
College of Liberal Arts and Sciences

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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 a School of Life Sciences, 20 academic departments, several interdisciplinary programs, 10 centers, and several research institutes and laboratories. The college offers 36 programs leading to a bachelor's degree, 31 programs leading to a master's degree, 22 programs leading to a doctoral degree, and interdisciplinary graduate programs in cooperation with other colleges. Undergraduate customized interdisciplinary degrees are also available.

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” prelaw or “no preference” premedicine. Students with 50 or more hours must declare a major to be accepted into the college.

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.

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.) Current ASU students who are changing their majors to CLAS from another ASU college must first contact the advisor in the department they are moving to.

Transfer Students. The university standards for evaluation of transfer credit are listed under “Transfer Credit,” page 68. 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 68).

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 their edition of the ASU *General Catalog*. See “General Studies,” page 91, “University Graduation Requirements,” page 87, “CLAS Graduation Requirements,” page 319, 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
Career advising (all majors)	SS 111 (480/965-6506)
Declared majors	Department of major
No preference, prelaw	SS 111 (480/965-6506)
No preference, premedical	Pre-Health Professions, 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.

Advising for Preprofessional Programs. Special advising is available for students planning to enter the fields listed in the “Advising for Preprofessional Programs” table, page 316. 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.

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

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 91.

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, ECA 377
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 Pre-Health Professions advisors concerning out-of-state schools where they may complete their training.

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 department of his or her major to obtain information regarding the procedure to apply to law school.

Career Advising: CLASWorks. A degree in the liberal arts and sciences prepares a student for careers that include but are not limited to business, government/public service, nonprofit organizations, the arts, science and research, and most corporate environments. By the time of graduation, CLAS students have developed the ability to solve problems, analyze data, communicate ideas, and execute complex plans. To identify career paths that best fit a student’s interests and talents, the Office of Academic

Programs offers individualized career advising. To make an appointment, call 480/965-6506.

Internships. All students are encouraged to complete at least one internship before graduation. Many CLAS disciplines have well-established internship programs, so students should begin with their academic departments. Contact information may be found on the Web at www.asu.edu/clasworks. To develop a successful internship experience, students are encouraged to meet with the director of CLASWorks for a career advising session soon after arriving on campus.

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 317. Each major is administered by the academic department indicated.

Concurrent degrees and second baccalaureate degrees. Students who wish to pursue a concurrent degree in CLAS may not double count courses from one major to the other. Each major must consist of a minimum of 30 semester hours unique to that major. Similarly, students who earn one baccalaureate degree may not earn a second baccalaureate degree in the same major or in a major that does not contain 30 core hours unique to that major. For example, a student may not pursue a degree in two life science fields (with the exception of Clinical Laboratory Sciences).

Minors. Although not required for graduation, special college-approved minors are available in most departments. Check department program descriptions for details. Minors 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” (2.00) 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 117.

ASU EXTENDED CAMPUS

The College of Extended Education was created in 1990 to extend the resources of ASU throughout Maricopa County, the state, and beyond. 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 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 physical campuses to provide access to quality academic credit and degree programs for working

College of Liberal Arts and Sciences Baccalaureate Degrees and Majors

Major	Degree	Concentration ¹	Administered By
African American Studies	B.A.	Humanities/arts, politics and society, or 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.A. B.S.	— Optional: medicinal chemistry ¹	Department of Chemistry and Biochemistry
Biology	B.S.	Optional: biology and society ¹	School of Life Sciences
Chemistry	B.A. B.S.	— Optional: environmental chemistry ¹	Department of Chemistry and Biochemistry
Chicana and Chicano Studies	B.A.	Humanities/cultural sciences or social sciences/policy	Department of Chicana and Chicano Studies
Clinical Laboratory Sciences	B.S.	—	School of Life Sciences
Computational Mathematical Sciences	B.S.	—	Department of Mathematics and Statistics
Conservation Biology	B.S.	—	School of Life Sciences
Economics	B.A., B.S.	—	Department of Economics ²
English	B.A.	Linguistics or literature	Department of English
Family and Human Development	B.S.	Optional: family studies/child development ¹	Department of Family and Human Development
French	B.A.	—	Department of Languages and Literatures
Geography	B.A., B.S.	Meteorology-climatology or 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
Kinesiology	B.S.	Exercise science, movement science, or teacher preparation	Department of Kinesiology
Mathematics	B.A. B.S.	— Optional: statistics ¹	Department of Mathematics and Statistics Department of Mathematics and Statistics
Microbiology	B.S.	—	School of Life Sciences
Molecular Biosciences/Biotechnology	B.S.	—	School of Life Sciences
Philosophy	B.A.	—	Department of Philosophy
Physics	B.S.	—	Department of Physics and Astronomy
Plant Biology	B.S.	Environmental science and ecology or plant biochemistry and molecular biology	School of Life Sciences

¹ If a major offers concentrations, one must be selected unless noted as *optional*.

² The department is in the W. P. Carey School of Business, which also offers this major, with different requirements.

College of Liberal Arts and Sciences Baccalaureate Degrees and Majors (continued)

Major	Degree	Concentration ¹	Administered By
Political Science	B.A.	—	Department of Political Science
	B.S.	Optional: public policy advocacy and lobbying or public policy analysis ¹	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
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

¹ If a major offers concentrations, one must be selected unless noted as *optional*.

² The department is in the W. P. Carey School of Business, which also offers this major, with different requirements.

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 689, 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 87.

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 91. Note that all three General Studies awareness areas are required. Consult an advisor for an approved list of courses.

General Studies courses are listed in the “General Studies Courses” table, page 94, 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” (2.00). 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” (2.00) had the normal grading scheme been used. See the individual departments for other minimum 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 (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)
 - Chicana and Chicano Studies (CSS)
 - Economics (ECN)
 - 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)
 - Kinesiology (Students majoring in this field must satisfy the CLAS graduation requirements in all three divisions.) (KIN)
 - 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 in section I, subsection C.

Unless the major field notes otherwise in section I, subsection C, students are considered to have fulfilled the CLAS graduation requirements in the division of the major.

Students majoring in Family and Human Development, Kinesiology, 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 the CLAS graduation requirements in either the humanities or the social and behavioral sciences, depending upon their concentrations; that is, these students fill the CLAS requirements within the concentration of their major only. They may not use courses in the department to fill the CLAS requirements outside their major concentration.

Students majoring in Women's Studies may complete the CLAS Social and Behavioral Sciences distribution area using courses within the major.

