Embry-Riddle Aeronautical University; Ph.D., University of Central Florida

Johnston, Carol S. (1986), Professor of Nutrition; B.S., University of Michigan; M.S., Ph.D., University of Texas, Austin

Jones, Kathy (1996), Assistant Professor of Exercise and Wellness; B.A., University of California, Berkeley; M.S., Ph.D., Arizona State University

K

Kagan, Albert (1992), Professor of Agribusiness and Resource Management; B.S., M.S., Ph.D., Iowa State University of Science and Technology

Karp, Merrill R. (1994), Associate Professor of Aeronautical Management Technology; B.S., Arizona State University; M.A., Central Michigan University; Ph.D., Walden University

Keith, Marlow F. (1946), Professor Emeritus of Technology; B.A., M.A., Arizona State University

Kelley, Donald G. (1980), Professor Emeritus of Manufacturing and Aeronautical Engineering Technology; B.S., M.S., Arizona State University

Kigin, Denis J. (1958–65; 1967), Professor Emeritus of Technology; Dean Emeritus, Continuing Education and Summer Sessions; B.S., Mankato State University; M.S., University of Wisconsin, Stout; Ed.D., University of Missouri

Kime, Charles H. (1999), Assistant Professor of Information and Management Technology; B.S., Arizona State University; M.B.A., University of Phoenix; D.P.A., Arizona State University

Kisielewski, Robert V. (1978), Professor Emeritus of Technology; B.S.M.E., M.S.M.E., University of Wisconsin, Madison

Kleemann, Gary L. (1979), Administrative Professional, Academic Programs; Director, E-Learning; B.A., M.S., San Jose State University; Ph.D., Arizona State University

Koehnemann, Harry E. (2001), Associate Professor, Electronics and Computer Engineering Technology; B.S., Northern Arizona University; M.S., Ph.D., Arizona State University

L

Lawler, Eugene D. (1967), Professor Emeritus of Technology; B.S., Northern State College; M.A., Arizona State University

Lestar, Dot J. (1995), Lecturer of Information and Management Technology; B.S., M.Tech., Arizona State University

Lindley, James (2001), Senior Lecturer of Preveterinary Medicine; B.S., D.V.M., University of Missouri

Lindquist, Timothy (1985), Professor of Electronics and Computer Engineering Technology; Chair, Department of Electronics and Computer Engineering Technology; B.S., Purdue University; M.S., Ph.D., Iowa State University

Lytle, Robert G. (1972), Professor Emeritus of Agribusiness and Resource Management; B.S., Western Kentucky University; M.S., Arizona State University

M

Macia, Narciso F. (1990), Associate Professor of Electronics and Computer Engineering Technology; B.S., M.S., University of Texas, Arlington; Ph.D., Arizona State University

Maddy, Kenneth H. (1980), Professor Emeritus of Agribusiness and Resource Management; B.S., Pennsylvania State University; M.S., University of Wisconsin, Madison; Ph.D., Pennsylvania State University

Maid, Barry M. (2000), Professor of Multimedia Writing and Technical Communication; B.A., University of Wisconsin, Madison; M.A., University of Texas, Austin; Ph.D., University of Massachusetts, Amherst

Maisel, James E. (1985), Professor Emeritus of Electronics and Computer Engineering Technology; B.Eng.Sci., B.E.E., Fenn College; M.S.E.E., Ohio State University

Manfredo, Mark R. (1999), Assistant Professor of Agribusiness and Resource Management; B.S., California State University, Fresno; M.S., New Mexico State University; Ph.D., University of Illinois, Urbana

Manore, Melinda M. (1984), Professor Emerita of Nutrition; B.S., Seattle Pacific University; M.S., University of Oregon; Ph.D., Oregon State University

ASU EAST FACULTY AND ACADEMIC PROFESSIONALS

Marquardt, Raymond A. (1997), Professor of Agribusiness and Resource Management; Dean, Morrison School of Agribusiness and Resource Management; B.S., M.S., Colorado State University; Ph.D., Michigan State University

Martin, Rose L. (1990), Senior Lecturer of Nutrition; B.S., University of Illinois; M.S., Pennsylvania State University

Matson, John H. (1978), Associate Professor of Information and Management Technology; B.S., M.S., Illinois State University

Matthews, James B. (1989), Professor Emeritus of Aeronautical Technology; B.S., Rose-Hulman Institute of Technology; M.S., Massachusetts Institute of Technology; Ph.D., University of Arizona

McBrien, Edward F. (1986), Professor Emeritus of Electronic/Computer Technology; B.S.E., Fenn College; M.S.E.E., Cleveland State University

McCurry, William K. (1995), Associate Professor of Aeronautical Management Technology; Chair, Department of Aeronautical Management Technology; B.S., Purdue University; M.S., Troy State University; Ph.D., University of Kansas

McHenry, Albert L. (1978), Professor of Electronics and Computer Engineering Technology; Dean, College of Technology and Applied Sciences; B.S., Southern University and A&M College; M.S., Ph.D., Arizona State University

Mermis, William L. (1995), Professor of Human Health; B.S., M.S., Saint Louis University; Ph.D., Arizona State University

Millard, Bruce R. (1988), Associate Professor of Electronics and Computer Engineering Technology; B.A., M.S., Washington State University; Ph.D., Arizona State University

Miller, Victor J. (1958), Professor Emeritus of Agribusiness and Resource Management; B.S., M.S., Ph.D., University of Illinois

Miller, William H. (1984), Associate Professor of Environmental Resources; B.S., M.S., Ph.D., Washington State University

Minter, Marshall R. Jr. (1965), Professor Emeritus of Technology; B.S.M.E., Purdue University; M.S.M.E., University of Arizona

Monte, Woodrow (1979), Professor Emeritus of Nutrition; B.S., New Mexico Institute of Mining and Technology; M.S., Ph.D., Colorado State University

Moody, E. Grant (1951), Professor Emeritus of Agribusiness and Resource Management; B.S., University of Arizona; M.S., Kansas State University; Ph.D., Purdue University

Munukutla, Lakshmi V. (1987), Professor of Electronics and Computer Engineering Technology; Associate Dean, College of Technology and Applied Sciences; B.S., M.S., Andhra University (India); Ph.D., Ohio University

N

Nam, Changho (1998), Associate Professor of Manufacturing and Aeronautical Engineering Technology; B.S., M.S., Seoul National University (South Korea); Ph.D., Purdue University

Newman, Richard L. (2001), Assistant Administrative Professional; Director, Training Services, College of Technology and Applied Sciences; B.S., M.S., Arizona State University

O

O'Brien, Marc H. (1997), Lecturer of Aeronautical Management Technology; B.A., Boston University; M.S., Indiana State University

Olson, Larry W. (1995), Associate Professor of Information and Management Technology; B.S., Baylor University; Ph.D., University of Pennsylvania

P

Palmgren, Dale E. (1984), Associate Professor of Manufacturing and Aeronautical Engineering Technology; Assistant Dean, College of Technology and Applied Sciences; B.S., M.S., Ph.D., University of Wisconsin, Madison

Pardini, Louis J. (1967), Professor Emeritus of Technology; B.A., A.M., Idaho State University; Ed.D., University of Northern Colorado

Patterson, Paul M. (1995), Associate Professor of Agribusiness and Resource Management; B.S., Auburn University; M.S., Ph.D., Purdue University

Pearce, Martha V. (1977), Professor Emerita of Technology; B.S., Columbia University; M.S., Boston University; Ed.D., Arizona State University

Pearson, Michael W. (1998), Assistant Professor of Aeronautical Management Technology; B.A., University of Houston; M.B.A., J.D., Arizona State University

Peterson, Danny M. (1999), Associate Professor of Information and Management Technology; B.S., University of Idaho; M.B.A., California State University, Sacramento; M.S., Ph.D., Arizona State University

Peterson, Edward R. (1977), Professor Emeritus of Electronics and Computer Engineering Technology; B.S.E.E., Fairleigh Dickinson University; M.S.E.E., Arizona State University

Phillips, Wayne T. (1997), Assistant Professor of Exercise and Wellness; Cert. Ed., Cardiff College of Education, Cardiff (United Kingdom); M.S., Loughborough University of Technology (United Kingdom); Ph.D., Arizona State University

Post, Alvin (2000), Assistant Professor of Manufacturing and Aeronautical Engineering Technology; B.S., University of Arizona; M.S., Stanford University; Ph.D., University of Hawaii

Prust, Zenas A. (1959), Professor Emeritus of Technology; B.S., University of Wisconsin, Stout; M.A., University of Minnesota, Twin Cities; Ed.D., University of Northern Colorado

R

Raccach, Moshe (1980), Associate Professor of Agribusiness and Resource Management; B.Sc., M.Sc., The Hebrew University (Israel); Ph.D., Cornell University

Rajadas, John N. (1996), Associate Professor of Manufacturing and Aeronautical Engineering Technology; B.Tech., Indian Institute of Technology (India); M.S., Ph.D., Georgia Institute of Technology

Reed, William H. (1968), Professor Emeritus of Manufacturing and Aeronautical Engineering Technology; B.S., University of Oklahoma; M.S., Arizona State University

Richards, Timothy J. (1994), Associate Professor of Agribusiness and Resource Management; B.Comm., University of British Columbia; M.A., Ph.D., Stanford University

Richardson, Grant L. (1953), Professor Emeritus of Agribusiness and Resource Management; B.S., M.S., University of Arizona; Ph.D., Oregon State University

Robinson, Daniel O. (1950), Professor Emeritus of Agribusiness and Resource Management; A.B., Brigham Young University; M.S., University of Arizona; Ph.D., Ohio State University

Robertson, John M. (2001), Professor of Electronics and Computer Engineering Technology; B.S., University of St. Andrews (United Kingdom); M.S., University of Dundee (United Kingdom); Ph.D., University of Edinburgh (United Kingdom)

Roe, Keith B. (1979), Professor Emeritus of Technology; B.S., Wisconsin State College; M.A., University of Michigan

Rogers, Bradley B. (1984), Associate Professor of Manufacturing and Aeronautical Engineering Technology; B.S., M.S., Montana State University; Ph.D., Arizona State University

Rook, Fern H. (1969), Professor Emerita of Technology; B.A., University of Colorado; M.A., Arizona State University

Roper, Devon J. (1966), Professor Emeritus of Aeronautical Technology; B.S., Utah State University; M.S., Arizona State University

S

Sadowski, Mary A. (1999), Professor of Information and Management Technology; B.S.E., Bowling Green University; M.A., Ohio State University; Ph.D., Purdue University

Salmirs, Seymour (1981), Professor Emeritus of Technology; B.A.E., M.S.A.E., Georgia Institute of Technology

Schildgen, Thomas E. (1981), Professor of Information and Management Technology; Chair, Department of Information and Management Technology; B.S., M.S., Illinois State University; Ed.D., Northern Arizona University

Schmidt, Peter A. (1978), Professor Emeritus of Manufacturing and Aeronautical Engineering Technology; B.S., Northern Illinois University; M.A., Ed.D., Arizona State University

Schmitz, Troy G. (1998), Assistant Professor of Agribusiness and Resource Management; B.S., University of Saskatchewan (Canada); M.S., Ph.D., University of California, Berkeley

Schoen, Robert A. (1966), Professor Emeritus of Technology; B.S., M.S., Arizona State University

Schvaneveldt, Roger (2000), Professor of Applied Psychology; B.A., University of Utah; M.S., Ph.D., University of Wisconsin, Madison

Schwalm, David E. (1986), Associate Professor of English; Dean of East College, Vice Provost ASUE; B.A., Carlton College; M.S., Ph.D., University of Chicago

Seperich, George J. (1976), Professor of Agribusiness and Resource Management; Associate Dean, Morrison School of Agribusiness and Resource Management; B.S., Loyola University, Chicago; M.S., Ph.D., Michigan State University

Shepard, Christina W. (1999), Academic Associate of Nutrition; B.S., University of Arizona; M.S., Arizona State University

Shultz, Clifford J. (1992), Professor of Agribusiness and Resource Management; Marley Foundation Chair in Consumer Food Marketing; B.A., DePauw University; M.S., Ph.D., Columbia University

Stanton, Julie V. (1996), Assistant Professor of Agribusiness and Resource Management; B.A., Georgetown University; Ph.D., University of Maryland, College Park

Stiles, Philip G. (1969), Professor Emeritus of Agribusiness and Resource Management; B.S., University of Arkansas; M.S., University of Kentucky; Ph.D., Michigan State University

Stone, William J. (1967), Professor of Exercise and Wellness; Chair, Department of Exercise and Wellness; B.S., Boston University; M.S., Florida State University; Ed.D., University of California, Berkeley

Strawn, Roland S. (1967), Professor Emeritus of Technology; B.S.E.E., M.S.E.E., University of Illinois; Ph.D., Arizona State University

Sundararajan, Rajeswari (1996), Associate Professor of Electronics and Computer Engineering Technology; B.S., University of Madras (India); M.S., Indian Institute of Science (India); Ph.D., Arizona State University

Swan, Pamela (1994), Associate Professor of Exercise and Wellness; B.A., University of California, Santa Barbara; M.S., University of North Carolina, Greensboro; Ph.D., University of Tennessee

T

Taysom, Elvin D. (1953), Professor Emeritus of Agribusiness and Resource Management; B.S., University of Idaho; M.S., Utah State University; Ph.D., Washington State University

Thomason, Leslie L. (1969), Professor Emeritus of Technology; A.B., M.A., Ed.D., University of Oklahoma

Thor, Eric P. (1990), Professor of Agribusiness and Resource Management; B.S., M.S., Ph.D., University of California, Berkeley

Tudor-Locke, Catrine (2001), Assistant Professor of Exercise and Wellness; B.A., University of Lethbridge (Canada); M.S., Dalhousie University (Canada); Ph.D., University of Waterloo (Canada)

Turney, Mary Ann (1999), Associate Professor of Aeronautical Management Technology; B.A., LeMoyné College; M.A., Hofstra University; Ed.D., Nova Southeastern University

V

Vaughan, Linda A. (1982), Professor of Nutrition; Chair, Department of Nutrition; B.S., University of California, Davis; M.N.S., Cornell University; Ph.D., University of Arizona

W

Watkins, Thomas B. (1972), Professor Emeritus of Technology; B.S., University of Wyoming; M.S., Arizona State University

Welty, Ellen L. (1996), Reference/Instruction Librarian, ASU East Library Services; B.A., University of Wyoming; M.L.S., University of Arizona

Wenhardt, James C. (1996), Senior Lecturer of Elementary Education; B.S., M.Ed., Arizona State University

Whitehouse, Richard O. (1997), Senior Lecturer of Computer Science and Engineering; B.S., Worcester State College; M.S., University of Tennessee

Whysong, Gary L. (1974), Associate Professor of Environmental Resources; B.S., M.S., Montana State University; Ph.D., University of Wyoming

Wilson, Daniel (1978), Senior Lecturer of Information and Management Technology; B.S., Drexel University; M.S.E., Ph.D., Arizona State University

Wood, Billy G. (1977), Professor Emeritus of Electronics and Computer Engineering Technology; A.B., University of California; B.S., Eastern Illinois University; M.S., University of Arizona

Woodruff, Larry (1998), Lecturer of Exercise and Wellness; B.S., University of Oregon; M.S., Western Oregon University

Z

Zeng, Guoliang (1991), Associate Professor of Electronics and Computer Engineering Technology; B.S., Chengdu Telecommunication Institute (China); M.S., University of California, San Diego; M.N.S., Ph.D., Arizona State University

ASU EAST FACULTY AND ACADEMIC PROFESSIONALS

ASU East Administrative Personnel

Academic Administration

Campus CEO and Provost, ASU East; Vice President, ASU	Charles E. Backus
Vice Provost, Academic Programs	David E. Schwalm
Dean, Student Affairs	Gary L. McGrath
Director, Academic Services	C. Vinette Williams
Director, Administrative Services	Terry C. Isaacson
Director, American Indian Programs	Phillip J. Huebner
Director, Information Technology	Kati L. Weingartner
Interim Director, Institutional Advancement	C. Vinette Williams
Director, Library Services	Charles W. Brownson
Director, Planning and Budget	Sheila L. Ainlay
Director, Research and Sponsored Projects	Jean N. Humphries
Marley Foundation Chair in Consumer Food Marketing	Clifford J. Shultz
Coordinator, Sustainable Technologies, Agribusiness, and Resources Center	John H. Brock

College of Technology and Applied Sciences

Dean, College of Technology and Applied Sciences	Albert L. McHenry
Associate Dean, College of Technology and Applied Sciences	Lakshmi V. Munukutla
Assistant Dean, College of Technology and Applied Sciences	Dale E. Palmgren
Chair, Department of Aeronautical Management Technology	William K. McCurry
Chair, Department of Electronics and Computer Engineering Technology	Timothy E. Lindquist
Chair, Department of Information and Management Technology	Thomas E. Schildgen
Chair, Department of Manufacturing and Aeronautical Engineering Technology	Scott G. Danielson
Project Director, International Projects Unit	Gary M. Grossman

East College

Dean, East College	David E. Schwalm
Chair, Department of Nutrition	Linda A. Vaughan
Head, Faculty of Applied Psychology	Roger W. Schvaneveldt
Head, Faculty of Business Administration	Roger W. Hutt
Head, Faculty of Education	Bette S. Bergeron
Chair, Department of Exercise and Wellness	William J. Stone
Head, Faculty of Multimedia Writing and Technical Communication	Barry M. Maid

Morrison School of Agribusiness and Resource Management

Dean, Morrison School of Agribusiness and Resource Management	Raymond A. Marquardt
Associate Dean, Morrison School of Agribusiness and Resource Management	George J. Seperich



The ASU East campus offers a variety of programs, from Agribusiness to Aeronautical Engineering Technology.