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)
4. CHI, FLA, FRE, GER, GRK, HEB, ITA, JPN, KOR, LAT, POR, RUS, SCA, SPA (Department of Languages and Literatures; literature or "civilization" courses at the 300 level or above that are not also used to meet the minimum language proficiency requirement)
5. HPS (School of Life Sciences)
6. HUM (Interdisciplinary Humanities Program)
7. PHI (Department of Philosophy)
8. 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.
9. WSH (Women's Studies 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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

- 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 (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 (Microbiology)
 9. AST, PHS, PHY (Department of Physics and Astronomy)
 10. PLB, MBB (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)
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 (access the Web site at asu.edu/clas/bridgecourses 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 (This course is also offered
at ASU East)
- 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 318 History of Medicine
(Cross-listed as HPS 331)
- BIO 319 Environmental Science (nonmajor
only) (Cross-listed as PLB 320)
- BIO 427 Fire
- ENG 312 English in Its Social Setting
and Literature
- ENG 469 Science and Literature
- GCU 344 Geography of Hispanic Americans
- GPH 210 Society and Environment
- 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)
- HPS 340 Biology and Society
(Cross-listed as BIO 311)
- HST 436 The Soviet Experiment
- HST 460 History of Fire
- HUM294 ST: Introduction to Southeast Asia
- HUM420 Interpreting Latin America
- KIN 422 Motor Control in Special Populations
- KIN 452 Exercise Psychology
- MIC 394 ST: HIV Disease and AIDS in America
- PGS 394 ST: Disease and AIDS in America
- PLB 320 Environmental Science (nonmajor)

- only) (Cross-listed as BIO 319)
- PLB 322 Environmental Science (majors only)
- PLB 422 Plant Geography
(Cross-listed as GPH 422)
- POS 305 Politics and Film
- 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 420 Sociology of Religion
- SOC 451 Comparative Sociology
- SOC 483 History of Social Thought
- WST 394 ST: Women and Religion

Note: With the exception of ASB 353 only the main campus courses listed above will fulfill the bridge course requirement.

- E. Second Language Requirement. 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” (2.00) 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, those students completing this requirement in Ancient Greek must take both GRK 301 and 302; students completing the requirements in Portuguese or Romanian must complete POR 314 or ROM 314);
 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” (2.00) 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 to 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

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 91.

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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 79.

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 84, 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 academic good standing (see "Academic Good Standing," page 84) 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 academic good standing 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 to good standing; 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 reinstatement and returning to good standing. By following recommendations and meeting established standards for summer school work or course work at other institutions, the possi-

bility 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, appropriate 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 128.

CLASWorks. The college provides a comprehensive career management program for all CLAS majors: CLASWorks. This program includes a first-year seminar as well as an upper-division course in career management. Individualized advising sessions, career events, and a Web-based list of CLASWorks contacts are available. Students are encouraged to meet with the director of CLASWorks during their first semester at ASU to explore opportunities in full- and part-time employment, volunteerism, and internships. For more information, call 480/965-6506, or access the Web site at www.asu.edu/clasworks.

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.

Learning Communities. CLAS Learning Communities are nine to 12 semester hour clusters of courses organized around a common theme and taught by prominent faculty from different disciplines. Course material and extracurricular activities are integrated to enhance the student's intellectual development and fulfill lower-division portions of the General Studies requirement. Each Learning Community is

College of Liberal Arts and Sciences Graduate Degrees and Majors

Major	Degree	Concentration ¹	Administered By
Anthropology	M.A.	Archaeology, bioarchaeology, linguistics, museum studies, physical anthropology, or social-cultural anthropology	Department of Anthropology
	Ph.D.	Archaeology, physical anthropology, or social-cultural anthropology	Department of Anthropology
Asian Languages and Civilizations—Chinese/Japanese	M.A.	—	Department of Languages and Literatures
Audiology	Au.D.	—	Department of Speech and Hearing Science
Biology	M.S., Ph.D.	Optional: ecology ¹	School of Life Sciences
Chemistry	M.S., Ph.D.	Analytical chemistry, biochemistry, geochemistry, inorganic chemistry, organic chemistry, physical chemistry, or 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 ²	M.F.A.	—	Creative Writing Committee
English	M.A.	Comparative literature, English linguistics, literature and language, or rhetoric and composition	Department of English
	Ph.D.	Literature or rhetoric/composition and linguistics	Department of English
Exercise Science ²	Ph.D.	Biomechanics, motor behavior/sport psychology, or physiology of exercise	Committee on Exercise Science
Family and Human Development	M.S.	Optional: family studies ¹	Department of Family and Human Development
Family Science	Ph.D.	Optional: marriage and family therapy ¹	Department of Family and Human Development
French	M.A.	Comparative literature, linguistics, or 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, or literature	Department of Languages and Literatures
History	M.A.	Asian history, British history, European history, Latin American history, public history, U.S. history, or U.S. Western history	Department of History
	Ph.D.	Asian history, British history, European history, Latin American history, or U.S. history	Department of History
Humanities	M.A.	—	Graduate Committee on Humanities
Kinesiology	M.S.	—	Department of Kinesiology
Materials Science ²	M.S.	—	Committee on the Science and Engineering of Materials
Mathematics	M.A., Ph.D.	—	Department of Mathematics and Statistics

¹ If a major offers concentrations, one must be selected unless noted as *optional*.

² This program is administered by the Graduate College.

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College of Liberal Arts and Sciences Graduate Degrees and Majors (continued)

Major	Degree	Concentration ¹	Administered By
Microbiology	M.S., Ph.D.	—	School of Life Sciences
Molecular and Cellular Biology	M.S., Ph.D.	—	Interdisciplinary Committee on Molecular and Cellular Biology
Natural Science	M.N.S.	Biology, microbiology, plant biology Chemistry Geological sciences Mathematics Physics	School of Life Sciences Department of Chemistry and Biochemistry Department of Geological Sciences Department of Mathematics and Statistics Department of Physics and Astronomy
Philosophy	M.A., Ph.D.	—	Department of Philosophy
Physical Education	M.P.E.	—	Department of Kinesiology
Physics	M.S., Ph.D.	—	Department of Physics and Astronomy
Plant Biology	M.S., Ph.D.	Optional: ecology or photosynthesis ¹	School of Life Sciences
Political Science	M.A., Ph.D.	American politics, comparative politics, international relations, or political theory	Department of Political Science
Psychology	Ph.D.	Behavioral neuroscience, clinical psychology, cognitive/behavioral systems, developmental psychology, quantitative research methods, or social psychology	Department of Psychology
Religious Studies	M.A., Ph.D.	—	Department of Religious Studies
Science and Engineering of Materials ²	Ph.D.	High-resolution nanostructure analysis or solid-state device materials design	Committee on the Science and Engineering of Materials
Sociology	M.A., Ph.D.	—	Department of Sociology
Spanish	M.A. Ph.D.	Comparative literature, language and culture, linguistics, or literature Cultural studies or literature	Department of Languages and Literatures Department of Languages and Literatures
Speech and Hearing Science ²	Ph.D.	Developmental neurolinguistic disorders, neuroauditory processes, or neurogerontologic communication disorders	Committee on Speech and Hearing Science
Statistics ²	M.S.	—	Committee on Statistics
Teaching English as a Second Language	M.TESL	—	Department of English

¹ If a major offers concentrations, one must be selected unless noted as *optional*.

² This program is administered by the Graduate College.

limited to fewer than 100 students, enabling the student to develop a supportive network of peers on campus. For more information, including residence hall information, access the Web site at www.asu.edu/clas/lcsite.

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 Wash-

ington 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

CLAS Certificates

Certificate Program	Administered By	Page
College of Liberal Arts and Sciences Enriched Certificate	CLAS	326
African and African Diaspora Studies, Graduate Certificate in ²	African American Studies Program	—
African American Studies Certificate	African American Studies Program	333
American Public Policy Certificate	Department of Political Science	432
Asian Studies, Graduate Certificate ¹	Center for Asian Studies	326
Atmospheric Sciences Certificate ²	CLAS and Ira A. Fulton School of Engineering	—
Civic Education Certificate	Department of Political Science	432
Classical Studies Certificate	Department of Languages and Literatures and Interdisciplinary Humanities Program	326
East Asian Studies Certificate	Center for Asian Studies	326
Ethics Certificate	Department of Philosophy	326
Geographic Information Science Certificate	Department of Geography	327
Geographic Information Science, Interdisciplinary Certificate in ²	CLAS and Graduate College	—
Health Physics Certificate	Pre-Health Professions Office	327
History and Philosophy of Science Certificate	School of Life Sciences	327
International Studies Certificate	Department of Political Science	433
Islamic Studies Certificate	Department of Religious Studies	327
Jewish Studies Certificate	Jewish Studies Committee	327
Latin American Studies Certificate ¹	Latin American Studies Center	328
Linguistics, Graduate Certificate in ²	Committee on Linguistics	—
Medieval and Renaissance Studies Certificate	Arizona Center for Medieval and Renaissance Studies (ACMRS)	328
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 Center	328
Scandinavian Studies Certificate	Department of Languages and Literatures	329
Scholarly Publishing Certificate ²	Department of History	—
Southeast Asian Studies Certificate	Program for Southeast Asian Studies	329
Statistics, Certificate in ²	Committee on Statistics and the Graduate College	—
Symbolic Systems, Certificate in	Department of Philosophy	329
Translation Certificate	Department of Languages and Literatures	386
Women’s Studies Certificate	Women’s Studies Program	330
Writing Certificate	Department of English	353

¹ Emphases are also available in these programs.

² For more information, see the *Graduate Catalog*.

commissions in the armed forces, but they do not offer majors or minors. For more information, see the appropriate department descriptions in this catalog.

available in some of the same subjects (e.g., Latin American Studies).

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, on this page. Areas of emphasis are also

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 91.

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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” (2.00) 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 432.

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.

A Graduate Certificate in Asian Studies is also available. For more information, see the *Graduate Catalog*.

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. The center also offers several professional development seminars to K–12 teachers.

For more information, contact the Center for Asian Studies in COOR 6611, or call 480/965-7184.

B.I.S. Concentrations. Concentrations in Asian studies and East Asian studies are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for

the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

Civic Education. See “Certificate in Civic Education,” page 432.

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 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 grade of “C” (2.00) in each course leading to the certificate.

Students interested in the Classical Studies certificate program need to submit an application before being accepted into the program. For more information, call the program coordinators at 480/965-1110 or 727-6512.

B.I.S. Concentration. Concentrations in (1) classical studies—Greek or (2) classical studies—Latin are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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 COOR 3307, or call 480/965-3394.

B.I.S. Concentration. A concentration in ethics is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one

double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

Geographic Information Science. The cross-disciplinary undergraduate certificate in Geographic Information Science (GIS) is designed for undergraduates wishing to pursue a GIS-related career. The certificate is awarded to students completing the following 19 semester hours with a grade of “C” (2.00) or higher.

Required Courses

CSE 100 Principles of Programming with C++	CS	3
GCU 495 Quantitative Methods in Geography	CS	3
GPH 370 Geographic Information Technologies	CS	3
GPH 373 Geographic Information Science I	CS	4
GPH 473 Geographic Information Science II	CS*	3
Elective (choose from the courses below)		3
ABS 485 GIS in Natural Resources	(3)	
ABS 586 Remote Sensing in Environmental Resources	(3)	
GCU 361 Urban Geography	SB (3)	
GCU 441 Economic Geography	SB (3)	
GCU 442 Geographical Analysis of Transportation	SB (3)	
GPH 371 Introduction to Cartography and Georepresentation	CS (3)	
GPH 372 Air Photo Interpretation	(3)	
GPH 471 Geographics: Interactive and Animated Cartography and Geovisualization	CS (3)	
GPH 481 Environmental Geography	(3)	
GPH 483 Geographic Information Analysis	(3)	
GPH 484 GIS-Based Internship	(3)	
PLB 434 Landscape Ecological Modeling	(3)	

For more information, call the Department of Geography at 480/965-7533.

Health Physics. The curriculum of health physics involves work in CLAS and the Ira A. Fulton School of Engineering. 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 Office in LSC 206C, or call 480/965-2365, where academic advising is available.

History and Philosophy of Science. The School of Life Sciences 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 an undergraduate advisor and passed with a grade of “C” (2.00) or higher.

For more information, visit the School of Life Sciences in LSC 206, or call 480/727-6277.

International Studies. See “Certificate in International Studies,” page 433.

Islamic Studies Certificate. Students admitted to undergraduate degree programs in any field are eligible for the Islamic Studies Certificate program. Students who complete all the requirements of their major, their college, and the certificate program receive the certificate plus transcript recognition of their particular emphasis. The certificate program is designed to prepare students for graduate programs in Religious Studies, Islamic studies, and area studies or for any academic discipline (such as professional programs in international law and business) that focus on global Muslim societies. Students must complete a minimum total of 26 semester hours, chosen in consultation with the Islamic Studies program coordinator. A minimum grade of “C” (2.00) is required in each course. To earn the certificate, students must complete these requirements:

1. eight semester hours of Arabic, Indonesian, or another language approved by the program coordinator; students who are native speakers of these languages or who otherwise have equivalent knowledge substitute two additional courses approved by the program coordinator;
2. nine semester hours from REL 260 Introduction to Islam, REL 365 Islamic Civilization, and REL 366 Islam in the Modern World;
3. three semester hours taken from REL 394 (topics may vary) or REL 460 Studies in Islamic Religion (topics may vary); and
4. six semester hours drawn from an approved list of courses in Arabic, anthropology, French, geography, history, religious studies, Spanish or from other courses approved by the program coordinator.

Direct inquiries about the program to the Department of Religious Studies, ECA 377, or call 480/965-7145.

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;

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 91.

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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, visit the Jewish Studies program office or access the Web site at asu.edu/clas/jewishstudies/certificateinfo.htm.

B.I.S. Concentration. A concentration in Jewish studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see "Bachelor of Interdisciplinary Studies," page 123.