Tim Trumble photo

ASU West

www.west.asu.edu

Elaine P. Maimon, Ph.D., Campus CEO and Provost

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A vital component of the ASU multicampus system, ASU West serves nearly 6,000 undergraduate and graduate students on its growing campus in northwest Phoenix. ASU West provides a friendly, small-campus atmosphere along with the services, resources, and expertise of a nationally acclaimed, PAC-10 research university. Founded in 1984 with upper-division and master's programs, ASU West became a four-year university campus in 2001.

ASU West prides itself on serving the diverse needs of students who balance academics with the multiple demands of work and family through convenient scheduling of small classes. Courses at ASU West lead to 29 bachelor's degrees, nine master's degrees, and eight professional certificates. Academic programs are linked directly to community needs, providing relevant, applied learning opportunities, such as internships. The campus mission balances teaching and research, faculty-student collaboration, interdisciplinary perspectives, and many thriving university-community partnerships. The faculty and staff share a deep commitment to learner-centered education.

ASU West offers many on-campus services and facilities, including a multimedia resource library, state-of-the-art computer classrooms and labs, tutoring services, bookstore, cafeteria, credit union, fitness center, recreational facilities, child care, and post office, plus many student activities, clubs, and organizations. ASU West facilities are completely accessible for those with disabilities, with academic services provided by a disability resource center. Classes are offered in the day and evening, as well as on weekends, and via television and the Internet.

The architecture and courtyards at ASU West are modeled on those of the University of Oxford in Great Britain, enhanced by a beautifully landscaped natural environment featuring widely acclaimed public art. The campus occupies approximately 300 square acres between 43rd and 51st Avenues on West Thunderbird Road in Phoenix, easily accessed from Interstate 17 and Loop 101.

ACCREDITATION

ASU West is accredited by the Higher Learning Commission and is a member of the North Central Association.

Professional programs in various academic areas are also accredited.

The Business and Accountancy degree programs in the School of Management are accredited by AACSB International—the Association to Advance Collegiate Schools of Business. The Accountancy program is also an Endorsed Internal Auditing Program by the Institute of Internal Auditors.

In the College of Human Services, the Department of Recreation and Tourism Management is accredited by the National Recreation and Park Association/American Association for Leisure and Recreation Council on Accreditation, and the Bachelor in Social Work program is accredited by the Council on Social Work Education (CSWE). The Master in Social Work program is in candidacy for accreditation by the CSWE. Full accreditation is anticipated in 2002. See "[Academic Accreditation at ASU West](#)," [page 716](#).

ACADEMIC ORGANIZATION AND ADMINISTRATION

The campus chief executive officer and provost provides executive leadership for the continuing development and management of the campus and reports directly to the president of ASU. The provost is aided in the administration of the campus by vice provosts, deans, directors, department chairs, faculty, and other officers. There are four schools and colleges at ASU West and a Division of Collaborative Programs administered by deans. These academic units develop and implement the teaching, research, and service programs of the institution, aided by the ASU West Library and other services.

The faculty and students of the institution play an important role in campus governance, with the Academic Senate, Associated Students of ASU West, and numerous cross-campus and joint ASU West–ASU Main–ASU East committees serving the needs of a rapidly growing institution.

See "[ASU West Administrative Personnel](#)," [page 701](#).

ADMISSION AND ADVISING

Admission

Nondegree Students. Nondegree students may take courses at ASU West according to the special provisions under "[Admission of Undergraduate Nondegree Applicants](#)," [page 64](#).

ASU West Baccalaureate Degrees and Majors

Major	Degree	Concentration	Administered By
Accountancy	B.S.	—	Department of Accounting and Information Systems Management
Administration of Justice	B.S.	—	Department of Administration of Justice
American Studies	B.A.	—	Department of American Studies
Applied Science	B.A.S.	All minors available at ASU West, individualized concentration	Division of Collaborative Programs
Communication Studies	B.A., B.S.	—	Department of Communication Studies
Elementary Education	B.A.E.	Bilingual education/English as a second language, early childhood education	Department of Elementary Education
English	B.A.	—	Department of American Studies
Global Business	B.S.	Financial management, human resources management, information systems management, international studies, marketing	School of Management
History	B.A.	—	Department of American Studies
Integrative Studies	B.A.	All minors available at ASU West, individualized concentration	Department of Integrative Studies
Interdisciplinary Arts and Performance	B.A.	Media, music, performance studies, theater/performance, visual art	Department of Interdisciplinary Arts and Performance
Life Sciences	B.S.	—	Department of Life Sciences
Nursing	B.S.N.	—	College of Nursing (ASU Main)
Political Science	B.A., B.S.	—	Department of Social and Behavioral Sciences
Psychology	B.A., B.S.	—	Department of Social and Behavioral Sciences
Recreation and Tourism Management	B.S.	—	Department of Recreation and Tourism Management
Secondary Education	B.A.E.	Academic specializations: biological sciences, English, history, mathematics, social studies	Department of Secondary Education
Social and Behavioral Sciences	B.A., B.S.	—	Department of Social and Behavioral Sciences
Social Work	B.S.W.	—	Department of Social Work
Sociology	B.A., B.S.	—	Department of Social and Behavioral Sciences
Spanish	B.A.	—	Department of American Studies
Special Education	B.A.E.	—	Department of Special Education
Women's Studies	B.A., B.S.	—	Women's Studies Program

Degree-Seeking Students. Any student admitted to ASU may take courses at ASU West. To be admitted to an ASU West degree program, the student must meet university admissions requirements and the specific admission requirements of the ASU West program. A student admitted to an ASU West degree program is defined as an ASU West student.

For more information on applying to ASU West degree programs, see the current *ASU West Catalog* or *ASU West Schedule of Classes*. For applications and admission information, call 602/543-8203, or write

ADMISSION SERVICES
 UNIVERSITY CENTER BUILDING 120
 ARIZONA STATE UNIVERSITY WEST
 PO BOX 37100
 PHOENIX AZ 85069-7100

Change of Major from ASU Main to ASU West

Currently enrolled ASU Main degree-seeking students who want to relocate to an ASU West degree program should contact the Admissions and Records Office at ASU West for the appropriate procedures. Acceptance to an ASU West degree program requires the student to meet the prerequisites for entry to the student's choice of major as stated

ASU West Graduate Degrees and Majors

Major	Degree	Concentration	Administered By
Business Administration	M.B.A.	—	School of Management
Communication Studies	M.A.	—	Department of Communication Studies
Criminal Justice	M.A.	—	Department of Administration of Justice
Educational Administration and Supervision	M.Ed.	—	Department of Graduate Studies and Professional Development
Elementary Education	M.Ed.	Bilingual education, educational technology, ESL education, reading	Department of Graduate Studies and Professional Development
Interdisciplinary Studies	M.A.	—	College of Arts and Sciences
Secondary Education	M.Ed.	Educational technology	Department of Graduate Studies and Professional Development
Social Work	M.S.W.	—	Department of Social Work
Special Education	M.Ed.	Infants and young children	Department of Graduate Studies and Professional Development

in the appropriate catalog. Students should be aware that certain requirements (e.g., the minimum number of upper-division semester hours to graduate) differ between ASU West and ASU Main. Students should therefore contact an academic advisor at ASU West before relocating to there.

Application of Course Credit. All courses completed on any ASU campus may fulfill the 120-semester-hour requirement for graduation with a baccalaureate degree. Every candidate for the baccalaureate degree is required to earn a minimum of 30 semester hours in resident credit courses at the ASU campus from which the student will graduate. Some degree programs have specific requirements that must be completed in the department of the major or through another department at the resident campus. The application of courses to the degree program is determined by the appropriate faculty member or academic advisor of the student's major. Because of these constraints, students should seek advice from the appropriate advisor for their major before registering for classes at another ASU campus.

Academic Advising

Effective academic advising is an essential aspect of the educational experience at ASU West. Prospective students should contact a general advisor as a first step in the admission process to make an appointment, call 602/543-WCAC, or visit the West Campus Advisory Center in UCB 201. A general counselor reviews admission requirements and processes and makes referrals to academic advisors as appropriate. A convenient alternative is to meet with an outreach advisor at an ASU West Transfer Center located on the campuses of local community colleges.

DEGREE PROGRAMS

Refer to the [“ASU West Baccalaureate Degrees and Majors” table, page 690](#), and [“ASU West Graduate Degrees and Majors” table, on this page](#).

The College of Education offers postbaccalaureate programs for teacher certification in elementary education and secondary education. Students who complete the approved program, including student teaching, are recommended for certification to the Arizona Department of Education. The following academic specializations for the B.A.E. degree in

Secondary Education require course work in the subject matter area not currently available at ASU West (but offered at ASU Main): business, chemistry, family resources and human development, physical education, physics, political science, and Spanish.

For more information on ASU West degree requirements, see the *ASU West Catalog*.

Minors and Certificates

ASU West offers an extensive selection of minors and certificate programs that may be taken in conjunction with a major. Other certificate programs may be taken independently; for the complete list, see the [“ASU West Minors” table, page 692](#), and the [“ASU West Certificates” table, page 692](#). For more information, refer to the individual department or college descriptions in the *ASU West Catalog*.

ASU Main Programs Hosted at ASU West. Courses for the Bachelor of Science in Nursing (B.S.N.) degree are offered at ASU West. For specific information on requirements, see [“College of Nursing,” page 473](#).

Course Information

For information on ASU West course offerings, see the current *ASU West Schedule of Classes*. For ASU West course descriptions and General Studies courses offered at ASU West, see the *ASU West Catalog*.

Library Services

The ASU West Library provides resources that support the curriculum of ASU West with a collection of 315,000 volumes, 1.4 million microforms, 7,500 videos, 15,000 slides, 230 electronic databases, and nearly 6,000 serial titles including 3,000 electronic full-text journals. Approximately 47% of electronic databases are available to ASU registered users from home computers.

The library is open seven days a week. Knowledgeable staff members are available to provide reference service and instruction in the use of the library's considerable resources. Individual consultations with subject specialist librarians are available by appointment. The Library Instruction Program provides introduction to the tools and resources available for research in academic disciplines, including Internet resources.

ASU West Minors

Minor	Administered By
American Studies	Department of American Studies
Communication Studies	Department of Communication Studies
English	Department of American Studies
Ethnic Studies	College of Arts and Sciences
Film and Video Studies	Department of Interdisciplinary Arts and Performance
Gerontology	Gerontology Program
History	Department of American Studies
Interdisciplinary Arts and Performance	Department of Interdisciplinary Arts and Performance
Life Sciences	Department of Life Sciences
Mathematics	Department of Integrative Studies
Philosophy	Department of Integrative Studies
Political Science	Department of Social and Behavioral Sciences
Prelaw	College of Human Services
Psychology	Department of Social and Behavioral Sciences
Public Relations and Strategic Communications	Department of Communication Studies
Religious Studies	College of Arts and Sciences
Social and Behavioral Sciences	Department of Social and Behavioral Sciences
Sociocultural Anthropology	Department of Social and Behavioral Sciences
Sociology	Department of Social and Behavioral Sciences
Spanish	Department of American Studies
Special Events Management	Department of Recreation and Tourism Management
Tourism Management	Department of Recreation and Tourism Management
Women's Studies	Women's Studies Program

Numerous information and research tools—most accessible from off-campus—are available through the ASU West Library Web site at www.west.asu.edu/library. For library hours and information, call 602/543-5717.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The university-wide college oversees the ASU Extended Campus and forms partnerships with other ASU colleges, including those at ASU

West, to meet the instructional and informational needs of a diverse community.

The ASU Extended Campus goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; and innovative delivery technologies, including television, the Internet, and independent learning. The Extended Campus also offers a variety of professional continuing education and community outreach programs.

For more information, see "[ASU Extended Campus](#)," [page 703](#), or access the Web site at www.asu.edu/xed.

ASU West Certificates

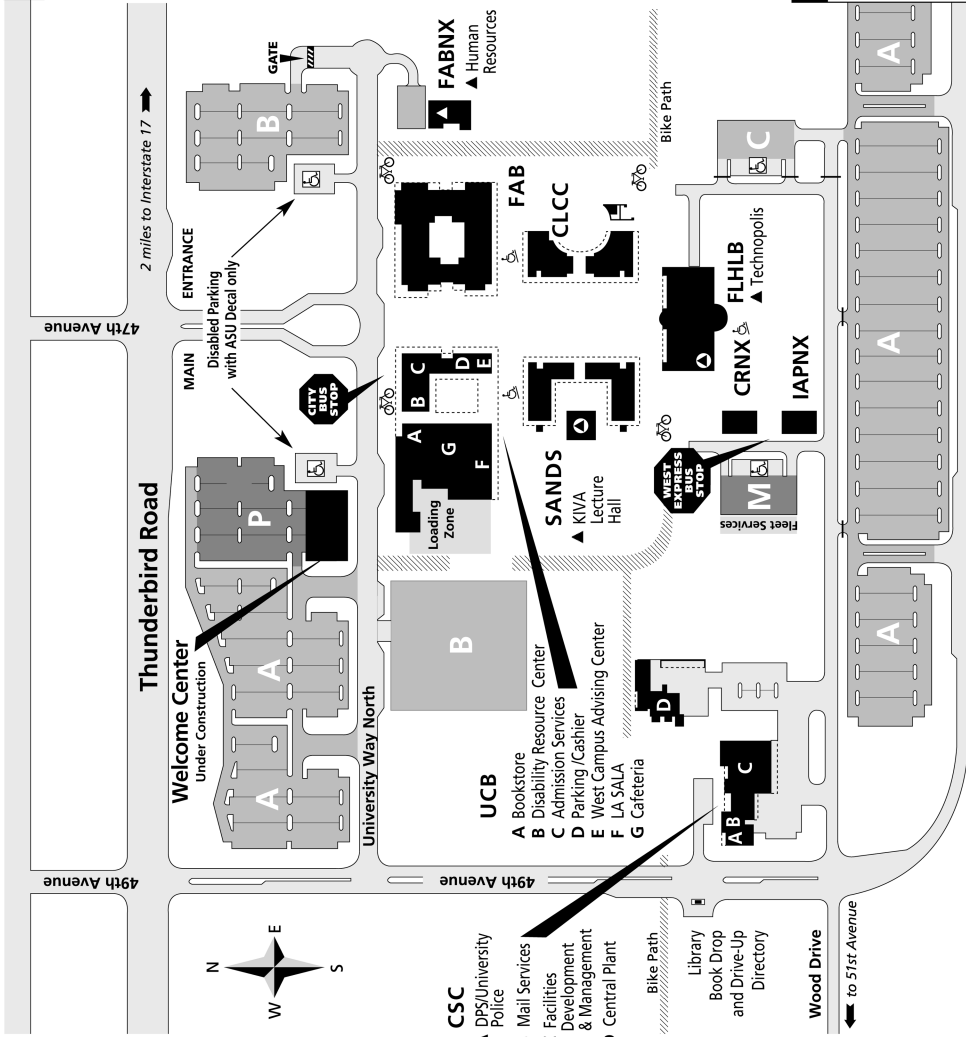
Certificate	Administered By
Accountancy, Postbaccalaureate Certificate in	Department of Accounting and Information Systems Management
Communication and Human Relations, Postbaccalaureate Certificate in	Department of Communication Studies
Ethnic Studies, Certificate in	College of Arts and Sciences
Film and Video Studies, Certificate in	Department of Interdisciplinary Arts and Performance
Gerontology, Certificate in	College of Human Services
Professional Accountancy, Postbaccalaureate Certificate in	Department of Accounting and Information Systems Management
Women's Studies, Certificate in	Women's Studies Program
Writing, Certificate in	Department of American Studies

BUILDING LEGEND

- | | |
|---|---|
| <p>University Center Building (UCB)
 Admission Services
 Arizona State Savings & Credit Union
 Bank of America ATM
 Bookstore
 Cafeteria
 Career Services/Personal Counseling Center
 Cashier's Office
 Child Care Center
 Disability Resource Center
 Division of Collaborative Programs
 Financial Aid/Student Employment Information Desk
 Information Desk
 La Sala A, B, C
 Multicultural Student Services
 Registration Services
 Parking Office
 Second Stage West Theatre
 Student Affairs Administration
 Student Health Services
 Student Life
 Student Support Services Program
 University-College Center
 Veteran Student Services
 Wellness/Fitness Center
 West Campus Advising Center
 Women's Studies Resource Center</p> | <p>Sands Classroom Building (SANDS)
 Copy Express
 Kiva Lecture Hall
 Sand Trap snack bar
 Faculty/Administration Building (FAB)
 Academic Affairs
 Academic/Faculty Offices
 Basement classrooms
 College of Arts & Sciences
 College of Education
 College of Human Services
 Copy Center
 Information Technology
 Instructional Technology Lab
 Informational Technology Desk
 Institutional Advancement
 Office of the Provost
 School of Management
 FAB Annex (FABNX)
 Human Resources
 Office of the Executive Vice Provost
 Human Resources
 Classroom Lab/ Computer Classroom Building (CLCC)
 Fletcher Library (FLHLB)
 Technopolis
 Learning Enhancement Center
 Interdisciplinary Arts Annex (IAPNX)
 Classroom Annex (CRNX)
 Central Services Complex (CSC)</p> |
|---|---|

SYMBOLS LEGEND

- | | | | |
|--|---|--|--|
| | Disabled Decal Parking | | Decal Parking
<i>(Students, faculty & staff only)</i> |
| | Metered Parking
<i>(25¢ per 15 minutes)</i> | | Faculty/Staff Decal Parking
<i>(7 a.m. to 5:30 p.m.; Student decal parking allowed after 5:30 p.m.)</i> |
| | Visitor Parking
<i>(\$1.00 exit fee; 24 hours)</i> | | Faculty/Staff Decal Parking
<i>(24 hours/day)</i> |
| | Accessible Ramp | | Bicycle Racks |
- Parking regulations are enforced at all times. Decals are required on campus from 7am through 11pm. Meters are enforced from 7am until 10pm.