Latin American Studies. The Latin American Studies Certificate program is designed to give students an understanding of culture, economies, political structures, and the history of Latin American nations. The Departments of Anthropology, Economics, Geography, History, Languages and Literatures (Spanish and Portuguese), and Political Science and the W. P. Carey School 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 count toward a major or interdisciplinary areas of preparation. Spanish and Portuguese courses above 313 in grammar and phonology do 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 COOR 4450, or call 480/965-5127.

B.I.S. Concentration. A concentration in Latin American studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see "Bachelor of Interdisciplinary Studies," page 123.

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 examina-

tions 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" (2.00) 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 or visiting COOR 4429.

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 36, for information about the center.

B.I.S. Concentration. A concentration in medieval and Renaissance studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see "Bachelor of Interdisciplinary Studies," page 123.

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 Center 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 undergraduate 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 more information, call 480/965-4188, or visit COOR 4465.

B.I.S. Concentration. A concentration in Russian and East European studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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” (2.00) 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.

B.I.S. Concentration. A concentration in Scandinavian studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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 391 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, visit the Program for Southeast Asian Studies in COOR 6611 or call 480/965-4232.

B.I.S. Concentrations. Concentrations in Southeast Asian studies (area studies option or language option) are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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 undergraduates studies in the Department of Philosophy, one substitution course from outside this list is allowed. All courses must be passed with a minimum grade of "C" (2.00).

For more information, visit the Department of Philosophy in COOR 3307, or call 480/965-3394.

Translation. See "Translation Certificate (Spanish/English)," page 386, 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 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 Biology and Society
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
Russian and East European Studies Center

CLAS also participates with the College of Education and the Ira A. Fulton School of Engineering in maintaining the Center for Research on Education in Science, Mathematics, Engineering, and Technology. See "Research Centers," page 34, 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

LIA 394 Special Topics. (1-4)

fall and spring

Topics may include the following:

- Career Management for CLAS Majors. (1-3)

LIA 484 CLAS Internship. (1-12)

fall, spring, summer

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Department of Aerospace Studies

Air Force ROTC

www.asu.edu/clas/afrotc

480/965-3181

PSYN 324

Col. David W. Guthrie, Chair

Professor: Guthrie

Assistant Professors: Greensfelder, Head, Kwazoski

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 test and medical examination and be selected by a board of Air Force officers. After successfully completing a six-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.

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 six-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.

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.

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 91.

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 63.

African American Studies Program

www.asu.edu/clas/afamstu

480/965-4399

COWDN 227

Patricia Neff, Interim Director

CORE FACULTY

Professor: Reyes

Associate Professors: Bontemps, Boulin Johnson

Assistant Professors: Hinds, 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

English

Professors: Lester, Miller

Associate Professors: Chancy, DeLamotte

Assistant Professor: Fuse

History

Associate Professors: Barnes, El Hamel

Assistant Professor: Whitaker

Human Communication

Professors: Jain, Martin

Associate Professors: Davey, Davis

Interdisciplinary Humanities

Assistant Professor: Lund

Journalism and Mass Communication

Associate Professor: Bramlett-Solomon

Justice Studies

Professors: Figueria-McDonough, Jurik, Romero, Zatz

Life Sciences (ASU West)

Professor: Graves

Music

Professors: Pilafian, Solís, Sunkett

Associate Professor: Smith

Political Science

Professor: McGowan

Associate Professor: Mitchell

Psychology in Education

Associate Professor: Hood

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>L/HU, C</i>	3
AFH 354 African American Literature: Harlem Renaissance to the Present <i>L/HU, 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>L/HU, C</i>	3
or AFH 354 African American Literature: Harlem Renaissance to the Present <i>L/HU, 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:

AFH 353 African American Literature: Beginnings Through the Harlem Renaissance <i>L/HU, C</i>	3
or AFH 354 African American Literature: Harlem Renaissance to the Present <i>L/HU, C</i> (3)	
AFR 210 Introduction to African American Studies <i>C</i>	3
AFS 363 African American History to 1865 <i>SB, C, H</i>	3
or 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. A minimum of 12 semester hours of upper-division courses is required. Courses should be selected in consultation with the major advisor.

B.I.S. Concentration. A concentration in African American studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. 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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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” (2.00) 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 303 African and African American Art. (3)

fall, spring, summer

Anthropological perspective of African and African American visual art traditions from the past to 1970. Lecture, discussion, video and slide films.

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. Fee.

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 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. Topics may include the following:

- African American Short Story

General Studies: L

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

AFRICAN AMERICAN STUDIES (AFR)

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 294 Special Topics. (1–4)

selected semesters

AFR 298 Honors Directed Study. (1–6)

selected semesters

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 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 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 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

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: SB, 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 Archaeology: Precolonial Urban Culture. (3)

fall and spring

Overview of African civilization from the last 10,000 years up to 1850 via archaeological, documentary, and oral data. 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 63.

Department of Anthropology

www.asu.edu/clas/anthropology

480/965-6213

ANTH 233

Sander van der Leeuw, Chair

Regents' Professor: Clark

Professors: Barton, Brandt, Carr, Chance, Cowgill, Eder, Hegmon, Hudak, Johanson, Kimbel, Kintigh, Marean, Martin, Nash, B. Nelson, M. Nelson, Redman, Spielmann, Stark, van der Leeuw, Williams

Associate Professors: Baker, Falconer, Reed, Rice, Stone, Welsh

Assistant Professors: Haenn, Isaac, Jonsson, Steadman

Senior Lecturer: Winkelman

Associate Research Professors: Simon, Sugiyama

ANTHROPOLOGY—B.A.

Course Requirements. The Anthropology major consists of a minimum of 39 or 40 semester hours in anthropology and a minimum of six semester hours in related fields in other departments. 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 (3)</i>	
ASM 104 Bones, Stones, and Human Evolution <i>SB/SG</i>	4

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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

Elective

Anthropology	2-3
Total	39-40

Related Fields

Statistics	3
Approved course	3
Total	45-46

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" (2.00) 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: 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)	3
ASM 104 Bones, Stones, and Human Evolution <i>SB/SG</i>	4

Distribution Requirements

Upper-Division 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>SB, 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 319 The North American Indian (3)	
ASB 321 Indians of the Southwest <i>L/SB, C, H</i> (3)	
ASB 322 Peoples of Mesoamerica <i>SB, G</i> (3)	
ASB 323 Indians of Latin America <i>SB, G</i> (3)	
ASB 324 Peoples of the Pacific <i>G</i> (3)	
ASB 325 Peoples of Southeast Asia <i>G</i> (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 412 History of Anthropology <i>L/SB</i> (3)	
ASB 416 Economic Anthropology <i>L/SB</i> (3)	
ASB 417 Political Anthropology (3)	
ASB 485 U.S.-Mexico Border in Comparative Perspective (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 <i>H</i> (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 <i>SB</i> (3)	
ASM 341 Human Osteology (4)	
ASM 342 Human Biological Variation <i>SG</i> (4)	
ASM 343 Primatology (3)	
ASM 344 Fossil Hominids <i>H</i> (3)	
ASM 345 Disease and Human Evolution (3)	
ASM 348 Social Issues in Human Genetics <i>SB</i> (3)	
ASM 452 Dental Anthropology <i>SG</i> (4)	
ASM 454 Comparative Primate Anatomy (4)	
ASM 455 Primate Behavior Laboratory <i>L</i> (3)	

Geographic Area Courses

Archaeology or Physical Anthropology

One course chosen from the following list*	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 <i>H</i> (3)	
ASM 301 Peopling of the World <i>SB</i> (3)	

Ethnographic

One course chosen from the following list*	3
ASB 319 The North American Indian (3)	
ASB 321 Indians of the Southwest <i>L/SB, C, H</i> (3)	
ASB 322 Peoples of Mesoamerica <i>SB, G</i> (3)	
ASB 323 Indians of Latin America <i>SB, G</i> (3)	
ASB 324 Peoples of the Pacific <i>G</i> (3)	
ASB 325 Peoples of Southeast Asia <i>G</i> (3)	
ASB 485 U.S.-Mexico Border in Comparative Perspective (3)	

Anthropology Elective

Any anthropology course (minimum)	2-3
Total	39-40

Related Fields

One lower- or upper-division statistics course in mathematics, sociology, psychology, political science, or history

One course from a field related to but outside of anthropology chosen with advisor	3
Total	6

* Consult with an anthropology undergraduate advisor for courses not listed that may fulfill distribution requirements.

MINOR IN ANTHROPOLOGY

The Anthropology minor requires a minimum of 18 semester hours. Two of the introductory courses—from ASB 102, ASM 104, and ASB 222 or 223—are required. The particular introductory courses selected may limit the anthropology courses available in the upper division however. Twelve 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 335, of those two subfields. A minimum grade of “C” (2.00) 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.

B.I.S. CONCENTRATION

For students pursuing the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a concentration in anthropology requires 24 or 25 semester hours. All three of the introductory courses—ASB 102, ASM 104, and ASB 222 or 223—are required. Fifteen 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 335. A minimum grade of “C” (2.00) is required for all courses taken for the minor in Anthropology for B.I.S. students.

CERTIFICATES

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 328.

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.

This degree is offered through the Initial Teacher Certification program in the College of Education. Students pursuing a major in Secondary Education have an advisor in the College of Education and an advisor within the department of their academic specialization area.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

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: SB, 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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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: instructor approval.

General Studies: SG

ASB 240 Introduction to Southeast Asia. (3)

fall and spring

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: HU, 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: C

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 Peoples of Mesoamerica. (3)

once a year

Indigenous, mestizo, and national cultures, rural and urban peoples. Lecture, discussion, video. 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 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: 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: 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: 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: ASB 361 or instructor approval.

*General Studies: H***ASB 366 African Archaeology: Precolonial Urban Culture. (3)***fall and spring*

Overview of African civilization from the last 10,000 years up to 1850 via archaeological, documentary, and oral data. 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 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 104 or only instructor approval.

*General Studies: L***ASB 480 Introduction to Linguistics. (3)***fall and spring*

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***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.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

ANTHROPOLOGY (SCIENCE AND MATHEMATICS) (ASM)

ASM 104 Bones, Stones, and Human Evolution. (4)*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. Lecture, lab.

*General Studies: SB/SG***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)*fall*

Reviews all evidence for human dispersal during the last 100,000 years, origins of language, cultures, races, and beginnings of modern humans. Prerequisite: ASM 104.

*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 104 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

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 91.

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hours lecture, 3 hours lab. Prerequisites: both ASM 104 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 104 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 104 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 104 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

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: 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 104 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 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.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

Department of Chemistry and Biochemistry

www.asu.edu/clas/chemistry

480/965-3461

PS D102

Robert E. Blankenship, Chair

Regents' Professors: Angell, Buseck, Pettit

Professors: Allen, Blankenship, Fromme, Fuchs, Glick, Gust, Holloway, Kouvetakis, Lohr, A. Moore, T. Moore, Petuskey, Rose, Shock, Skibo, Steimle, Williams, Woodbury

Associate Professors: Booksh, Hayes, Richert, Wolf

Assistant Professors: Caudle, Francisco, Ghirlanda, Gould, Matyushov, Seo, Wachter

Senior Lecturer: White

Lecturers: Bauer, Marks

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 *SQ* (4)

CHM 115 General Chemistry with Qualitative

Analysis *SQ* (5)

— or —

CHM 117 General Chemistry for Majors I *SQ** (4)

CHM 118 General Chemistry for Majors II *SQ** (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	29–30

* 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 MA ¹	4
MAT 271 Calculus with Analytic Geometry II MA ¹	4
PHY 111 General Physics SQ ^{2,3}	3
PHY 112 General Physics SQ ^{2,3}	3
PHY 113 General Physics Laboratory SQ ^{2,3}	1
PHY 114 General Physics Laboratory SQ ^{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 SQ (4)	
CHM 115 General Chemistry with Qualitative Analysis SQ (5)	
_____ or _____	
CHM 113 General Chemistry SQ (4)	
CHM 116 General Chemistry SQ (4)	
_____ or _____	
CHM 117 General Chemistry for Majors I SQ* (4)	
CHM 118 General Chemistry for Majors II SQ* (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 CS 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 L ²	1
CHM 349 Physical Chemistry Laboratory II L ²	1
CHM 452 Inorganic Chemistry Laboratory L ²	1
CHM 453 Inorganic Chemistry	3
CHM 460 Biological Chemistry	3
Chemistry elective (choose from the courses below)	3
CHM 302 Environmental Chemistry (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 481 Geochemistry (3)	
CHM 485 Meteorites and Cosmochemistry (3)	
Total	30

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 MA	4
MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	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
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 318.

CHEMISTRY—B.S.

Environmental Chemistry Concentration

The program consists of a minimum of 40 semester hours in chemistry or biochemistry and 26 hours of related courses. Required courses are as follows:

CHM 113 General Chemistry SQ	4
CHM 115 General Chemistry with Qualitative Analysis SQ	5

Choose between the course combinations below

- 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)

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 91.

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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	17

* CHM 117, 118, 317, 318, 319, and 320 are strongly recommended for qualified students.