University Way South

ASU ARIZONA STATE UNIVERSITY WEST

(602) 543-5500 • www.west.asu.edu
 Street Address: 4701 West Thunderbird Road • Glendale, AZ 85308-4908
 Mailing address: PO Box 37100, Phoenix, AZ 85069-7100

ASU West Directory

For the “ASU Main Directory,” see page 540. For the “ASU East Directory,” see page 683. For the “ASU Extended Campus Directory,” see page 713.

Organization	Location	Telephone	Web Address
Admission Services	UCB 120	602/543-8203	www.west.asu.edu/admissions
Arts and Sciences, College of	FAB N201	602/543-6000	www.west.asu.edu/coas
American Studies, Department of	FAB N220C	602/543-6090	www.west.asu.edu/amerstud
Ethnic Studies Program	FAB N204	602/543-6007	www.west.asu.edu/ethnic
Integrative Studies, Department of	FAB N279-1	602/543-6003	www.west.asu.edu/iasweb/index.html
Interdisciplinary Arts and Performance, Department of	AB N230F	602/543-6057	www.west.asu.edu/iap
Life Sciences, Department of	CLCC 210	602/543-6050	www.west.asu.edu/lifesci
M.A. Interdisciplinary Studies	FABN 201F	602/543-6241	www.west.asu.edu/mais
Social and Behavioral Sciences, Department of	FAB N250	602/543-6058	www.west.asu.edu/social
Women’s Studies Program	FAB N291	602/543-3300	www.west.asu.edu/wsteam
Associated Students of ASU West	UCB 221	602/543-8186	www.west.asu.edu/asasuw
ASU West	—	602/543-5500	www.west.asu.edu
Bookstore	UCB 140	602/543-6800	www.west.asu.edu/adaff/auxs/bookstore
Career Services and Personal Counseling Center	UCB 320	602/543-8124	www.west.asu.edu/cspsc
Collaborative Programs, Division of	UCB 201	602/543-4600	www.west.asu.edu/dcp
Bachelor of Applied Science Program	UCB 201	602/543-4BAS	www.west.asu.edu/bas
Barrett Honors College	UCB 201	602/543-4503	www.asu.edu/honors
Learning Enhancement Center	FLHLB LL2	602/543-6151	www.west.asu.edu/lec
Research Consulting Center	UCB 201	602/543-3410	www.west.asu.edu/rcc/lab/
Transition and Outreach Services	UCB 201	602/543-8217	www.west.asu.edu/tos
University-College Center	UCB 201	602/543-4222	www.west.asu.edu/ucc
West Campus Advising Center	UCB 201	602/543-WCAC	www.west.asu.edu/wcac
Disability Resource Center	UCB 130	602/543-8145	www.west.asu.edu/drc
TDD	—	602/543-8168	—
Education, College of	FAB S210A	602/543-6300	www.west.asu.edu/coe
Elementary Education, Department of	FAB S218	602/543-6315	www.west.asu.edu/coe
Graduate Studies and Professional Development, Department of	FAB S220	602/543-3634	www.west.asu.edu/coe/graduate
Secondary Education, Department of	FAB S251A	602/543-6445	www.west.asu.edu/coe
Special Education, Department of	FAB S252	602/543-6380	www.west.asu.edu/coe
Financial Aid Services	UCB 120	602/543-8178	www.west.asu.edu/financialaid
Graduate Studies	FAB S 301	602/543-4567	www.west.asu.edu/graduate
Human Services, College of	FAB S105-A	602/543-6600	www.west.asu.edu/chs
Administration of Justice, Department of	FAB S270C-1	602/543-6607	www.west.asu.edu/chs/aoj
Communication Studies, Department of	FAB S141C	602/543-6606	www.west.asu.edu/chs/comm
Gerontology Program	FAB S170-2	602/543-6642	www.west.asu.edu/chs/GRN
Nursing (ASU Main Program)	FAB N290A-2	602/543-6605	nursing.asu.edu
Recreation and Tourism Management, Department of	FAB S115A	602/543-6603	www.west.asu.edu/chs/RTM
Social Work, Department of	FAB S149	602/543-6602	www.west.asu.edu/chs/sw
Information Desk	FAB Lobby	602/543-5500	www.west.asu.edu/adaff/auxs/info
Library	FLHLB	602/543-5717	www.west.asu.edu/library

Organization	Location	Telephone	Web Address
Management, School of	FAB N101	602/543-6200	www.west.asu.edu/som
Accounting and Information Systems	FAB S190-1	602/543-6275	www.west.asu.edu/som/acct
Management, Department of			
Economics, Finance, Marketing and	FAB N120-A	602/543-6101	www.west.asu.edu/som
Quantitative Business Analysis,			
Department of			
Management, Department of	FAB N120-D	602/543-6204	www.west.asu.edu/som
Master of Business Administration	FAB N151	602/543-6201	www.west.asu.edu/som/MBA
(MBA) Program			
Multicultural Student Services	UCB 220	602/543-8148	www.west.asu.edu/multicultural
Parking Services (Decals, Appeals)	Welcome Center	602/543-7275	www.west.asu.edu/adaff/auxs/parking
Provost, Office of the	FAB N303	602/543-7001	—
Residency Classification	UCB 120	602/543-8203	www.west.asu.edu/registrar/residency.htm
Student Employment	UCB 120	602/543-8178	www.west.asu.edu/financialaid/stdemply.htm
Student Health Services	UCB 170	602/543-8019	www.west.asu.edu/studenthealth
Student Life	UCB 220	602/543-8200	www.west.asu.edu/studentlife
Student Support Services Program	UCB 220	602/543-8121	www.west.asu.edu/sssp
Testing Services	UCB 120	602/543-8136	www.west.asu.edu/testing
Transition and Outreach Services (General Advising)	UCB 201	602/543-8217	www.west.asu.edu/tos
Veteran Student Services	UCB 120	602/543-8220	www.west.asu.edu/veteran
Vice Provost, Academic Affairs	FAB N301	602/543-4500	www.west.asu.edu/acadaffairs
West Campus Advising Center	UCB 201	602/543-WCAC	www.west.asu.edu/wcac
Women's Studies Resource Center	UCB 323	602/543-3421	www.west.asu.edu/wsteam/resource.htm



A view of ASU West campus with the University Center Building and Faculty and Administration Building in the foreground

Mark Boisclair photo

ASU West Faculty and Academic Professionals

A

- Abramson, Marianne** (1999), Visiting Assistant Professor of Psychology; B.A., Northern Arizona University; M.A., Ph.D., Arizona State University
- Achilles, Elayne R.** (1986), Associate Professor of Education; B.M.Ed., Temple University; M.M., Ed.D., Arizona State University
- Ackroyd, William S.** (2000), Lecturer of Social and Behavioral Sciences; B.A., M.A., M.S., Portland State University; Ph.D., University of Arizona
- Aleshire, Peter** (1993), Senior Lecturer of Professional Writing; B.A., M.A., Stanford University
- Amobi, Olufunmilayo A.** (2001), Assistant Professor of Secondary Education; B.A., University of Ibadan (Nigeria); M.Ed., Ed.D., Arizona State University
- Anastasi, Jeffery S.** (2001), Assistant Professor of Cognitive Psychology; B.A., M.A., Ph.D., State University of New York, Binghamton
- Andereck, Kathleen L.** (1993), Associate Professor of Recreation and Tourism Management; B.S., University of Wisconsin, Stevens Point; M.S., Texas A&M University; Ph.D., Clemson University
- Anders, Gary C.** (1989), Professor of Economics; Director, Institute for International Business, School of Management; B.S., West Texas State University; M.A., Ph.D., University of Notre Dame
- Anderson, Laurel A.** (1989), Associate Professor of Marketing; B.S.N., University of Minnesota, Twin Cities; M.N., University of Washington; Ph.D., Arizona State University
- Anoyke, Akua Duku** (1999), Associate Professor of American Studies; Cochair, Department of American Studies; B.A., Michigan State University; M.A., Federal City College, District of Columbia; M.A., Ph.D., City University of New York Graduate School and University Center
- Armstrong, Gaylene S.** (2000), Assistant Professor of Administration of Justice; B.A., University of Manitoba (Canada); M.A., Ph.D., University of Maryland
- Armstrong, Todd A.** (1999), Assistant Professor of Administration of Justice; B.A., M.A., Ph.D., University of Maryland, College Park
- Atwater, Leanne E.** (1993), Professor of Management; Chair, Department of Management; B.A., M.A., San Diego State University; Ph.D., Claremont Graduate School
- Ávalos, Manuel** (1990), Associate Professor of Political Science; Associate Vice Provost for Research and Faculty Development; B.A., M.A., University of Arizona; Ph.D., University of New Mexico
- Awender, Michael A.** (2000), Professor of Education; Dean, College of Education; B.A., M.A., University of Windsor (Canada); M.Ed., University of Toronto (Canada); Ph.D., Claremont Graduate School

B

- Baldwin, Bruce A.** (1989), Professor of Accountancy; B.A., M.B.A., Michigan State University; Ph.D., Arizona State University
- Balthazard, Pierre A.** (1999), Associate Professor of Information Management Systems; B.S., McGill University (Canada); M.S., Ph.D., University of Arizona
- Beckett, E. Carol** (1996), Assistant Professor of Bilingual Education; B.A., M.Ed., Ed.D., Arizona State University
- Bellizzi, Joseph A.** (1988), Professor of Marketing; Chair, Department of Economics, Finance, Marketing and Quantitative Business Analysis; B.S., M.A., Ph.D., University of Nebraska, Lincoln
- Bernat, Frances P.** (1993), Associate Professor of Administration of Justice; B.S., M.A., J.D., State University of New York, Buffalo; Ph.D., Washington State University
- Brawley, E. Allan** (1992), Professor of Social Work; Vice Provost for Academic Personnel; Certificate of Social Work, University of Strathclyde (United Kingdom); D.S.W., University of Pennsylvania
- Bredbenner, Candice D.** (1990), Associate Professor of American History; Assistant Dean, College of Arts and Sciences; B.A., Russell Sage College; M.A., Ph.D., University of Virginia
- Brett, Joan F.** (1999), Associate Professor of Management; B.A., B.S., Ohio State University; Ph.D., New York University
- Bristol, Terry** (2000), Assistant Professor of Marketing; B.S., M.S., San Diego State University; Ph.D., Virginia Polytechnic Institute
- Britt, Chester L. III** (1999), Associate Professor of Administration of Justice; B.S., University of Iowa; M.A., Washington State University; Ph.D., University of Arizona
- Broadus, Dorothy C.** (1990), Associate Professor of English; B.A., Eastern Kentucky University; M.Ed., Ph.D., University of Louisville
- Brown, Lee H.** (2001), Assistant Professor of Secondary Education; B.A., Union College; M.A., Ed.D., State University of New York, Albany
- Buenker, Joe** (2000), Assistant Librarian; B.A., University of Wisconsin, Parkside; M.S., University of Illinois, Urbana
- Burleson, Mary H.** (1997), Assistant Professor of Psychology; B.A., M.S., New Mexico State University; Ph.D., Arizona State University
- Buss, Ray R.** (1990), Associate Professor of Educational Psychology; Assistant Dean, College of Education; B.S., M.S., Ph.D., University of Wisconsin, Madison
- Byam, L. Dale** (1999), Visiting Assistant Professor of Interdisciplinary Arts and Performance; B.A., Concordia University (Canada); M.A., Ph.D., New York University
- ## C
- Cardelle-Elawar, Maria** (1987), Professor of Educational Psychology; B.A., Universidad Experimental Libertador (Venezuela); M.S., University of Southern California; Ph.D., Stanford University

Cárdenas, Lupe (1986), Associate Professor of Spanish; B.A., M.A., Ph.D., Arizona State University

Carey, James (1998), Lecturer, School of Management; B.S., M.B.A., Ph.D., Arizona State University

Carey, Jane M. (1988), Associate Professor of Management Information Systems; B.S., M.B.A., Eastern Illinois University; Ph.D., University of Mississippi

Carter, Wendy (1997), Assistant Professor of Sociology; B.A., Stanford University; M.S., Carnegie Mellon University; M.S., Ph.D., University of Wisconsin, Madison

Champion, Kelly M. (2001), Assistant Professor of Psychology; A.B., University of Michigan, Ann Arbor; M.S., Eastern Michigan University; Ph.D., University of Kansas

Chang, Stanley Y. (1992), Associate Professor of Accountancy; B.B.A., National Taiwan University (Taiwan); M.A., University of Missouri; Ph.D., Texas Tech University

Chavez, José G. (2000), Assistant Professor of Spanish; B.A., M.A., California State University, Sacramento; Ph.D., Arizona State University

Chisholm, Inés M. (1991), Associate Professor of Bilingual Education; B.A., M.Ed., University of Puerto Rico; Ph.D., University of Florida

Christie, Alice A. (1995), Associate Professor of Technology and Education; B.A., Denison University; M.Ed., Boston University; Ph.D., Arizona State University

Cleland, Jo Ann V. (1991), Associate Professor of Reading/ Language Arts; B.A., Saint Olaf College; M.A., Ed.D., Northern Arizona University

Collins-Chobanian, Shari C. (1994), Associate Professor of Philosophy; B.A., Colorado State University; M.A., Ph.D., Washington University

Corley, Ted L. (2001), Lecturer in Mathematics; B.S., Grand Canyon University; M.A., Ed.D., Arizona State University

Costantino, James (1998), Lecturer of Accountancy; B.S., M.Acc., Arizona State University; M.A., University of Southern California

Cuádras, Gloria H. (1994), Associate Professor of American Studies; Director, Ethnic Studies Program; B.A., University of California, Santa Cruz; M.A., Ph.D., University of California, Berkeley

Cutrer, Emily F. (1990), Associate Professor of American Studies; Interim Dean, College of Arts and Sciences; B.A., M.A., Ph.D., University of Texas, Austin

Cutrer, Thomas W. (1992), Professor of American Studies; Cochair, Department of American Studies; B.A., M.A., Louisiana State University; Ph.D., University of Texas, Austin

D

Dallmus, John T. (2000), Lecturer of Accountancy; B.S., Towson University; M.B.A., Loyola College in Maryland

Davidson, Ronald (1997), Associate Professor of Accountancy; B.Comm., University of Manitoba (Canada); M.B.A., York University (Canada); Ph.D., University of Arizona

De La Cruz, Yolanda (1991), Associate Professor of Mathematics Education; B.A., M.A., California State University, Northridge; Ed.D., University of California, Berkeley

Delgado, Fernando (1994), Associate Professor of Communication Studies; Associate Vice Provost for Academic Programs and Graduate Studies; B.A., San Jose State University; M.A., Ph.D., University of Iowa

Di Mare, Lesley (1992), Associate Professor of Communication Studies; Chair, Department of Communication Studies; B.A., California State University, Chico; M.A., California State University, Hayward; Ph.D., Indiana University, Bloomington

Dix, Clarence L. (1979), Senior Lecturer of Social Work; B.A., Buena Vista College; M.S.W., University of Chicago

Duncan, William A. (1991), Associate Professor of Accountancy; Chair, Department of Accounting and Information Systems Management; B.S., Portland State University; Ph.D., University of Texas, Austin

E

Elenes, C. Alejandra (1992), Associate Professor of Women's Studies; Licenciada en Ciencias de la Información, University of Monterrey (Mexico); M.A., Ph.D., University of Wisconsin, Madison

F

Farone, Diane Weis (2001), Assistant Professor of Social Work; B.A., University of Colorado, Boulder; M.B.A., University of Tennessee; M.S., D.S.W., Columbia University; J.D., Vanderbilt University

farrelly, deg (1991), Associate Librarian; B.A., Illinois State University; M.L.S., Rutgers, The State University of New Jersey

Feezor-Buttes, Barbara (1995), Assistant Professor of American Studies; B.A., University of California, Berkeley; M.A., Ph.D., University of California, Los Angeles

Firat, A. Fuat (1990), Professor of Marketing; Licencié en Economie, Istanbul University (Turkey); Ph.D., Northwestern University

Fitzpatrick, Tanya R. (2000), Associate Professor of Social Work; B.A., Clark University; M.S.W., Simmons School of Social Work; Ph.D., Boston College

Flint, G. David (1998), Lecturer of Management; B.A., Grand Canyon University; M.I.M., American Graduate School of International Management; Ph.D., Texas A&M University

Forster, Bruce A. (2000), Professor of Economics; Dean, School of Management; B.A., University of Guelph (Canada); Ph.D., Australian National University (Australia)

Foster, Madison J. III (2001), Visiting Associate Professor of Social Work; B.A., Morehouse College; M.S.W., University of Michigan, Ann Arbor; Ph.D., Bryn Mawr College

Foster, Will (2001), Assistant Professor of Information Systems Management; B.A., Williams College; Ph.D., University of Arizona

G

Gaffney, Cynthia (2001), Instructor of Communication Studies; B.A., M.A., Arizona State University

Gallegos, Bee (1984), Associate Librarian; B.S., University of North Alabama; M.L.S., George Peabody College for Teachers

Gater, Helen (1970), Dean Emerita; B.A., Fort Hays University; M.A., University of Denver

George, Peggy J. (2001), Lecturer of Elementary Education; B.A., Arizona State University; M.Ed., Ed.D., University of Massachusetts, Amherst

Gilkeson, John S. (1991), Associate Professor of History; A.B., Amherst College; M.A., University of Oklahoma; Ph.D., Brown University

ASU WEST FACULTY AND ACADEMIC PROFESSIONALS

Gitelson, Richard (1994), Professor of Recreation and Tourism Management; Chair, Department of Recreation and Tourism Management; B.A., M.A.T., M.S., University of North Carolina, Chapel Hill; Ph.D., Texas A&M University

Glass, Ronald D. (1996), Assistant Professor of Professional Core; B.A., Harvard College; M.A., Ph.D., Stanford University; Ed.M., Harvard University; C.Phil., University of California, Berkeley

Gonzalez-Jensen, Margaret (1994), Associate Professor of Bilingual Education; B.A., Our Lady of the Lake University; M.A., Ed.D., Texas A&M University

Gopalakrishnan, Mohan (1998), Associate Professor of Operations Production Management; B.E., College of Engineering (India); M.S., Ph.D., University of Alabama, Tuscaloosa

Graves, Joseph L. (1994), Professor of Evolutionary Biology; A.B., Oberlin College; Ph.D., Wayne State University

Greenhut, John G. (1989), Associate Professor of Finance; B.A., Ph.D., Texas A&M University

Greenstein, Marilyn (2000), Associate Professor of Accountancy; B.B.A., University of Houston; Ph.D., Temple University

Gregg, Dawn G. (2000), Visiting Assistant Professor of Information Systems; B.S., University of California, Irvine; M.B.A., Arizona State University West; M.S., Arizona State University

Griffin, Marie (1997), Assistant Professor of Administration of Justice; B.S., Santa Clara University; Ph.D., Arizona State University

Gruber, Diane (1995), Lecturer of Communication Studies; B.A., Rutgers, The State University of New Jersey; M.A., Purdue University

Gutierrez, Sara E. (1990), Associate Professor of Psychology; B.S., M.A., Ph.D., Arizona State University

H

Haarr, Robin N. (1994), Associate Professor of Administration of Justice; B.S., State University of New York, Brockport; M.S., Ph.D., Michigan State University

Haas, Nancy S. (1986), Associate Professor of Curriculum and Instruction; Chair, Department of Secondary Education; B.A., M.Ed., Ph.D., Arizona State University

Haasnoot, Richard (2000), Lecturer of Marketing; B.A., Pennsylvania State University

Haladyna, Thomas M. (1986), Professor of Educational Psychology; B.S., Illinois State University; M.A., San Jose State University; Ph.D., Arizona State University

Harken, Henry R. Jr. (1986), Associate Librarian; B.A., Hofstra University; M.S.L.S., Long Island University

Harris, Kathleen C. (1990), Professor of Special Education; B.A., M.Ed., Rutgers, The State University of New Jersey; Ph.D., Temple University

Hattenhauer, Darryl (1988), Associate Professor of American Literature; B.A., M.A., California State University; Ph.D., University of Minnesota, Twin Cities

Hay, Victoria (1993), Senior Lecturer of Writing; B.A., University of Arizona; M.A., Ph.D., Arizona State University

Hayden, Mary (1998), Lecturer of Management; B.A., M.B.A., Arizona State University

Hess, Robert K. (1990), Associate Professor of Measurement and Evaluation; B.A., M.Ed., University of Georgia; Ph.D., University of South Carolina

Hino, Jo Ann (2001), Lecturer in Elementary Education; B.S., State University of New York, Cortland; M.A., Kean College; Ed.D., Rutgers University

Hultsman, John (1990), Professor of Recreation and Tourism Management; Director, Partnership for Community Development, College of Human Services; B.G.S., University of Kansas; M.S., University of Missouri; Re.D., Indiana University, Bloomington

Hultsman, Wendy Z. (1990), Associate Professor of Recreation and Tourism Management; B.S.E., State University of New York, Cortland; M.S., Indiana University, Bloomington; Ph.D., Pennsylvania State University

Hurwitz, Sally (2001), Lecturer; B.A.E., M.Ed., Ph.D., Arizona State University

I

Irvin, Glenn W. (1997), Professor of English; Vice Provost for Academic Affairs; B.A., M.A., Ph.D., Arizona State University

Irwin, Leslie H. (1995), Assistant Professor of Professional Education Core; B.S., University of Wisconsin, Superior; B.Ed., M.Ed., University of Ottawa (Canada); Ed.D., Brigham Young University

Isbell, Dennis (1991), Associate Librarian; B.S., M.A., Northern Arizona University; M.L.S., University of Arizona

J

Jacquette, Barbara L. (1990), Senior Lecturer of Curriculum and Instruction; B.S., Cornell University; M.A., Adelphi University; Ph.D., Arizona State University

Johnson, Carolyn R. (1995), Associate Librarian; B.A., Montclair State College; M.S.L.S., University of Illinois; M.B.A., University of Minnesota

Jones, Robert W. (1994), Associate Professor of Collaborative Programs; B.S., M.A., Middle Tennessee State University; Ph.D., Miami University

K

Kammerlocher, Lisa (1988), Associate Librarian; B.S., M.L.S., University of Oklahoma

Kassing, Jeffrey W. (1998), Assistant Professor of Communication Studies; B.A., William Jewell College; M.A., Murray State University; Ph.D., Kent State University

Katz, Charles (1997), Assistant Professor of Administration of Justice; B.S., Truman State University; M.A., Ph.D., University of Nebraska, Omaha

Keil, Thomas J. (1999), Professor of Sociology; B.A., King's College; M.A., Ph.D., Temple University

Kelley, Douglas L. (1994), Associate Professor of Communication Studies; B.A., Westmont College; M.C., Arizona State University; Ph.D., University of Arizona

Kelley, Michael F. (1990), Associate Professor of Early Childhood Education; Chair, Department of Elementary Education; B.S., M.S., Arizona State University; Ed.D., University of Georgia

Kennedy, Jeffery T. (2000), Fine Arts Specialist; B.A., California State University, Fullerton; M.A., New York University

Kirby, Andrew (1995), Professor of Social and Behavioral Sciences and Geography; Director, M.A. in Interdisciplinary Studies Program; B.A., Ph.D., University of Newcastle (United Kingdom)

Kline, Elliot (1993), Lecturer of Management; B.A., M.B.A., Ph.D., University of Colorado

Knopf, Richard C. (1986), Professor of Recreation and Tourism Management; B.S., M.S., Ph.D., University of Michigan

L

Lash, Christine (1999), Academic Professional; Coordinator, Women's Studies Resource Center; B.S., M.C., Ph.D., Arizona State University

Lavitt, Melissa R. (1991), Associate Professor of Social Work; Chair, Department of Social Work; B.A., University of Chicago; M.S.W., Ph.D., Tulane University

Lentz, Daniel (1991), Associate Professor of Music Theory and Composition; B.A., Saint Vincent College; M.F.A., Ohio University, Athens

Lerman, Richard (1995), Professor of Media Arts; B.A., M.F.A., Brandeis University

Levy, Emanuel (1990), Professor of Sociology; B.A., M.A., Tel Aviv University (Israel); M.Ph., Ph.D., Columbia University

Luken, Paul C. (1993), Senior Lecturer of Sociology; B.A., Quincy College; M.A., Ph.D., Ohio State University

M

Maimon, Elaine P. (1996), Professor of English; Campus Chief Executive Officer and Provost, ASU West; Vice President, ASU; B.A., M.A., Ph.D., University of Pennsylvania

Malian, Ida M. (1990), Professor of Special Education; Chair, Department of Special Education; B.A., Oakland University; M.A., Ph.D., University of Michigan

McCabe, James (2000), Visiting Assistant Professor of Social Work; B.A., St. Ambrose College; M.P.H., M.S.W., University of Hawaii; D.S.W., University of California, Berkeley

McGovern, Thomas V. (1990), Professor of Psychology; A.B., Fordham University; M.A., Ph.D., Southern Illinois University, Carbondale

McKennon, Edward (2000), Assistant Librarian; B.A., Rutgers University; M.A., University of Arizona

Medville, Karen K. (1995), Assistant Research Scientist in Life Sciences; B.A., Colorado College; M.S., Colorado State University

Mengesha, Astair Gebre Mariam (1991), Associate Professor of Women's Studies; Chair, Women's Studies Program; B.A., Purdue University; M.A., Michigan State University; Ph.D., Iowa State University

Mezner, Martin (1994), Associate Professor of International Business; B.A., B.S., Bryan College; M.S., University of Texas, Dallas; Ph.D., University of South Carolina

Midobuche, Eva (1996), Assistant Professor of Bilingual Education; B.S., M.A., Ed.D., Texas A&M University

Miller, Paul A. (1988), Associate Professor of Psychology; Chair, Department of Social and Behavioral Sciences; B.S., Saint Vincent College; M.S., North Carolina State University, Raleigh; M.A., Ph.D., University of Texas, Austin

Mizzi, Philip J. (1988), Associate Professor of Economics; B.A., Rockford College; Ph.D., Texas A&M University

Mohan, Srimathy (1999), Visiting Assistant Professor of Operations Production Management; B.S., M.S., University of Alabama, Tuscaloosa; M.S., Massachusetts Institute of Technology; Ph.D., University of Montreal (Canada)

Montaño, Henry (2000), Instructor of Social Work; B.A., California State University, Northridge; M.S.W., University of California, Los Angeles

Moore, David W. (1989), Professor of Reading; B.A., M.Ed., University of Arizona; Ph.D., University of Georgia

Moore, Harold E. Jr. (1990), Lecturer of Administration of Justice; B.A., J.D., University of Denver

Morris, Richard (1999), Professor of Communication Studies; B.A., San Jose State University; M.A., Ph.D., University of Wisconsin, Madison

Moulton, Ian F. (1995), Associate Professor of British Literature; B.A., University of Manitoba, Winnipeg (Canada); M.A., University of Western Ontario (Canada); Ph.D., Columbia University

Mueller, Carol M. (1988), Professor of Sociology; B.A., University of California, Berkeley; M.A., Rutgers, The State University of New Jersey; Ph.D., Cornell University

Muller, Barbara J. (1991), Senior Lecturer of Accountancy; B.S., M.B.A., Arizona State University

Murphy Erfani, Julie A. (1989), Associate Professor of Political Science; B.A., Knox College; M.A., Ph.D., University of Minnesota, Twin Cities

Myers, Marilyn (1987), Associate Librarian; Interim Dean, ASU West Library; B.A., M.A., Kansas State University; M.S., University of Illinois

N

Nadesan, Majia H. (1994), Associate Professor of Communication Studies; B.A., M.A., San Diego State University; Ph.D., Purdue University

Nadir, P. Aneesah (1994), Lecturer of Social Work; B.S.W., Adelphi University; M.S.W., Arizona State University

Nahavandi, Afsaneh (1989), Professor of Management; B.A., University of Denver; M.A., Ph.D., University of Utah

Náñez, José E. Sr. (1988), Associate Professor of Psychology; B.A., M.A., California State University; Ph.D., University of Minnesota, Twin Cities

Nevin, Ann (1991), Professor of Special Education; B.A., Westminster College; M.Ed., University of Vermont; Ph.D., University of Minnesota, Twin Cities

Nichols, Mark Heitzler (2001), Lecturer in Elementary Education; B.A., Colorado College; M.A., Princeton Theological Seminary; M.A.P.P., Claremont Graduate School

Noronha, Gregory M. (1995), Associate Professor of Finance; B.S.E., University of Michigan; M.B.A., Ph.D., Virginia Polytechnic Institute and State University

Nucci, Christine (1998), Assistant Professor of Early Childhood Education; B.A., Hunter College, City University of New York; M.S., Brooklyn College, City University of New York; Ph.D., City University of New York

O

Olander, George A. (2000), Lecturer of Finance; B.S., Xavier University; M.B.A., Pepperdine University; D.B.A., United States International University

Olson, Joel (2001), Visiting Assistant Professor of Political Theory; B.S., Arizona State University; M.S., Ph.D., University of Minnesota, Twin Cities

P

Painter, Suzanne R. (1995), Assistant Professor of Educational Administration; B.S., Eastern Oregon State College; M.Ed., Ph.D., University of Oregon

ASU WEST FACULTY AND ACADEMIC PROFESSIONALS

Pambuccian, Victor V. (1994), Associate Professor of Mathematics; Baccalaureat, German Lyceum (Romania); M.S., University of Bucharest (Romania); Ph.D., University of Michigan

Pecuch-Herrero, Marta (1994), Assistant Professor of Mathematics; M.S., Ph.D., University of Chicago

Perry, Eleanor A. (1996), Assistant Professor of Educational Administration; Chair, Department of Graduate Studies and Professional Development; B.A., Douglas College; M.Ed., Rutgers, The State University of New Jersey; Ph.D., University of Oregon

Persau, Linda (1999), Lecturer of Integrative Studies; B.A., University of California, Davis; M.A., Ottawa University

Pisa, Rosaria Angela (2001), Visiting Assistant Professor of Social Sciences; B.A., University of Texas, Dallas; M.A., Ph.D., Northeastern University

Pough, F. Harvey (1993), Professor of Integrative Biology; B.A., Amherst College; M.A., Ph.D., University of California, Los Angeles

Pulido, Alberto L. (1993), Associate Professor of American Studies; B.A., University of California, San Diego; M.A., Ph.D., University of Notre Dame

R

Ragle, Gael L. (1988), Senior Lecturer of Educational Psychology; B.S.Ed., M.A.Ed., Northern Arizona University; Ed.D., Arizona State University

Ramsey, R. Eric (1994), Associate Professor of Communication Studies; B.A., Rutgers, The State University of New Jersey; M.A., Ph.D., Purdue University

Reese, Ruth (1988), Senior Lecturer of Educational Psychology; B.S., University of Wisconsin, Madison; M.S., Ph.D., University of Wisconsin, Milwaukee

Renne, Diane J. (2000), Lecturer of Special Education; B.S., M.S., University of Kansas; Ed.D., University of Kentucky

Ridley, Dale Scott (1990), Associate Professor of Educational Psychology; B.S., New Mexico State University; M.A., Ph.D., University of Texas, Austin

Rillero, Peter (1994), Associate Professor of Science Education; B.A., State University of New York, Buffalo; M.A., Columbia University; Ph.D., Ohio State University

Rodriguez, Nancy (1998), Assistant Professor of Administration of Justice; B.S., Sam Houston University; Ph.D., Washington State University

Ryan, Joseph M. (1995), Professor of Education and Collaborative Programs; Director, Research Consulting Center; A.B., M.Ed., Boston College; Ph.D., University of Chicago

S

Sabatini, Arthur J. (1991), Associate Professor of Performance Studies; B.A., M.A., Ohio University; Ph.D., New York University

Saffo, Mary Beth (1994), Professor of Physiology; B.A., University of California, Santa Cruz; Ph.D., Stanford University

Schmidtke, Paul C. (1998), Senior Lecturer of Astronomy; B.S., Rose-Hulman Institute of Technology; Ph.D., Ohio State University

Schuett, Gordon W. (1995), Assistant Professor of Integrative Biology; B.A., University of Toledo; M.S., Central Michigan University; Ph.D., University of Wyoming

Searle, Mark S. (1995), Professor of Recreation and Tourism Management; Dean, College of Human Services; B.A., University of Winnipeg (Canada); M.S., University of North Dakota; Ph.D., University of Maryland

Sen, Nilanjan (1992), Associate Professor of Finance; B.A., Jadavpur University (India); M.A., Ph.D., Virginia Polytechnic Institute

Shaffer, Dennis M. (2000), Assistant Professor of Social and Behavioral Sciences; B.S., Denison University; M.A., Ph.D., Kent State University

Shell, Leslee B. (2001), Assistant Librarian; B.A., Oklahoma State University; M.L.S., University of Arizona

Shirreffs, Janet H. (1977), Professor of Recreation and Tourism Management; Director, Gerontology Program; B.S., Ithaca College; M.S., Syracuse University; Ph.D., Texas Woman's University

Shome, Raka (1999), Assistant Professor of Communication Studies; B.A., University of Calcutta (India); Ph.D., University of Georgia, Athens

Silberman, Jonathan (1992), Professor of Economics; B.S., Bowling Green State University; M.S., Ph.D., Florida State University

Slotnick, Susan A. (1998), Assistant Professor of Operations Productions Management; A.B., Brandeis University; M.S., Ph.D., Carnegie Mellon University; M.A., M.Phil., Ph.D., Columbia University

Solovey, Mark (1996), Assistant Professor of History and Philosophy of Science; B.A., Rollins College; M.A., Ph.D., University of Wisconsin, Madison

Sowell, Evelyn J. (1990), Professor of Education; B.A., Howard Payne College; M.Ed., Wichita State University; Ed.D., Northern Illinois University

St. Clair, Charles E. (1991), Fine Arts Specialist; B.F.A., Fairmount Center for Creative and Performing Arts