Additional required chemistry and biochemistry courses are as follows:

CHM 240 Introduction to Physical Chemistry CS ¹	3
CHM 302 Environmental Chemistry	3
CHM 303 Environmental Chemistry Laboratory	2
CHM 327 Instrumental Analysis.....	3
CHM 328 Instrumental Analysis Laboratory.....	2
CHM 345 Physical Chemistry I.....	3
CHM 348 Physical Chemistry Laboratory I L.....	1
CHM 460 Biological Chemistry	3
CHM 481 Geochemistry	3
Total	23

Additional required related field courses are as follows:

GLG 321 Mineralogy.....	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
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
Related field elective (choose from the courses below).....	3
BIO 320 Fundamentals of Ecology (3)	
BIO 426 Limnology L (3)	
MIC 461 Geomicrobiology (3)	
Total	26

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.

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.A.

The program consists of a minimum of 38 semester hours in chemistry or biochemistry and 18 semester hours of related courses. Required courses are as follows:

Choose between the course combinations below.....	9 or 8
CHM 113 General Chemistry SQ (4)	
CHM 115 General Chemistry with Qualitative Analysis SQ (5)	
———— or ————	
CHM 113 General Chemistry SQ (4)	
CHM 116 General Chemistry SQ (4)	

———— or ————	
CHM 117 General Chemistry for Majors I SQ* (4)	
CHM 118 General Chemistry for Majors II SQ* (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 and biochemistry courses are as follows:

BCH 461 General Biochemistry	3
BCH 462 General Biochemistry	3
BCH 467 Analytical Biochemistry Laboratory L	3
Choose between the course combinations below.....	3
CHM 302 Environmental Chemistry (3)	
———— or ————	
CHM 325 Analytical Chemistry (3)	
CHM 341 Elementary Physical Chemistry*.....	3
Chemistry electives (choose from the courses below).....	6
BCH 392 Introduction to Research Techniques (1–3)	
BCH 463 Biophysical Chemistry (3)	
BCH 464 Biophysical Chemistry Laboratory (2)	
BCH 465 Protein and Nucleic Acid Biochemistry (3)	
CHM 302 Environmental Chemistry (3)	
CHM 325 Analytical Chemistry (3)	
CHM 326 Analytical Chemistry Laboratory (1)	
CHM 327 Instrumental Analysis (3)	
CHM 328 Instrumental Analysis Laboratory (2)	
CHM 392 Introduction to Research Techniques (1–3)	
CHM 424 Separation Science (3)	
CHM 452 Inorganic Chemistry Laboratory L (1–2)	
CHM 453 Inorganic Chemistry (3)	
CHM 471 Solid-State Chemistry (3)	
CHM 481 Geochemistry (3)	
Total	21

* CHM 345 may be taken in place of CHM 341.

Additional required related field courses are as follows:

Choose between the course combinations below.....	11 or 12
BIO 187 General Biology I SG (4)	
BIO 188 General Biology II SQ (4)	
BIO 340 General Genetics (4)	
———— or ————	
BIO 187 General Biology I SG (4)	
BIO 188 General Biology II SQ (4)	
BIO 353 Cell Biology (3)	
———— or ————	
MBB 245 Cellular and Molecular Biology (3)	
MBB 343 Genetic Engineering and Society L (4)	
MBB 350 Applied Genetics (4)	
Choose between the course combinations below.....	7
MAT 251 Calculus for Life Sciences MA ¹ (3)	
PHY 101 Introduction to Physics SQ ² (4)	

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	_____ or _____
MAT 210 Brief Calculus <i>MA</i> ¹ (3)	
PHY 101 Introduction to Physics <i>SQ</i> ² (4)	
Total	18 or 19

- ¹ MAT 270 may be taken in place of MAT 210 or 251.
² The combination of PHY 111, 112, 113, and 114 may be taken in place of PHY 101.

BIOCHEMISTRY—B.S.

The program consists of 36 semester hours in chemistry and biochemistry and 31 semester hours of related courses. Required courses are as follows:

Choose between the course combinations below.....	8 or 9
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 and biochemistry 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 392 Introduction to Research Techniques (1–3)	
BCH 465 Protein and Nucleic Acid Biochemistry (3)	
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>SG</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.

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.

BIOCHEMISTRY—B.S.

Medicinal Chemistry Concentration

The program consists of a minimum of 41 semester hours in chemistry or biochemistry and 26 hours of related courses. Required courses are as follows:

Choose between the course combinations below.....	8 or 9
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 and biochemistry courses are as follows:

BCH 461 General Biochemistry	3
BCH 462 General Biochemistry	3
BCH 463 Biophysical Chemistry.....	3
BCH 467 Analytical Biochemistry Laboratory <i>L</i>	3
CHM 341 Elementary Physical Chemistry.....	3
CHM 343 Physical Chemistry Laboratory.....	1
CHM 433 Advanced Organic Chemistry I.....	3
CHM 435 Medicinal Chemistry.....	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 91.

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Chemistry or biochemistry elective (choose from the courses below).....	3
BCH 465 Protein and Nucleic Acid Biochemistry (3)	
CHM 434 Advanced Organic Chemistry II (3)	
CHM 453 Inorganic Chemistry (3)	

Total25

Additional required related field courses are as follows:

Choose between the course combinations below.....	4
BIO 187 General Biology I <i>SG</i> (4)	
_____ or _____	
BIO 188 General Biology II <i>SQ</i> (4)	
_____ or _____	
MBB 245 Cellular and Molecular Biology <i>SQ*</i> (3)	
MBB 246 Cellular and Molecular Biology Laboratory <i>SQ*</i> (1)	

Total4

* Both MBB 245 and 246 must be taken to secure SQ credit.

Additional required related field courses are as follows:

BIO 353 Cell Biology.....	3
BIO 360 Animal Physiology ¹	3
MAT 270 Calculus with Analytic Geometry I <i>MA</i>	4
MAT 271 Calculus with Analytic Geometry I <i>MA</i>	4
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

Total22

¹ BIO 340 may be taken in place of BIO 360.

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.

MINOR IN CHEMISTRY

A minor in Chemistry is awarded to students who complete the following required courses:

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 <i>L</i> ³ (1)	

CHM 349 Physical Chemistry Laboratory II <i>L</i> ³ (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.

³ CHM 348, 349, and 452 must all be taken to secure L credit.

MINOR IN BIOCHEMISTRY

A minor in Biochemistry is awarded to students who complete the following required courses:

BCH 461 General Biochemistry.....	3
BCH 462 General Biochemistry.....	3

Choose between the course combinations below.....8 or 9

CHM 113 General Chemistry <i>SQ</i> (4)	
CHM 115 General Chemistry with Qualitative Analysis <i>SQ</i> (5)	

_____ or _____

CHM 113 General Chemistry *SQ* (4)

CHM 116 General Chemistry *SQ* (4)

_____ or _____

CHM 117 General Chemistry for Majors I *SQ*¹ (4)

CHM 118 General Chemistry for Majors II *SQ*¹ (4)

Choose between the combinations of courses below.....8

CHM 317 Organic Chemistry for Majors I ¹ (3)	
CHM 318 Organic Chemistry for Majors II ¹ (3)	
CHM 319 Organic Chemistry Laboratory for Majors I ¹ (1)	
CHM 320 Organic Chemistry Laboratory for Majors II 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)

CHM 341 Elementary Physical Chemistry².....3

Minimum total

¹ CHM 117, 118, 317, 318, 319, and 320 are strongly recommended for qualified students.