Stage, Sarah J. (1994), Professor of Women's Studies; B.A., University of Iowa; M.A., University of Massachusetts; M.Phil., Ph.D., Yale University

Stryker, Linda L. (1985), Associate Professor of Astronomy; Chair, Department of Integrative Studies; B.A., Whittier College; B.A., M.S., San Diego State University; M.A., California State University, Los Angeles; Ph.D., Yale University

Sullivan, Brian K. (1989), Associate Professor of Evolutionary Biology; B.A., University of California, Berkeley; Ph.D., Arizona State University

Svoboda, William S. (1969), Professor Emeritus of Education; B.S., M.S., Ed.D., University of Kansas

Sweat, Ken Gunter (2000), Lecturer of Life Sciences; B.A., Claremont McKenna College; M.S., Arizona State University

Swenson, Daniel (2000), Associate Professor of Accountancy; B.A., Memphis State University; Ph.D., University of Mississippi

T

Taylor, Robert D. (1996), Associate Professor of Theatre Performance; Chair, Department of Interdisciplinary Arts and Performance; B.A., Crewe and Alsager College, Manchester Metropolitan University (United Kingdom); M.A., University of Essex (United Kingdom); Ph.D., University of Kansas

Toel, William H. (2001), Lecturer of Finance; M.B.A., University of Illinois, Chicago

Toth, Stephen A. (2000), Assistant Professor of History; B.A., B.S., University of Nebraska at Omaha; M.A., Arizona State University; Ph.D., Indiana University

U

Ukpanah, Ime J. (2001), Assistant Professor of History; B.S., M.A., Sam Houston State University; Ph.D., University of Houston

V

Van Fleet, David D. (1989), Professor of Management; Director, Master of Business Administration Program; B.S., Ph.D., University of Tennessee, Knoxville

Vaughan, Suzanne (1987), Associate Professor of Sociology; B.A., Roanoke College; M.A., University of New Mexico; Ph.D., Ohio State University

Vickrey, Don W. (1992), Professor of Accountancy; B.B.A., University of Houston; M.B.A., Ph.D., University of Texas, Austin

Villarreal, Mary Ann (2000), Lecturer of History; B.A., Mount Holyoke College

W

Waldman, David A. (1995), Professor of Management; B.A., University of Kentucky; M.S., Ph.D., Colorado State University

Waldron, Vincent R. (1992), Associate Professor of Communication Studies; Interim Dean, Division of Collaborative Programs; B.A., M.A., University of Arizona; Ph.D., Ohio State University

Webb, Vincent J. (1996), Professor of Administration of Justice; Chair, Department of Administration of Justice; B.A., University of Omaha; M.A., University of Nebraska, Omaha; Ph.D., Iowa State University

Wertheimer, Eric H. R. (1995), Assistant Professor of American Literature; B.A., Haverford College; M.A., Ph.D., University of Pennsylvania

Wetzel, Keith (1991), Associate Professor of Educational Technology; B.A., Greenville College; M.A., Goddard College; M.A., Ph.D., University of Oregon

Wilson, Denward J. (1989), Lecturer of Philosophy; B.A., Arizona State University; M.A., University of California, Davis

Wise, John Macgregor (1999), Assistant Professor of Communication Studies; B.A., Trinity University; M.A., Ph.D., University of Illinois, Urbana-Champaign

Wosinska, Wilhelmina (1994), Senior Lecturer of Social Psychology; B.A., University of Warsaw (Poland); M.A., Ph.D., Jagiellonian University (Poland)

Y

Yungbluth, Stephen C. (2000), Lecturer of Communication Studies; B.A., Xavier University; M.A., Ph.D., University of Kentucky

Z

Zambo, Ronald W. (1991), Associate Professor of Mathematics Education; B.S., Indiana University, Bloomington; M.A., Ph.D., University of South Florida

Zorita, Paz Méndez-Bonito (1993), Associate Professor of Social Work; A.S., School of Social Work of Gijon (Spain); M.S.S.A., Ph.D., Case Western Reserve University

ASU West Administrative Personnel

Administration

Campus Chief Executive Officer and Provost, ASU West; Vice President, ASU	Elaine P. Maimon
Executive Vice Provost	Gebeyehu Ejigu
Vice Provost for Academic Affairs	Glenn W. Irvin
Associate Vice Provost, Academic Programs and Graduate Studies	Fernando Delgado
Director, Curriculum and Academic Articulation	Julia R. Ramsden
Vice Provost for Academic Personnel	E. Allan Brawley
Associate Vice Provost, Research and Faculty Development	Manuel Ávalos
Vice Provost for Planning and Budget	Barry R. Bruns
Vice Provost for Institutional Advancement	John E. Collins
Interim Dean, ASU West Library	Marilyn Myers
Interim Dean of Students	Jo Ann Madonna

University Offices

Vice Provost for Research	Jonathan Fink
Dean, College of Extended Education	Bette F. DeGraw
Dean, Craig and Barbara Barrett Honors College	Ted Humphrey

College of Arts and Sciences

Interim Dean, College of Arts and Sciences	Emily F. Cutrer
Assistant Dean	Candice Bredbenner
Cochair, Department of American Studies	A. Duku Anokye
Cochair, Department of American Studies	Thomas Cutrer
Chair, Department of Integrative Studies	Linda L. Stryker
Chair, Department of Interdisciplinary Arts and Performance	Robert Taylor
Chair, Department of Life Sciences	Harvey F. Pough
Chair, Department of Social and Behavioral Sciences	Paul A. Miller
Chair, Women’s Studies Program	Astair G. M. Mengesha

ASU WEST FACULTY AND ACADEMIC PROFESSIONALS

Director, M.A. Interdisciplinary Studies Program Andrew Kirby

College of Education

Dean, College of Education Michael A. Awender
 Assistant Dean, College of Education Ray R. Buss
 Chair, Department of Elementary Education Michael F. Kelley
 Chair, Department of Graduate Studies and Professional Development Eleanor A. Perry
 Chair, Department of Secondary Education Nancy S. Haas
 Chair, Department of Special Education Ida M. Malian

College of Human Services

Dean, College of Human Services Mark S. Searle
 Chair, Department of Administration of Justice Vincent J. Webb
 Chair, Department of Communication Studies Lesley Di Mare
 Chair, Department of Recreation and Tourism Management Richard Gitelson
 Chair, Department of Social Work Melissa R. Lavitt
 Director, Gerontology Program Janet Shirreffs
 Director, Partnership for Community Development John T. Hultsman
 Liaison, Nursing (ASU Main Program) Lasca Beck

Division of Collaborative Programs

Interim Dean, Division of Collaborative Programs Vincent R. Waldron
 Assistant Director, West Campus Advising Center Cynthia Rasmussen
 Coordinator, Bachelor of Applied Science Program Cynthia Rasmussen
 Coordinator, Transition and Outreach Services Deborah S. Moore
 Coordinator, University College Center Christina Hahn
 Director, Research Consulting Center Joseph M. Ryan
 Faculty Director, Barrett Honors College Eric Ramsey

School of Management

Dean, School of Management Bruce A. Forster
 Chair, Department of Accounting and Information Systems Management William Duncan
 Chair, Department of Economics, Finance, Marketing and Quantitative Business Analysis Joseph A. Bellizzi
 Chair, Department of Management Leanne E. Atwater



ASU West serves approximately 6,000 students on its growing campus in northwest Phoenix.

Art Holeman photo

ASU Extended Campus

www.asu.edu/xed

Gary S. Krahenbuhl, Ed.D., Senior Vice President, ASU
Bette F. DeGraw, D.P.A., Dean, College of Extended Education

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PURPOSE

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and the region. The College of Extended Education is a university-wide college that oversees the ASU Extended Campus and forms partnerships with other ASU colleges to meet the instructional and informational needs of a diverse community.

For the most current information, visit the college's Web site at www.asu.edu/xed.

ASU EXTENDED CAMPUS

The ASU Extended Campus goes beyond the boundaries of the university's three physical campuses to provide access to quality academic credit and degree programs for working adults through flexible schedules; a vast network of off-campus sites; classes scheduled days, evenings, and weekends; plus innovative delivery technologies including television, the Internet, and independent learning. The ASU Extended Campus also offers a variety of professional continuing education and community outreach programs.

DEGREE PROGRAMS

ASU offers degree programs through the ASU Extended Campus. Convenient times and locations as well as today's innovative technologies make it easier for working adults and other nontraditional students to earn a degree. The College of Extended Education facilitates the delivery of these programs. All courses and degrees are offered through the respective university academic departments. These courses are published each fall and spring semester in the *Extended Campus Catalog* and in the Schedule of Classes. All degree programs offered through the college are shown in the ["Baccalaureate Degrees and Majors Offered Through the College of Extended Education" table, page 704](#), and the ["Graduate Degrees and Majors Offered in Collaboration with the College of Extended Education" table, page 706](#).

Undergraduate Degrees

OFF-CAMPUS DEGREE PROGRAMS

Interdisciplinary Studies—B.I.S.

ASU Main. This interdisciplinary degree completion program enables students to take an active role in creating their educational plan and defining their career goals. The program is offered for selected corporate and municipal employees. It emphasizes self-assessment and appraisal of opportunities to support academic and career goals. For more information, call 480/965-9797 or write

COLLEGE OF EXTENDED EDUCATION
ACADEMIC AND PROFESSIONAL PROGRAMS
ARIZONA STATE UNIVERSITY
PO BOX 874001
TEMPE AZ 85287-4001

Housing and Urban Development—B.S.D.

ASU Main. The faculty in the School of Planning and Landscape Architecture in the College of Architecture and Environmental Design offer this degree primarily at the ASU Downtown Center, although some courses may be available at other locations and via cable television. See the fall and spring issues of the *Extended Campus Catalog* for complete scheduling information. For program information, call 480/965-7167 or write

SCHOOL OF PLANNING AND LANDSCAPE
ARCHITECTURE
ARIZONA STATE UNIVERSITY
PO BOX 872005
TEMPE AZ 85287-2005

Elementary Education—B.A.E.

ASU Main. This off-campus degree program is targeted to school district audiences. To learn more, call 480/965-1644.

Social Work—B.S.W.

ASU Main. The School of Social Work offers this degree in Tucson. This program is grant-funded for a five-year period and offers a part-time curriculum designed to increase the number of trained child welfare social workers in the rural areas of Arizona. For more information, call 520/884-5507, extension 19.

Baccalaureate Degrees and Majors Offered Through the College of Extended Education

Major	Degree	Concentration	Administered By
Applied Science	B.A.S.	Aviation maintenance management technology, aviation management technology, computer systems administration, consumer products technology, digital media management, digital publishing, emergency management, fire service management, food retailing, instrumentation, manufacturing technology and management, microcomputer systems, multimedia writing and technical communication, municipal operations management, operations management, resource team specialist, semiconductor technology, software technology applications, technical graphics All minors available at ASU West, individualized concentration	Bachelor of Applied Science Advisory Committee (ASU East) Division of Collaborative Programs (ASU West)
Communication	B.A., B.S.	—	Hugh Downs School of Human Communication
Elementary Education	B.A.E.	Multilingual/multicultural education	Division of Curriculum and Instruction
English	B.A.	Linguistics, literature	Department of English
History	B.A.	—	Department of History
Housing and Urban Development	B.S.D.	—	School of Planning and Landscape Architecture
Integrative Studies	B.A.	All minors available at ASU West, individualized concentration	Department of Integrative Studies
Interdisciplinary Studies	B.I.S.	See “B.I.S. Concentrations” table, page 116.	Bachelor of Interdisciplinary Studies Advisory Committee
Political Science	B.A.	—	Department of Political Science
	B.S.	American public policy, civic education, international studies, public policy advocacy and lobbying, public policy analysis	Department of Political Science
Psychology	B.A., B.S.	—	Department of Psychology
Social Work	B.S.W.	—	School of Social Work
Sociology	B.A.	—	Department of Sociology

Applied Science (B.A.S.) and Integrative Studies (B.A.)

ASU West. Because of overlapping degree requirements and the flexibility built into each program, ASU West, working through the College of Extended Education, offers the same set of courses to meet the degree completion needs of students who bring differing educational experiences to the classroom. Thus, students who have completed an Associate of Applied Science (A.A.S.) degree can enroll in the B.A.S. degree program. Students entering the program with Associate of Arts (A.A.) degrees or some other combination of courses that totals 60 semester hours and encompasses the equivalent of the ASU General Studies requirement could receive the B.A. degree in Integrative Studies upon program completion. Both sets of students follow the same program of study.

Both degree programs emphasize focused study in critical thinking, communication, and leadership skills and include individual and team problem-solving experiences. Both

include courses designed to refresh students’ academic skills and to develop the resources to succeed in their educational pursuits.

Concentration areas, under the Bachelor of Applied Science (B.A.S.) at ASU West, are developed by the advisor and student based on educational goals and interests. The West Campus B.A.S. core curriculum is focused on the arts, computers, writing, ethics, and career development. For more information on the West Campus B.A.S., call 620/543-4BAS or access the Web site at www.west.asu.edu/bas.

The Bachelor of Arts in Integrative Studies (B.A.) is an upper-division arts and sciences degree. Students are expected to read, write, and think critically which enables them to pursue postbaccalaureate employment, or graduate and professional degrees, in the broadest possible array of fields and specialization. This is a classical liberal arts degree, taught by interdisciplinary scholars in a student-oriented and lifelong learning fashion. Small classes and systematic assessment and feedback are defining characteristics of the program. Students complete 21 semester hours,

including a gateway course in Adult Career Development; a capstone internship experience; and academic seminars in ethics, social and environmental theory; history and philosophy of sciences/mathematics; and multicultural perspectives on autobiographies, literature, and art. Students select one of the established minors or construct with a faculty advisor an area of academic concentration to complement the core curriculum with an additional 18 to 21 semester hours. For more information on the West Campus B.A., call 623/543-6000 or access the Web site at www.west.asu.edu/iasweb.

ASU East. Students holding an Associate of Applied Science (A.A.S.) degree from a regionally accredited community college can earn the Bachelor of Applied Science (B.A.S.) degree by completing 60 semester hours of upper-division course work through ASU East.

This degree is practical and flexible. ASU East faculty and advisors work with students to match a 60-semester-hour program of study to their individual interests and career goals, or students may select one of the concentrations shown in the [“Baccalaureate Degrees and Majors Offered Through the College of Extended Education” table, page 704.](#)

For more information, call 480/727-1874.

TECHNOLOGY-SUPPORTED DEGREE PROGRAMS

History—B.A.

ASU Main. The faculty of the Department of History offer the B.A. degree completion program in History via technology. (Students are required to take at least two of the courses on campus in the evening.) For more information, call 480/965-8364.

ON-CAMPUS EVENING DEGREE PROGRAMS

CLAS Bachelor’s Degree Programs

ASU Main. Students who enroll in the College of Liberal Arts and Sciences (CLAS) evening degree program typically have completed 60 lower-division semester hours. They may pursue a Bachelor of Arts degree in English, History, Political Science, Sociology, Psychology, or Religious Studies, or a Bachelor of Science degree in Political Science or Psychology. For more information, call 480/965-3986 and request “degree programs.”

Communication—B.A. or B.S.

ASU Main. The faculty in the Hugh Downs School of Human Communication offer the B.A. and B.S. degrees in Communication through the College of Extended Education’s Evening Degree Program. For more information, call 480/965-5095.

Graduate Degrees

DEGREE PROGRAMS

ASU offers degree programs through the ASU Extended Campus. Convenient times and locations as well as today’s innovative technologies make it easier for working adults and other nontraditional students to earn a degree. The Col-

lege of Extended Education facilitates the delivery of these programs. All courses and degrees are offered through the respective university academic departments. These courses are published each fall and spring semester in the *Extended Campus Catalog* and in the *Schedule of Classes*. All graduate degree programs offered through the college are shown in the [“Graduate Degrees and Majors Offered in Collaboration with the College of Extended Education” table, page 706.](#)

OFF-CAMPUS DEGREE PROGRAMS

Business Administration—M.B.A.

ASU Main. The technology M.B.A. is an evening program designed specifically for technology professionals. The degree program is offered at the ASU Research Park. Cases, applications, and examples emphasize technology, global competition, and rapid organizational change. For more information, call 480/965-3332.

The evening M.B.A. is offered at the ASU Downtown Center. It is designed to meet the needs of working professionals and combines theoretical concepts with practical applications. For more information, call 480/965-3332.

ASU West. The Scottsdale M.B.A. degree program meets in the Scottsdale Airpark in north Scottsdale. Classes emphasize the development of critical learning skills, with practical application in analyzing local industries. Students, faculty, and industry experts work together on projects for local companies. The integrated curriculum provides a comprehensive understanding of interrelated business issues. For more information, call 602/543-6201.

Public Administration—M.P.A.

ASU Main. The School of Public Affairs offers this interdisciplinary program. The program is designed to provide professional training for careers in public administration and management. Opportunities for completing course work leading to the M.P.A. are offered during evening hours at ASU Main, the ASU Downtown Center, and various off-campus sites. For more information, call 480/965-3926 or write

SCHOOL OF PUBLIC AFFAIRS
ARIZONA STATE UNIVERSITY
PO BOX 870603
TEMPE AZ 85287-0603

Curriculum and Instruction—M.Ed.

ASU Main. The Master of Education degree in Curriculum and Instruction is offered with concentrations in either multicultural education or secondary education. This is an off-campus degree program targeted to school district audiences. For more information, call 480/965-1644.

Social Work—M.S.W.

ASU Main. The Master of Social Work program prepares social workers to respond effectively to the needs of the state and other populations of the Southwest. This program is offered in Tucson and Flagstaff. For more information about the Tucson component, call 520/884-5507. For more

ASU EXTENDED CAMPUS

Graduate Degrees and Majors Offered in Collaboration with the College of Extended Education

Major	Degree	Concentration	Administered By
Business Administration	M.B.A.	—	College of Business (ASU Main) School of Management (ASU West)
Curriculum and Instruction	M.Ed.	Secondary education	College of Education
Educational Administration and Supervision	Ed.D.	—	College of Education
Electrical Engineering	M.S.E.	—	Department of Electrical Engineering
Engineering	M.E.*	—	School of Engineering
Public Administration	M.P.A.	Public information management, public management, public policy analysis and evaluation, urban management and planning	School of Public Affairs
Social Work	M.S.W.	Advanced direct practice; planning, administration, and community practice	School of Social Work

* This collaborative program is offered by the three state universities.

information about the Flagstaff component, call 480/965-3304.

DELTA Doctorate

ASU Main. The DELTA Doctorate, which leads to the Doctor of Education degree in Educational Administration and Supervision, is available as an off-campus degree program. The program is targeted to qualified public school administrators. For more information, call 480/965-6357.

TECHNOLOGY-DELIVERED DEGREE PROGRAMS

Electrical Engineering—M.S.E.

ASU Main. The faculty in the Department of Electrical Engineering offer the Master of Science in Engineering degree in Electrical Engineering via interactive television. This program meets the needs of the part-time student who is working full-time in industry. Ten graduate courses are required; six should constitute a major, two courses a minor, and two courses should be taken outside the Department of Electrical Engineering. After completing the required hours of course work, students in this program must pass a comprehensive examination covering topics in the major. Using the department's three-year schedule of courses, students are able to complete course requirements over the interactive television system. For more information, call 480/965-3590.

Business Administration—M.B.A.

ASU Main. The ASU MBA Online program leverages computer and communications technologies to offer the highly ranked ASU M.B.A. to managers and professionals who do not wish to attend a traditional, on-campus program. The program consists of on-site sessions, asynchronous technology-based materials, and electronic communication among faculty and students. This two-year program consists of 12 four-semester-hour courses. For more information, call 480/965-3332.

ASU West. The connectMBA from ASU West allows working professionals to complete a quality, AACSB International-accredited M.B.A. without weekly attendance on campus. Course delivery combines classroom instruction (every seventh weekend) with self-paced, computer-assisted learning. The two-year program consists of 15 three-semester-hour courses. For more information, access the Web site at www.west.asu.edu/som/mba.

Engineering—M.E.

ASU Main. The tri-university Master of Engineering degree program is intended to meet the educational needs of Arizona's practicing engineers. With industry input, Arizona's three state universities—Arizona State University, Northern Arizona University, and University of Arizona—enhance the skills, knowledge, and understanding that are critical to today's practicing engineers. The courses are offered through a variety of distance-delivery methods in flexible formats at any of the three universities.

The M.E. degree offers the practicing engineer opportunities to design, in conjunction with an advisory committee, a program of study that can reflect the increasingly interdisciplinary nature of engineering practice. The M.E. degree requires the completion of 30 semester hours of course work; students must complete a minimum of three hours in applied engineering mathematics as well as three hours of engineering management/business. Up to six semester hours from a practice-oriented project may be applied. A final examination is required.

For application information, call 480/965-1726, send e-mail to m.eng@asu.edu, or access the program's Web site at truniv.engr.arizona.edu.

Technology—M.S.

ASU East. The faculty in the Department of Information and Management Technology offer this degree with a concentration in environmental management technology, which has three areas of study: environmental management, international environmental management, and emergency management. The program has a Web-based distance learning

format. Students in this program are part of a cohort group that begins each January and graduates 24 months later at the December ceremony.

Students in the distance learning cohort are expected to be working professionals in fields such as ES&H (environmental, health, and safety), environmental engineering, emergency management, national or local regulatory and permitting activities, environmental law, and environmental laboratories. A variety of undergraduate degree preparation is appropriate, but students should have at least one course in inorganic chemistry and one course in organic chemistry. For more information, access the Web site at www.east.asu.edu/ctas/imt/etm/html/dmasters.html.

ON-CAMPUS EVENING DEGREE PROGRAM

Public Administration—M.P.A.

ASU Main. The School of Public Affairs offers this interdisciplinary program. The program is designed to provide professional training for careers in public administration and management. Opportunities for completing course work leading to the M.P.A. are offered during evening hours at ASU Main, the ASU Downtown Center, and various off-campus sites. For more information, call 480/965-3926 or write

SCHOOL OF PUBLIC AFFAIRS
ARIZONA STATE UNIVERSITY
PO BOX 870603
TEMPE AZ 85287-0603

Winter Session (Main)

The College of Extended Education schedules the winter session courses in collaboration with academic departments. The condensed session is offered between the fall and spring semesters. For more information about winter session, call 480/965-9797.

Certificate Programs

Certificate programs provide opportunities for those seeking to advance their careers, to begin a new career, to reenter the workplace, or simply to develop new knowledge. A practical choice for career development, certificate programs are recognized by employers as evidence of professional skill or accomplishment.

Business English Certificate Program

Designed to help international students and professionals succeed in the world of business, this program offers five courses: international business, business decisions, business writing, business communication, and TOEIC test preparation. Once students successfully complete three certificate courses, they earn a Business English Certificate. If they wish to complete all five classes, they earn an Advanced Business English Certificate. Classes are ongoing and meet several hours a week for eight weeks.

For more information, call the American English and Culture Program at 480/965-2376, send e-mail to aecp@asu.edu, or access the Web page at www.asu.edu/xed/aecp/aboutaecp.html.

This certificate is not for academic credit.

English as a Second Language Certificate

The American English and Culture Program offers a certificate in the study of English as a second language (ESL), comprising 21 hours a week for eight weeks of language and culture training. For more information, see [“American English and Culture Program,” page 709](#), call 480/965-2376, send e-mail to aecp@asu.edu, or access the Web page at www.asu.edu/xed/aecp/aboutaecp.html.

Gerontology Certificate Program

The Gerontology Program is interdisciplinary, bringing together faculty from several disciplines to collaborate on gerontological research, to teach courses related to adult development and aging, and to participate in projects of service to older adults.

The Certificate in Gerontology, offered by the Graduate College, is available to graduate students enrolled in master’s or doctoral degree programs in disciplines such as communication, exercise science, nursing, psychology, social work, and sociology. Unclassified graduate students may pursue the certificate. This program consists of 24 semester hours evenly divided between required and elective course work.

The Gerontology Program has an affiliated faculty of more than 60 members based in 22 different departments throughout the university. Students can work on independent study or participate with faculty in their aging-related research.

Because of increased longevity, there could be more than 30 million Americans over the age of 85 by 2040, a demographic change with many ramifications. The certificate is designed for individuals interested in learning more about the aging process. For more information, call 480/965-3225 (ASU Main) or 602/543-6642 (ASU West).

Human Performance Improvement Certificate Program

The Human Performance Improvement Certificate Program is offered at the Downtown Center by the College of Extended Education and the American Society of Training and Development. This program is designed to provide a well-rounded understanding of the human performance improvement field for those in a human resource capacity. Individuals can receive a Human Performance Improvement Certificate after completing the six courses of the program or may elect to enroll in one or more classes on a per-class basis. For more information, call 480/965-9200.

This certificate is not for academic credit.

Maintenance Management Certificate Program

This program improves maintenance performance for organizations by exploring the latest technical, profit-making, and cost-cutting ideas in the industry. This is a four-part, results-oriented seminar series. Participants can receive a Maintenance Management Certificate after completing all courses of the program or may elect to enroll in one or more classes on a per-class basis. Courses are offered at the ASU Downtown Center. For more information, call 480/965-9200.

This certificate is geared toward professional development and Continuing Education Units (CEUs) are available. The certificate is not for academic credit.

ASU EXTENDED CAMPUS

Nonprofit Management Certificate Program

The Nonprofit Management Institute is offered by the College of Extended Education and the Valley of the Sun United Way. This program is designed to enhance the management skills of those who serve nonprofit human services groups, hospitals, government agencies, churches, private schools, art organizations, environmental groups, and others in the nonprofit sector.

Individuals can receive a Certificate in Nonprofit Management along with 13 Continuing Education Units after completing 130 hours of the program. The individual class option permits participants to enroll in one or more classes on a per-class basis. Additional full- and half-day workshops are also provided to help those in the nonprofit sector achieve excellence in managing nonprofit organizations. For more information, call 480/965-9200.

This certificate is not for academic credit.

Professional Purchasing Certificate Program

This is a four-part seminar series that covers the latest technical, profit-making, and cost-cutting ideas to improve purchasing management. Enroll in the results-oriented seminars individually or combine them to earn a National Association of Purchasing Managers approved Professional Purchasing Certificate. Each seminar is held at the ASU Downtown Center. For more information, call 480/965-9200.

This certificate is geared toward professional development and Continuing Education Units (CEUs) are available. This certificate is not for academic credit.

Spanish Language Court Interpreter Certificate Program

The program, developed and implemented by ASU and the Superior Court in Maricopa County, is designed to prepare students who are fluent in Spanish and English for a career in court interpreting. The program provides comprehensive training that focuses on interpretation, translation, and legal skills needed to be an effective court interpreter. The program is not designed to teach participants the languages. Applicants fluent in English and Spanish must successfully complete oral and written examinations before acceptance into the program. For more information, call 480/965-9200.

This certificate is geared toward professional development and Continuing Education Units (CEUs) are available. This certificate is not for academic credit.

College Units by Program Area

Degree Programs and Credit Courses

The College of Extended Education facilitates the delivery of several degree programs and credit courses. Convenient times and locations as well as today's innovative technologies make it easier for working adults and other nontraditional students to earn a degree. All courses and degrees are offered through the respective university academic departments. These courses are published each fall and spring semester in the *Extended Campus Catalog* and the *Schedule of Classes*.

Academic and Professional Programs. As a convenience to students, courses are conducted off campus in locations throughout the state, and on campus in the evening and during the Winter Session.

Academic credits earned off campus are recorded on a student's permanent record in the same manner as those earned on campus and are equivalent in all academic considerations. All academic standards of the university, including policies related to admission and registration, apply to off-campus courses. It is the responsibility of the student to be aware of all applicable policies before registering. It is the responsibility of each dean to determine what courses to offer off campus and to make faculty assignments.

The tuition and fees for off-campus credit courses are the same as for those offered on campus. (See resident and non-resident rates in the latest *Schedule of Classes*.) Before the 21st calendar day of each semester, any combination of on-campus and off-campus resident credit courses resulting in a combined registration of seven or more semester hours requires that the student pay full-time tuition. Off-campus credit courses and programs that commence on or after the 21st calendar day of the start of each semester require full-time and part-time students to pay tuition separate from (but in addition to) those courses starting before the 21st calendar day of the semester.

Professional continuing education activities focus on professional and personal development as well as lifelong learning. Programs are planned and developed to complement the missions of the college and the university. These programs can be customized and transported to reach numerous target populations and levels of need.

Distance Learning and Technology. Distance Learning and Technology uses a variety of technologies. Semester-based courses are offered through Instructional Television Fixed Service, cable television, public television, satellite, microwave, videotape, and the Internet. In addition, independent learning courses are offered (print- or Internet-based). Distance Learning and Technology makes it possible for many people to access and share educational resources locally, regionally, nationally, and internationally through a variety of electronic technologies and distribution systems. In addition to distance learning courses, other products and services are available, including teleconferencing and video production.

Many students are unable to attend class on campus due to schedule or commuting difficulties and prefer to participate in distance learning courses at convenient locations such as the work site or home. The distance learning course schedule consists of approximately 175 courses offered by various ASU colleges each semester, and these courses are available for credit at a variety of remote locations, including students' homes. Students participating in televised courses from the work site or home can interact with faculty and students in the classroom on campus while class is in session via teleconferencing technology. Videotapes of most courses are available through University Libraries Video Resources. Other student support services are available to assist off-campus students.

Cable/Public Television. ASU offers credit courses that require students to view televised class sessions and com-

plete work assignments at home. Exams usually are held on campus. Courses are available throughout the Phoenix area via KAET Channel 8, Cox Communications, Qwest, Digital Choice TV, and other cable providers. Televised courses are also available in university residence halls.

Interactive Instructional Television Program (IITP). Students employed by companies participating in the IITP may take courses for credit at the work site. A daily courier service circulates course materials between faculty on campus and their students at remote sites. Exams typically are held at the work site. Each company has an on-site coordinator to assist with registration, to provide information, and to proctor exams. A Master of Science in Engineering degree with a major in Electrical Engineering is available through the IITP. More information about the degree is available from the College of Engineering and Applied Sciences at 480/965-6738.

Interactive Television (Public Sites). Certain sites are open to the public. Students can participate in most televised courses at locations such as ASU Downtown Center, ASU East, ASU West, select community college campuses, Cactus Shadows High School, and the Gila River Indian Community. Each public site has an on-site coordinator to assist with registration, to provide information, and to proctor exams.

Internet Courses. ASUonline is the university's gateway to an "online campus." Internet courses are offered by various departments through ASU Extended Campus, allowing students to participate from any location in the world. Through the Web, students can access lectures, participate in class assignments, interact with the instructor, collaborate with other students, and earn ASU credit at convenient times and locations. Students register for Internet courses through the normal university admissions and registration process. Certain computer hardware and software may be required for Internet courses. For more information about Distance Learning and Technology call 480/965-6738 or access the Web site at asuonline.asu.edu.

Independent Learning. These courses allow students to pursue ASU credit and to fulfill degree requirements or to enhance occupational, professional, and intellectual skills. Independent Learning courses are appropriate for students seeking flexibility in progressing through university courses. Any individual with a high school diploma or GED may enroll; however, enrollment in Independent Learning is not the same as admission to ASU. For ASU degree-seeking students, enrollment in these courses requires an advisor's and dean's approval. Generally, ASU students may take one course at a time—other students can participate in two. A maximum of 60 semester hours earned by independent learning and/or by comprehensive examination may be applied toward the baccalaureate degree at ASU. Independent Learning courses are not applicable toward graduate credit, and pass/fail options are not available. Grades earned are not calculated in the ASU Honors G.P.A. Students have up to one year to complete courses. Independent Learning courses may not be used to change a grade at ASU. An independent learning registration fee is required of all students, including full-time students who have paid registration fees and tuition. Tuition waivers do not apply to independent

learning. On-campus services and activities for students are not covered by independent learning fees. More information on registration, lesson formats, submission of assignments, correspondence with instructors, and other course details is available in a catalog from the Independent Learning office, at 480/965-6563.

Professional Continuing Education

Academic and Professional Programs provides professional continuing education programs throughout the Phoenix metropolitan area. These ongoing programs are intended to improve professional competence and address current issues and trends, and are offered to adult learners in collaboration with ASU colleges, other educational providers, professional associations, and public and private organizations. In addition, the Elderhostel Program, a series of challenging, thought-provoking college-level courses, is offered to people over 55. For more information, call 480/965-9200.

The Nonprofit Management Institute is offered by the College of Extended Education and the Valley of the Sun United Way. This program is designed to enhance the management skills of those who serve nonprofit human services groups, hospitals, government agencies, churches, private schools, art organizations, environmental groups, and others in the nonprofit sector. For more information, call 480/965-9200.

For more information about Academic and Professional Programs, call 480/965-9797.

Global and Community Outreach

American English and Culture Program. The American English and Culture Program (AECPP) features an intensive course of study designed for adult international students who want to become proficient in English as a second language for academic, professional, or personal reasons. Applicants must be at least 18 years of age and must have a high school diploma or its equivalent. All conditions of the U.S. Immigration and Naturalization laws pertaining to full-time study in the United States must be met by all applicants. Students are required to take an English placement test before the beginning of classes. Certificates of achievement are awarded on completion of the course. Admission to the program does not constitute regular admission to ASU.

Beginning, intermediate, and advanced courses provide instruction in listening, reading, speaking, grammar, and writing. Academic advising and orientation to Arizona and the United States are integral parts of the program.

The program provides a wide variety of social, cultural, and recreational activities including field trips, sports, parties, arts and crafts, concerts, and visits to museums and historical sites.

Advanced-level students may be permitted to enroll concurrently in up to two ASU credit classes with the approval of the director. Several special classes are offered through the AECPP: business English, pronunciation, conversation, TOEFL and TOEIC preparation, grammar and idioms.

The fall and spring semesters are divided into two eight-week cycles. Students may enroll for one or more cycles. An eight-week summer session of study is also offered.

ASU EXTENDED CAMPUS

Four-week sessions are offered in January and July. AECPC also offers evening English classes and business English certificates.

Inquiries concerning admission requirements, enrollment, and fee schedules should be sent to

AMERICAN ENGLISH AND CULTURE PROGRAM
ARIZONA STATE UNIVERSITY
PO BOX 873504
TEMPE AZ 85287-3504

For more information, call 480/965-2376, send e-mail to aecp@asu.edu, or access the Web page at www.asu.edu/xed/aecp/aboutaecp.html.

Extended Campus Programs. Extended Campus Programs was established in response to the rapidly expanding demand for educational services in Maricopa County and throughout Arizona. Analyzing community needs for course offerings, workshops and seminars, the unit oversees the planning, organizing, and staffing necessary to satisfy these educational needs.