² CHM 345 may be taken in place of CHM 341.

B.I.S. CONCENTRATION

A concentration in chemistry is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see "Bachelor of Interdisciplinary Studies," page 123.

SECONDARY EDUCATION—B.A.E.

Chemistry. This degree is offered through the Initial Teacher Certification (ITC) program in the College of Education. Students pursuing a major in Secondary Education have an advisor in the College of Education and an advisor within the department of their academic specialization area.

See "College of Education," page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more informa-

tion, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

Academic Specialization ITC Admission Requirements.

The following courses must be completed with a "C" (2.00) or higher before applying to the ITC program: CHM 113, 115, 131, and 335. The following courses may be in progress when applying to the ITC program but must be completed with a "C" (2.00) or higher before starting the program: CHM 332 and 336.

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)	
CHM 453 Inorganic Chemistry.....	3
Total.....	30

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.

Teaching Methods

CHM 480 Methods of Teaching Chemistry.....	3
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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 480/965-1768.

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.

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. (3)

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. (3)

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 465 Protein and Nucleic Acid Biochemistry. (3)

spring

Structure and function of proteins and nucleic acids, including protein folding, enzymology, proteomics, DNA/RNA structure, replication, transcription, and genomics. Prerequisite: BCH 461.

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 91.

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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 484 Internship. (3)

selected semesters

BCH 494 Special Topics. (1–4)

selected semesters

Various topics.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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 warming, and others. Credit is allowed for only CHM 107 or 101 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 113 or 101 or 107 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 114 or 101 or 107 or 113 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 115 or 114 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 116 or 114 or 115 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 117 or 101 or 107 or 113 or 114. 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" (3.00) 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 118 or 114 or 115 or 116. 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" (3.00) 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" (2.00) or higher: MAT 272.

General Studies: CS

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 303 Environmental Chemistry Laboratory. (2)

spring

Lab in environmental chemistry to complement CHM 302. First-hand experience with sampling methods, analytical techniques, and environmental lab methods. Lab. Prerequisite: CHM 231 or 331. Pre- or corequisite: CHM 302.

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 317 or 231 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 331 or 231 or 317. 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 332 or 318. 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 335 or 319. 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 336 or 320. 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" (2.00) 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. Credit is allowed for both CHM 348 and 349 or only CHM 343. 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. Credit is allowed for both CHM 349 and 348 or only CHM 343. 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 433 Advanced Organic Chemistry I. (3)*fall*

Reaction mechanisms, reaction kinetics, linear free energy relationships, transition state theory, and Woodward-Hoffmann rules. Prerequisites: both CHM 318 (or 332) and 341 (or 346) or only instructor approval.

CHM 434 Advanced Organic Chemistry II. (3)*spring*

Continuation of CHM 433. Prerequisite: CHM 433 (or CHM 531) or instructor approval.

CHM 435 Medicinal Chemistry. (3)*spring*

Principles of medicinal and pharmaceutical chemistry. Drug design, synthesis, and mechanism of action. Prerequisites: a combination of BCH 361 (or 461) and BIO 353 and CHM 318 (or 332) 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.

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 484 Internship. (3)*selected semesters***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.

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 91.

CHM 494 Special Topics. (1–4)
selected semesters

Topics may include the following:

- Chemistry of Global Climate Change. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

Department of Chicana and Chicano Studies

www.asu.edu/clas/chicana

480/965-5091

COOR 6633

Cordelia Candelaria, Chair

Professor: Candelaria

Associate Professor: Escobar

Assistant Professors: Garcia, Leños, Magaña, Szkupinski-Quiroga

The Department of Chicana and Chicano Studies (CCS) is an interdisciplinary degree program whose central mission is to increase the direct participation of Mexican Americans and Latinos in the human and capital development of American society. This mission is advanced by the department’s core undergraduate curriculum and related programs that examine the culture, artistic achievements, history, and current status of people of Mexican descent and other Latinas and Latinos living in the United States. The curriculum combines a research-based understanding of the humanities, social sciences, and the arts with practical CCS applications (studio formats, internships, community research projects, etc.) as preparation for successful careers and productive public service in diverse communities.

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 in CCS, CSH, and CSS courses. The remaining course work must be in a related field and 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 <i>C</i>	3
CCS 111 Introduction to Chicana and Chicano Culture <i>C</i>	3
CCS 498 Pro-Seminar	3
HST 331 Mexican American History to 1900 <i>SB, C, H</i>	3
HST 332 Mexican American History Since 1900 <i>SB, C, H</i>	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 <i>C</i>	3
or CCS 111 Introduction to Chicana and Chicano Culture <i>C</i> (3)	
HST 417 Topics in Mexican American History <i>SB, C, H</i>	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.

B.I.S. CONCENTRATION

A concentration in Chicana and Chicano studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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)

fall
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 446 Teaching Chicana and Chicano Studies in the Schools. (3)***selected semesters*

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 63.

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" (2.00) 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)*fall*

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.

*General Studies: HU, C, G***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 484 Internship. (3)***selected semesters***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: HU, C***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.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

**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 63.

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 91.

Computational Biosciences

Interdisciplinary Master's Degree

www.asu.edu/compbiosci

480/965-5519

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)

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

Economics

The College of Liberal Arts and Sciences offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree in Economics. The B.S. degree is designed primarily for students intending to seek employment upon completion of their undergraduate studies. The B.A. degree is designed primarily for students intending to go on to graduate school or law school. The W. P. Carey School of Business also offers a B.S. degree in Economics. Faculty, course descriptions, and the major requirements in the W. P. Carey School of Business are listed under "Department of Economics," see page 175.

ECONOMICS—B.A.

The B.A. is designed to prepare students for graduate programs in economics, business, or law. Concurrent degree programs such as mathematics and physics coordinate well with the B.A. program in economics.

The requirements for the B.A. in Economics consist of three parts: the university requirements for all students at ASU, see "University Graduation Requirements," page 87; the requirements of the College of Liberal Arts and Sciences, see "College Degree Requirements," page 318; and the requirements of the Department of Economics.