A primary goal of this unit is to ensure that qualified students have access to effective, appropriate university programs. Extended Campus Programs focuses on developing and maintaining education, business, government, professional, and community links to further the university's and college's missions.

The major components of Extended Campus Programs are the lectures and events at the ASU Downtown Center and emerging programs in the east Valley, Scottsdale, and Ahwatukee. For more information, call 480/965-3046.

ASU Downtown Center. The ASU Downtown Center is a university-wide resource located in downtown Phoenix that serves as an educational, applied-research, and community-service facility.

Responding to the needs of business, industry, and state and local governments, the center offers traditional and interdisciplinary upper-division and graduate-level courses. The center also offers professional and continuing education programs, lectures, and community forums, and serves as a meeting location for conferences, workshops and seminars.

ASU faculty, staff, and students may take advantage of the center's computer lab. A lab assistant is available during posted hours. Faculty, staff, and students also can access the ASU library online catalog and ASU library information and resources. Library books may be ordered and returned through the center, and copied materials may be ordered as well. Textbooks for all courses held at the center are available during the first week of classes.

Accommodations for small or large meetings or conferences are available at attractive rates and can include beverages, food service, and professional equipment. Meeting rooms include conference rooms, a board room, and two computer classrooms. Most meeting rooms can be configured in a variety of styles and setups. In addition, break-out areas are conveniently located throughout the facilities. Advice in logistics planning is available as are a wide range of related services. The center is available for use by outside organizations, subject to the limits of university policies and procedures. Contact the center's facility scheduler for details.

For more information about the programs and services provided at the center, call 480/965-3046 or write

ASU DOWNTOWN CENTER
502 E MONROE ST
PHOENIX AZ 85004-2337

Several ASU programs and partnerships are located at the ASU Downtown Center.

Academic and Professional Programs. As part of ASU Extended Campus and the College of Extended Education, Academic and Professional Programs brings the resources of ASU to many who may not be pursuing a traditional degree but are seeking professional and personal enrichment. See "[Academic and Professional Programs](#)," [page 708](#), for a description.

Joint Urban Design Program. The Joint Urban Design Program, located in the ASU Downtown Center, is a partnership between the Colleges of Architecture and Environmental Design and Extended Education. The program directs institutional and public resources toward developing an understanding of issues that affect the urban quality of Phoenix. For more information, call 480/727-5146.

Urban Data Center. The Urban Data Center, a partnership with the College of Public Programs, serves as a resource for analysis and implementation of public policy in the Phoenix metropolitan area. The center works closely with ASU researchers and organizations such as the Joint Urban Design Program, the Morrison Institute for Public Policy, University Libraries, local governments, state agencies, and other independent organizations to build a comprehensive database on policy issues for urban planners and community leaders. For more information, call 480/727-5195.

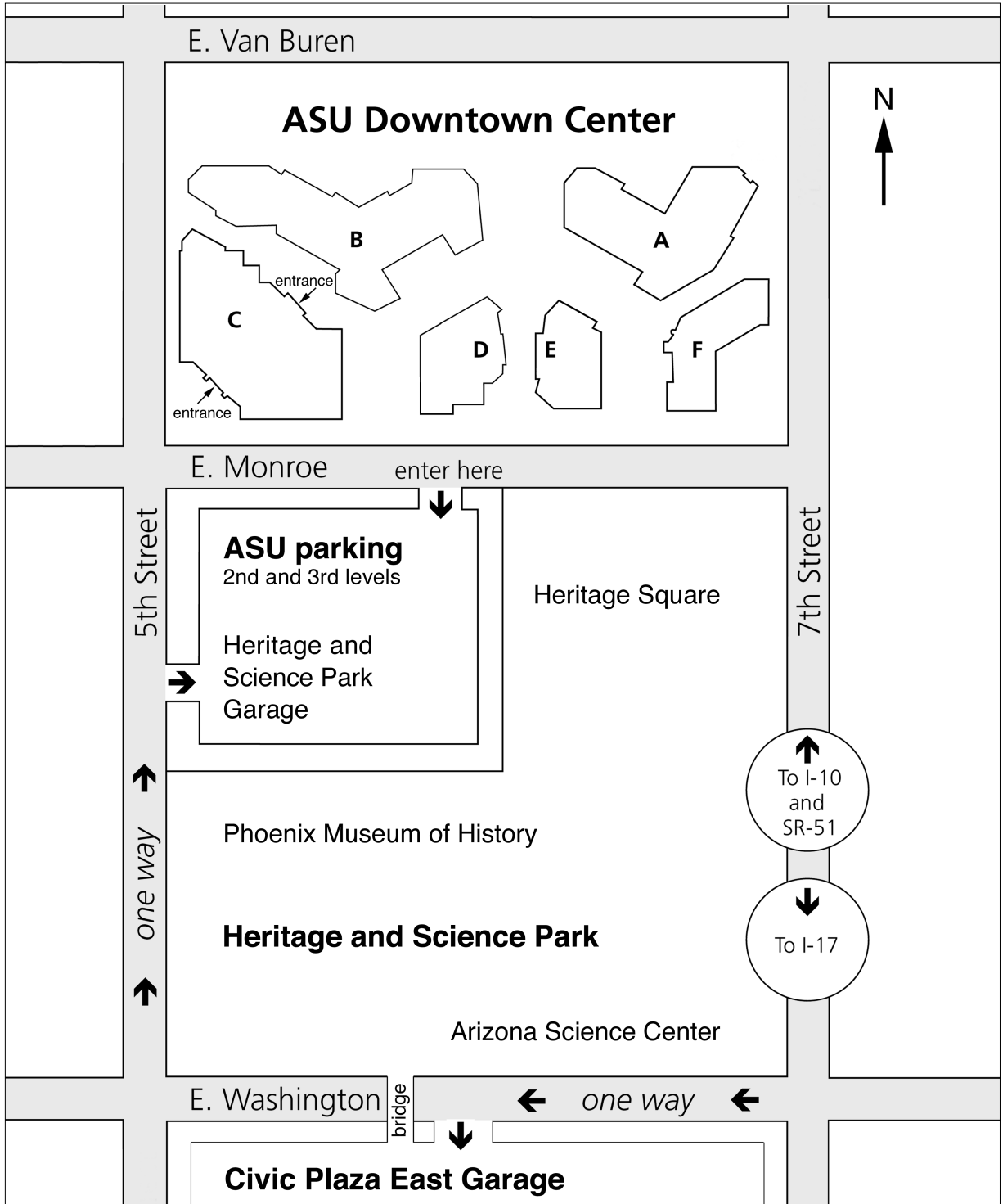
Advanced Public Executive Program. The Advanced Public Executive Program of the College of Public Programs is housed at the ASU Downtown Center. This program is designed to provide public managers and administrators with analytical approaches and skills through short courses and seminars to help mobilize ideas, people, and resources in support of public programs. For more information, call 480/965-4006.

Office of Youth Preparation and Project PRIME. The Office of Youth Preparation and Project PRIME (Project to Improve Minority Education) are housed at the Downtown Center with evaluation support services located at the Hispanic Research Center. The programs are designed to increase the pool of college-eligible minority students, who have historically been underrepresented in higher education, by providing instructional and support services to seventh-through 12th-grade students and their families at targeted Arizona schools. For more information, call 480/965-8510.

Arizona Drug and Gang Prevention Resource Center. The Arizona Drug and Gang Prevention Resource Center serves as a centralized source for individuals, schools, and communities throughout Arizona to support, enhance, and initiate prevention efforts.

For information about planning, mobilizing, training, and evaluating community prevention efforts, call the center at 480/727-2772.

ASU Downtown Center Map



ASU Extended Campus Faculty and Academic Professionals

B

Backer, Linda R. (1997), Assistant Instructional Professional, College of Extended Education; Manager, Interdisciplinary Programs, Academic and Professional Programs, College of Extended Education; B.A., University of Colorado; M.S., Colorado State University

C

Caglan, Janet (1977), Lecturer, College of Extended Education; B.A., M.A., Arizona State University

Cole, Tom (1981), Lecturer, College of Extended Education; Associate Director, American English and Culture Program, College of Extended Education; B.S., Northern Arizona University; M.A., Arizona State University

Craft, Elizabeth H. (1982), Administrative Professional, College of Extended Education; Director, Distance Learning and Technology, College of Extended Education; B.F.A., Ohio University; M.A., Arizona State University

D

DeGraw, Bette F. (1986), Administrative Professional, College of Extended Education; Associate Professor of Public Affairs; Dean, College of Extended Education; Director, Downtown Center, College of Extended Education; B.A., Thiel College; M.S.W., Rutgers, The State University of New Jersey; D.P.A., Arizona State University

Dehghanpisheh, Elaine (1983), Lecturer, College of Extended Education; B.A., M.A., Pahlavi University (Iran)

E

Edwards, Regina (1995), Assistant Instructional Professional, College of Extended Education; Associate Director, Academic and Professional Programs, College of Extended Education; B.S., M.A., University of Nebraska, Lincoln; Ph.D., University of Hawaii, Manoa

F

Feldman, Patricia A. (1990), Associate Administrative Professional, College of Extended Education; Director, Academic and Professional Programs, College of Extended Education; B.S., M.Ed., Colorado State University

Felix-Sol, Carol (1994), Lecturer, College of Extended Education; B.A., M.A., University of Colorado

Fountaine, Steven (1990), Lecturer, College of Extended Education; B.A., Shepherd College; M.A., Temple University; Ph.D., Arizona State University

G

Graham, Andrea (2000), Instructor, College of Extended Education; B.A., M.A., Arizona State University

J

Jones, Dawnell (2001), Instructional Specialist, College of Extended Education; International Student Advisor, American English and Culture Program, College of Extended Education; B.A., M.A., Brigham Young University

K

Kegelman, Jan (1978), Lecturer, College of Extended Education; Coordinator, International Teaching Assistants Program, American English and Culture Program; B.S., University of Massachusetts; M.A., Arizona State University

Kyselka, Christine K. (1990), Associate Administrative Professional, College of Extended Education; Assistant Director, Extended Campus Programs, College of Extended Education; B.S., M.P.A., Arizona State University

L

Lindeman, Mary (1988), Lecturer, College of Extended Education; B.A., St. Mary's University; M.A., University of Houston

Livingston, Mary (1978), Lecturer, College of Extended Education; B.A., M.A., Arizona State University

M

Mitchell, Marie (1980), Lecturer, College of Extended Education; B.A., Fort Hays State University; M.A., School for International Training

P

Parker, Denise (1997), Instructor, College of Extended Education; B.A., Miami University; M.A., University of Virginia

Pope, Donna (1999), Assistant Instructional Professional, College of Extended Education; Manager, Nonprofit Management Program, Academic and Professional Programs, College of Extended Education; B.S.W., Texas Women's University; M.S.S.W., University of Texas, Arlington

R

Rentz, Mark D. (1984), Lecturer, College of Extended Education; Director, American English and Culture Program, College of Extended Education; B.A., Bethel College; M.A., William Carey International University

Robinson, Antoniette (1994), Instructor, College of Extended Education; B.A., M.A., State University of New York

S

Schlather, Erica (1993), Instructional Specialist, College of Extended Education; Marketing Coordinator, American English and Culture Program, College of Extended Education; B.A., M.A., Northern Arizona University

T

Thursby, Gayle (1994), Lecturer, College of Extended Education; B.A., University of Colorado; M.A., University of California, Los Angeles

V

Verdini, William A. (1976), Associate Professor of Supply Chain Management; Associate Dean, College of Extended Education; B.S., Case Western Reserve University; M.B.A., D.B.A., Kent State University

Vicens, Wendy (1977), Senior Lecturer, College of Extended Education; B.A., M.A., Northern Arizona University

W

Wagy, Scott (2001), Instructional Specialist, College of Extended Education; Coordinator for Cultural Activities and Programs, American English and Culture Program, College of Extended Education; B.A., M.A., West Virginia University

ASU Extended Campus Administrative Personnel

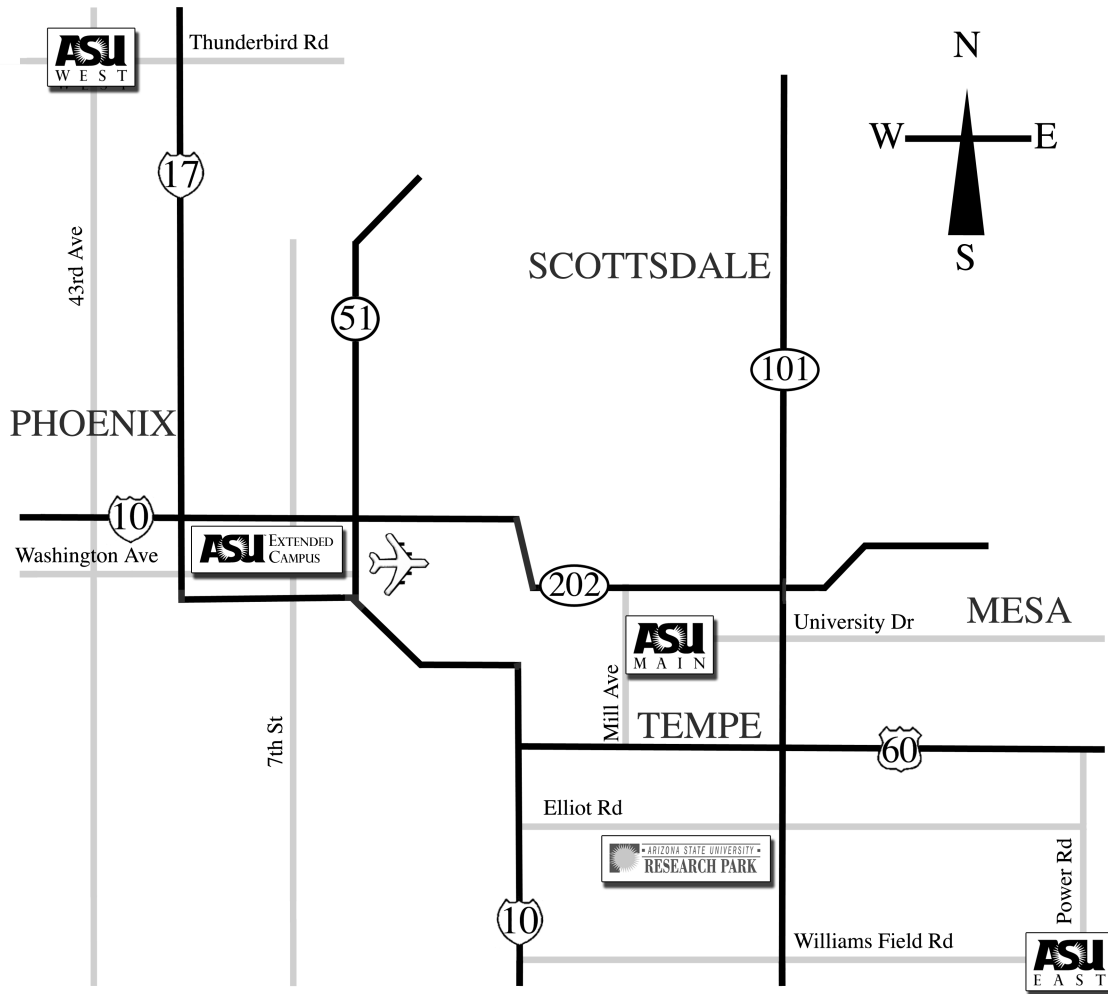
Senior Vice President, ASU Gary S. Krahenbuhl
 Dean, College of Extended Education Bette F. DeGraw
 Associate Dean William A. Verdini
 Assistant Dean Elaine Sweet
 Director, Academic and Professional Programs Patricia A. Feldman
 Director, American English and Culture Program Mark D. Rentz
 Director, Communications and Marketing Randy Bailey
 Director, Development and Outreach Scott Sheldon
 Director, Distance Learning and Technology Elizabeth H. Craft
 Director, Downtown Center Bette F. DeGraw
 Director, Extended Campus Programs Jim Patzer
 Director, Property Administration Cathie Fox

ASU Extended Campus Directory

For the [“ASU Main Directory,”](#) see page 540. For the [“ASU East Directory,”](#) page 683. For the [“ASU West Directory,”](#) see page 694.

Organization	Location	Telephone	Web Address
Extended Education, College of	ASUDC C319	480/965-3046	www.asu.edu/xed
Academic and Professional Programs	RITT B132	480/965-9797	—
	ASUDC	480/965-9200	—
American English and Culture Program	MARIP	480/965-2376	www.asu.edu/xed/aecp/esl.html
ASU Downtown Center	ASUDC	480/965-3046	www.asu.edu/xed/dtc
Communications and Marketing	ASUDC C319	480/965-9696	—
Development and Outreach	ASUDC C250	480/727-5330	—
Distance Learning and Technology	RITT A129	480/965-6738	www.dlt.asu.edu
Extended Campus Programs	ASUDC C250	480/965-3046	—
Independent Learning	RITT B132	480/965-6563 or 1-800-533-4806	www.dlt.asu.edu/info/indlearn.html
Planning and Business Services	ASUDC C319	480/727-5338	—
Property Administration	ASUDC C319	480/965-9696	—

ASU Vicinity Map



Near Downtown Tempe



Monroe and Fifth Streets,
Phoenix



Power and Williams Field
Roads, Mesa



Price and Elliot Roads,
Tempe



43rd Avenue and
Thunderbird Road



Phoenix Sky Harbor
International Airport

Accreditation and Affiliation

ASU Main and ASU East. Arizona State University Main is accredited by the Higher Learning Commission and is a member of the North Central Association (NCA). Arizona State University East is recognized by the Higher Learning Commission as a full-service campus and is accredited under the ASU Main umbrella. Programs in the various colleges, schools, divisions, and departments are accredited by, affiliated with, or members of national bodies as described in the [“Academic Accreditation at ASU Main and East” table below](#); “Academic Affiliation” table, [716](#); and “Academic Membership” table, [717](#). Some programs in the College of Education are approved by the State Board of Education (Arizona) and the National Association of School Psychologists.

ASU West. ASU West is separately accredited by the Higher Learning Commission. Professional programs in the various academic areas are accredited by national bodies as described in the “Academic Accreditation at ASU West” table, [716](#).

Academic Accreditation at ASU Main and East

Unit or Program	Accredited By
College of Architecture and Environmental Design	
B.S.D., Graphic Design, Industrial Design	National Association of Schools of Art and Design
B.S.D., Interior Design	Foundation for Interior Design Education Research
B.S.L.A.	Landscape Architectural Accreditation Board
M.Arch.	National Architectural Accrediting Board
M.E.P.	Planning Accreditation Board
M.S.D., Design, with concentrations in graphic design and industrial design.	National Association of Schools of Art and Design
College of Business	
All programs	AACSB International, the Association to Advance Collegiate Schools of Business
M.H.S.A., School of Health Administration and Policy	Accrediting Commission on Education for Health Services Administration
School of Accountancy and Information Management	AACSB International, the Association to Advance Collegiate Schools of Business
College of Education	
M.C., Counseling	Council for Accreditation of Counseling and Related Educational Programs
Ph.D., Counseling Psychology; Educational Psychology, with a concentration in school psychology	American Psychological Association
College of Engineering and Applied Sciences	
B.S., Computer Science	Computer Science Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc.
B.S., Construction	American Council for Construction Education
B.S.E., Aerospace Engineering; Bioengineering; Chemical Engineering; Civil Engineering; Computer Systems Engineering; Electrical Engineering; Industrial Engineering; Materials Science and Engineering; Mechanical Engineering	Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc.
College of Law	
J.D.	American Bar Association
College of Liberal Arts and Sciences	
B.S., Clinical Laboratory Sciences	National Accrediting Agency for Clinical Laboratory Sciences
M.S., Communication Disorders	American Speech-Language-Hearing Association

* This program is accredited through the ASU Main College of Business.

ACCREDITATION AND AFFILIATION

Academic Accreditation at ASU Main and East (continued)

Unit or Program	Accredited By
College of Liberal Arts and Sciences (continued) Ph.D., Psychology, with a concentration in clinical psychology	American Psychological Association
College of Nursing B.S.N., M.S., Nursing	Arizona State Board of Nursing Commission on Collegiate Nursing Education, initial approval National League for Nursing
College of Public Programs B.S., Recreation	Council on Accreditation of the National Recreation and Park Association
B.S.W., M.S.W., School of Social Work	Council on Social Work Education
Walter Cronkite School of Journalism and Mass Communication	Accrediting Council on Education in Journalism and Mass Communications
M.P.A.	National Association of Schools of Public Affairs and Administration
College of Technology and Applied Sciences B.S., Aeronautical Engineering Technology; Electronics Engineering Technology; Manufacturing Engineering Technology	Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc.
B.S., Aeronautical Management Technology, with concentrations in professional flight and air transportation management	Council on Aviation Accreditation
East College B.S., Business Administration*	AACSB International, the Association to Advance Collegiate Schools of Business American Dietetic Association
B.S., Nutrition (didactic program in dietetics); M.S., Nutrition (dietetic internship)	
Herberger College of Fine Arts Department of Theatre School of Music	National Association of Schools of Theatre American Music Therapy Association National Association of Schools of Music

* This program is accredited through the ASU Main College of Business.

Academic Accreditation at ASU West

Unit or Program	Accredited By
College of Human Services B.S.W., Department of Social Work Department of Recreation and Tourism Management	Council on Social Work Education National Recreation and Park Association/American Association for Leisure and Recreation Council on Accreditation
School of Management All programs	AACSB International, the Association to Advance Collegiate Schools of Business

Academic Affiliation

Unit or Program	Affiliated With
Barrett Honors College	National Collegiate Honors Council
College of Architecture and Environmental Design School of Architecture	American Institute of Architects, Central Arizona and Rio Salado Chapters Architectural Research Centers Consortium Association for Computer-Aided Design in Architecture

Academic Affiliation (continued)

Unit or Program	Affiliated With
College of Architecture and Environmental Design (continued)	
School of Architecture (continued)	Association of Collegiate Schools of Architecture
School of Design	American Society of Interior Designers Human Factors and Ergonomics Society Industrial Designers Society of America Interior Design Educators Council International Interior Design Association Society of Environmental Graphic Designers
School of Planning and Landscape Architecture	American Planning Association American Society of Landscape Architects Association of Collegiate Schools of Planning Council of Educators in Landscape Architecture
College of Education	American Association of Colleges for Teacher Education American Educational Research Association American Psychological Association University Council for Educational Administration
College of Nursing	
Continuing and Extended Education Programs	Arizona Nurses Association (American Nurses Credentialing Center's Commission on Accreditation)
Morrison School of Agribusiness and Resource Management	
B.S., M.S., Environmental Resources	Society for Range Management
Morrison School of Agribusiness and Resource Management	Soil and Water Conservation Society Wildlife Society

Academic Membership

Unit or Program	Membership With
Barrett Honors College	National Collegiate Honors Council
College of Education	American Association of Colleges for Teacher Education American Educational Research Association University Council for Educational Administration
Ph.D., Educational Psychology, with a concentration in school psychology	National Association of School Psychologists
College of Law	Association of American Law Schools
College of Liberal Arts and Sciences	
Department of Anthropology	American Anthropological Association Council for Museum Anthropology
Department of Biology	American Institute of Biological Sciences American Society of Naturalists American Society of Zoologists Animal Behaviorists' Society Sigma Psi
Department of Chemistry and Biochemistry	American Association for the Advancement of Science American Chemical Society American Society for Advancement of Science
Department of Exercise and Wellness	American Academy of Kinesiology and Physical Education American Alliance for Health, Physical Education, Recreation and Dance American Association of Health Education American College of Sports Medicine Association of Worksite Health Promotion Committee on Allied Health Education

ACCREDITATION AND AFFILIATION

Academic Membership (continued)

Unit or Program	Membership With
Department of Exercise and Wellness (continued)	Council on Physical Education for Children National Association for Physical Education in Higher Education National Strength and Conditioning Association National Wellness Association North American Society for Sports Psychology and Physical Activity North American Society for the Study of Obesity
Department of Exercise Science and Physical Education	American Academy of Kinesiology and Physical Education American Alliance for Health, Physical Education, Recreation and Dance American College of Sports Medicine American Society of Biomechanics Committee on Allied Health Education Council on Physical Education for Children International Society of Biomechanics National Association for Physical Education in Higher Education North American Society for Sports Psychology and Physical Activity Physiological Society Society for Experimental Biology Society for Neuroscience
Department of Geography	Association of American Geographers
Department of Geological Sciences	American Association of Petroleum Geologists American Geophysical Union American Institute of Professional Geologists Geological Society of America Mineralogical Society of America Society of Economic Paleontologists and Mineralogists
Department of History	American Association for State and Local History American Association of Museums American Historical Association Coordinating Committee for History in Arizona Institute of Historical Research National Council on Public History Western History Association
Department of Languages and Literatures	American Council on Teaching Foreign Language International Studies Association Modern Language Association
Department of Mathematics and Statistics	American Mathematical Society Mathematical Association of America Rocky Mountain Mathematics Consortium Society for Industrial and Applied Mathematics
Department of Microbiology	American Association of Immunologists American Association of Immunology American Society for Virology American Society of Microbiology Society for Neuroscience
Department of Military Science	Association of U.S. Army
Department of Philosophy	American Philosophical Association
Department of Physics and Astronomy	Acoustical Society of America American Association of Physicists in Medicine American Association of Physics Teachers American Astronomical Society American Crystallographic Association American Physical Society American Vacuum Society

Academic Membership (continued)

Unit or Program	Membership With
Department of Physics and Astronomy (continued)	International Astronomical Union
	Materials Research Society
	Optical Society of America
Department of Plant Biology	American Chemical Society
	American Institute of Biological Sciences
	American Society for Biochemistry and Molecular Biology
	American Society for Photobiology
	American Society of Cell Biology
	American Society of Horticultural Science
	American Society of Plant Physiologists
	American Society of Plant Taxonomy
	Arizona-Nevada Academy of Science
	Botanical Society of America
	Botanical Society of Japan
	California Botanical Society
	Ecological Society of America
	International Association for Study of Plant Succulents
	International Association of Landscape Ecology
	International Association of Plant Taxonomy
	International Association of Wood Anatomists
	International Organization of Paleobotany
	International Photosynthesis Society
	International Phycological Society
	International Society of Arboriculture
	International Society of Ecological Modeling
	International Society of Plant Molecular Biology
	International Society of Plant Propagators
	International Union of Woody Plant Physiologists
	Microscopy Society of America
	Mycological Society of America
	Phycological Society of America
	Phytochemical Society of North America
	Sigma Xi
	Society for Economic Botany
	Society of Ecological Restoration
	Society of Wetlands Scientists
	Soil Science Society of America
	Southwestern Association of Naturalists
Department of Political Science	American Political Science Association
	Inter-university Consortium for Political and Social Research
Department of Psychology	American Society of Clinical Psychologists
Department of Sociology	American Sociological Association
M.S., Ph.D., Molecular and Cellular Biology	American Society of Medical Technology
Women's Studies Program	Association for Women in Science
	National Women's Studies Association
College of Nursing	American Association of Colleges of Nursing
	Western Institute of Nursing
College of Public Programs	
Walter Cronkite School of Journalism and Mass Communication	Association of Schools of Journalism and Mass Communication
	Broadcast Education Association
Department of Recreation Management and Tourism	American Humanics, Inc.
	Arizona American Indian Tourism Association
	Arizona Heritage Alliance
	Arizona Park and Recreation Association
	Arizona State Therapeutic Recreation Association

ACCREDITATION AND AFFILIATION

Academic Membership (continued)

Unit or Program	Membership With
Department of Recreation Management and Tourism (continued)	Association for Research on Nonprofit Organizations and Voluntary Action Association for Volunteer Administration Learning Institute National Center for Nonprofit Boards National Park and Recreation Association National Society of Fund Raising Executives National Training Institute for Community Youth Work Nonprofit Academic Centers Council Nonprofit Risk Management Center Peter F. Drucker Foundation for Nonprofit Management Society for Nonprofit Organizations Travel Tourism Research Association
Hugh Downs School of Human Communication	National Communication Association Western States Communication Association
School of Justice Studies	Arizona Justice Educators Association of Criminal Justice Doctoral Programs National Academic Advising Onati International Institute for the Sociology of Law
School of Public Affairs	National Association of Schools of Public Affairs and Administration
School of Social Work	Baccalaureate Program Directors Association Council on Social Work Education Group for the Advancement of Doctoral Education National Association of Deans and Directors of Social Work National Association of Social Workers
East College	
Department of Nutrition	American Dietetic Association
Graduate College	Council of Graduate Schools
Herberger College of Fine Arts	
Department of Theatre	American Alliance for Theatre and Education Association for Theatre in Higher Education
Morrison School of Agribusiness and Resource Management	
B.S., Agribusiness with a concentration in professional golf management	Professional Golfer's Association of America



Family Weekend festivities during halftime of a game at Sun Devil Stadium

Tim Trumble photo

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Building Abbreviations

Buildings are located at ASU Main unless otherwise noted. For the ASU Main map, see the inside back cover. For other locations, see the “ASU East Map,” page 682; “ASU West Map,” page 693; and “ASU Downtown Center Map,” page 711.

ADM	Administration (wings A–B)	ECG	Engineering Center G-Wing
AED	College of Architecture and Environmental Design/North	ECANX	Engineering Center Annex
AG	Agriculture Building	ED	Hiram B. Farmer Education Building
AGB1–4	ASU East Agribusiness Quads 1–4 ¹	EDB	Ira D. Payne Education Hall
AIP	ASU East American Indian Programs ¹	EDC	Education Lecture Hall
ALTCH	ASU East Altitude Chamber ¹	ELAB	Electronics Laboratory Building ³
ANTH	Anthropology Building	ENGRC	Engineering Research Center
ANX	Visual Arts Annex	ENVIR	Environmental Lab
AQUAT	Mona Plummer Aquatics Center (wings A–B)	FAB	Faculty and Administration Building ³
ARCH	College of Architecture and Environmental Design/South	FABNX	Faculty and Administration Building Annex ³
ARCV	University Archives	FAC	Nelson Fine Arts Center
ART	Art Building	FDSC1	ASU East Agribusiness Food Science Lab ¹
ARWH	Art Warehouse	FIELD	University Field Lab
ASUDC	Downtown Center ²	FLHLB	Fletcher Library ³
BA	Business Administration Building	GGMA	Grady Gammage Memorial Auditorium
BAC	Business Administration C-Wing	GHALL	Dixie Gammage Hall
BKSTR	ASU Bookstore	GWC	Barry M. Goldwater Center for Science and Engineering Research
CERA	Ceramics Annex (wings A–B)	HSC	ASU East Health Sciences Center ¹
CFS	Center for Family Studies	HSC2	ASU East Health Sciences Center Research ¹
CHAPL	Danforth Chapel	IAPNX	Interdisciplinary Arts and Performance Annex ³
CLCC	Classroom Laboratory/Computer Classroom Building ³	ICA	Intercollegiate Athletics
CLRB	ASU East Classroom Building ¹	IRISH	Frederick M. Irish Hall (wings A–C)
CMPIN	Campus Inn	LAW	John S. Armstrong Hall
CNTR	ASU East Academic Center Building ¹	LAWLB	John J. Ross-William C. Blakley Law Library
COMM2	ASU East Communications Building ¹	LIB	Charles T. Hayden Library
COWDN	Cowden Family Resources Building	LL	G. Homer Durham Language and Literature Building
CP	Central Plant	LSA	Life Sciences A-Wing
CPCOM	Computing Commons Building	LSC	Life Sciences C-Wing
CRI	Cancer Research Institute	LSE	Life Sciences E-Wing
CRNX	Classroom Annex ³	LYC	Lyceum Theatre
CSAC	Nadine and Ed Carson Student Athlete Center	MAIN	Old Main
CSB	Community Services Building	MANZH	Manzanita Hall
CSC	Central Services Complex ³	MARIP	Mariposa Hall
DPSMN	Department of Public Safety—Main	MB	M.O. Best Hall
EAW2	ASU East Exercise Instructional Lab Building ¹	MCENT	A.J. Matthews Center
ECA	Engineering Center A-Wing	MCL	James H. McClintock Hall
ECB	Engineering Center B-Wing	MHALL	Carrie Matthews Hall
ECC	Engineering Center C-Wing		
ECD	Engineering Center D-Wing		
ECE	Engineering Center E-Wing		
ECF	Engineering Center F-Wing		

¹ This building is located at ASU East.

² The ASU Downtown Center is located at 502 E. Monroe Street in Phoenix.

³ This building is located at ASU West.

BUILDING ABBREVIATIONS

MOEUR	B.B. Moeur Administration	SS	Social Sciences Building
MTCHL	Mitchell School (Tempe)	SSV	Student Services Building
MU	Memorial Union	STAD	Sun Devil Stadium
MUR	John Murdock Lecture Hall	STAUF	Charles Stauffer Communication Arts Building (wings A–B)
MUSIC	Music Building (wings E–W)	TC	Technology Center
NEEB	L.S. Neeb Hall	TCB	Aeronautics Building
NOBLE	Daniel E. Noble Science and Engineering Library	TCC	Technology Center Annex
NUR	Nursing Building	TECH	ASU East Technology Center ¹
PAC	ASU East Physical Activity Center ¹	TECH2	ASU East Technology Center Annex ¹
PBS	Packard Baseball Stadium	THWH	Theatre Warehouse
PEBE	Physical Education Building East	TMPCT	Tempe Center
PEBW	Physical Education Building West	TOWER	University Tower Center (wings A–B)
PGM	ASU East Professional Golf Management ¹	TRACK	Joe Selleh Track
PPS	Physical Plant Shops	UASB	Undergraduate Academic Services Building
PRNT	ASU East Technology Print Building ¹	UCB	University Center Building ³
PS	George M. Bateman Physical Sciences Center (wings A–G)	UCLUB	University Club
PSH	Physical Science H-Wing	UNION	ASU East Williams Campus Union Building ¹
PSY	Psychology Building	UVCMN	University Commons
PVE	Palo Verde East	UWT	Unsteady Wind Tunnel
PVM	Palo Verde Main	VISIT	ASU Visitor’s Information Center
PVW	Palo Verde West	WFA	Wells Fargo Arena
RITT	Ritter Building (wings A–B)	WFLD	ASU West Alternate Locations ³
SANDS	Sands Classroom Building ³	WH	Warehouse
SCOB	John W. Schwada Classroom Office Building	WHALL	West Hall
SCRED	Sonora Center Residence Education Center	WILSN	George W. Wilson Hall
SDF	Solar Demonstration Facility	WTC	Whiteman Tennis Center
SHS	Student Health Service (wings A–B)		
SIM	ASU East Flight Simulator Building ¹		
SOLAR	ASU East Photovoltaics Testing Laboratory ¹		
SRC	Student Recreation Complex		

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