Requirements of the Department of Economics. The program consists of at least 43 semester hours of course work distributed between economics and related fields as shown below. Students must earn grades of "C" (2.00) or higher in all courses in the major. If a student receives a grade below "C" (2.00) in any course in the major, this course must be repeated. Transfer students wanting to major in Economics must have a transfer GPA of at least 2.50 and are given a one-semester period to register and establish a GPA at ASU. In addition, students must meet all prerequisites and course requirements as listed in the catalog. These include

- A. Mathematics and Statistics: MAT 270, 271, and 272 or MAT 290 and 291; STP 226 or QBA 221; and ECN 470
- B. Principles of Economics: ECN 111 and 112
- C. Completion of 21 semester hours in economics courses and quantitative business analysis courses at the 300-level or above. These 21 hours must include
 1. Economic Theory: ECN 313 and 314;
 2. Econometrics and Statistics: ECN 425 or QBA 321 or QBA 410 or STP 421;
 3. a Capstone course or Honors Thesis: ECN 475 or 493; and
 4. economics electives at the 400-level or above to fill out the remaining hours. A maximum of three hours of ECN 484 Economics Internship can be used to satisfy this requirement. ECN 475 and 493 cannot be used to satisfy the requirement.

ECONOMICS—B.S.

The B.S. degree is designed to prepare students for employment in the private or public sectors of the economy. This program will provide students with the typical analytical and quantitative skills employers expect of individuals holding economics degrees.

Requirements for the College of Liberal Arts and Sciences B.S. in Economics consist of three parts: the university requirements for all students at ASU, see "University Graduation Requirements," page 87; the requirements of the College of Liberal Arts and Sciences, see "College Degree Requirements," page 318; and the requirements of the Department of Economics.

Requirements of the Department of Economics. The program consists of at least 45 semester hours of course work distributed between economics and related fields as shown below. Students must earn grades of "C" (2.00) or higher in all courses in the major. If a student receives a grade below "C" (2.00) in any course in the major, this course must be repeated. Transfer students wanting to major in Economics must have a transfer GPA of at least 2.50 and are given a one-semester period to register and establish a GPA at ASU. In addition, students must meet all prerequisites and course requirements as listed in the catalog. These include

- A. Mathematics and Statistics: MAT 210 or 270 or 290; STP 226 or QBA 221

- B. Principles of Economics: ECN 111 and 112
- C. Completion of 24 semester hours in economics courses and quantitative business analysis courses at the 300-level or above. At least four of these courses must be at the 400-level or above. These 24 semester hours must include
 - 1. Economic Theory: ECN 313 and 314;
 - 2. Econometrics and Statistics: ECN 425 or QBA 321 or QBA 410 or STP 421;
 - 3. a Capstone course or Honors Thesis: ECN 475 or 493; and
 - 4. Economics electives at the 300-level or above to fill out the remaining hours. A maximum of three hours of ECN 484 Economics Internship can be used to satisfy this requirement. ECN 475 and 493 cannot be used to satisfy the requirement.
- D. A total of nine semester hours from the Approved List of Related Field Courses.

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 328, for more information.

Certificate in International Business Studies. Students majoring in Economics may elect to pursue a Certificate in International Business Studies, combining courses from the major with selected international business courses. For more information see “Certificate in International Business Studies,” page 181.

Certificate in Quality Analysis. Students majoring in Economics may elect to pursue a Certificate in Quality Analysis, combining courses from the major with selected quantitative business analysis courses. For more information, see “Certificate in Quality Analysis,” page 170.

MINOR IN ECONOMICS

Minor in General Economics. This minor (and BIS area of concentration) requires 18 semester hours of course work which includes ECN 111 and 112, and 12 semester hours of economics courses at the 300-level or above for which all prerequisites have been met. The W. P. Carey School of Business does not permit its professional program students to enroll in this minor. Students must earn grades of “C” (2.00) or higher in all courses in the minor. If a student receives a grade below “C” (2.00) in any course in the minor, this course must be repeated.

Minor in Economics for Students Planning a Career in Law. This minor requires 18 semester hours of course work that includes ECN 111, 112, 314, 450, 453, and one additional economics or accounting course at the 300-level or above for which all prerequisites have been met. Students must earn grades of “C” (2.00) or higher in all courses in the minor. If a student receives a grade below “C” (2.00) in any course in the minor, this course must be repeated.

Honors Students

Students admitted to the Barrett Honors College may substitute ECN 294 ST: Macroeconomics for ECN 111 and 313, and ECN 294 ST: Microeconomics for ECN 112 and 314. These courses with grades of “C” (2.00) or higher satisfy the prerequisites and pre/corequisites for all upper-division economics courses.

B.I.S. CONCENTRATIONS

Concentrations in (1) economics and (2) economics for students planning a career in law are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

SECONDARY EDUCATION—B.A.E.

This degree is offered through the Initial Teacher Certification (ITC) program in the College of Education. Students pursuing a major in Secondary Education (Economics) have an advisor in the College of Education and an advisor within the Department of Economics.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

Academic Specialization ITC Admission Requirements. The following courses must be completed with a grade of “C” (2.00) or higher before applying to the ITC professional program:

ECN 111 Macroeconomic Principles <i>SB</i>	3
ECN 112 Microeconomic Principles <i>SB</i>	3
ECN 313 Intermediate Macroeconomic Theory <i>SB</i>	3
ECN 314 Intermediate Microeconomic Theory <i>SB</i>	3
MAT 210 Brief Calculus <i>MA</i>	3

Economics. The major teaching field consists of 45 semester hours and six hours in teaching methods. A minimum grade of “C” (2.00) is required in all academic specialization courses. Required major courses are as follows:

ECN 111 Macroeconomic Principles <i>SB</i>	3
ECN 112 Microeconomic Principles <i>SB</i>	3
ECN 313 Intermediate Macroeconomic Theory <i>SB</i>	3
ECN 314 Intermediate Microeconomic Theory <i>SB</i>	3
MAT 210 Brief Calculus <i>MA</i>	3
Choose one of the following courses	3
QBA 221 Statistical Analysis <i>CS</i> (3)	
STP 226 Elements of Statistics <i>CS</i> (3)	
Choose one of the following courses	3
ECN 425 Introduction to Econometrics <i>CS</i> (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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

QBA 321 Applied Quality Analysis I (3)	
QBA 410 Applied Business Forecasting (3)	
Choose one of the following courses	3
ECN 475 Capstone in Economics L (3)	
ECN 493 Honors Thesis L (3)	
Upper-division economics electives.....	12
Related area course*	9
Total	45

* Choose in consultation with an economics advisor.

Teaching Methods

SED 480 Methods of Teaching Social Studies.....	3
Additional teaching methods course*	3
Total	6

* Choose in consultation with an education advisor.

Minor Teaching Field. 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 economics advisor in consultation with the student.

Social Studies. This degree is offered through the Initial Teacher Certification program in the College of Education. Students pursuing a major in Secondary Education have an advisor in the College of Education and an advisor within the department of their academic specialization area.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, 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 175.

COURSES

For courses, see “Economics (ECN),” page 176.

Department of English

www.asu.edu/clas/english

480/965-3168

LL 542

Neal Lester, Chair

Regents’ Professors: Carlson, Dubie, Ríos

Professors: Adams, Bjork, Boyer, Brack, Candelaria, Crowley, Goldberg, Gutierrez, Helms, Hogue, Horan, Kehl, Lester, Major, Miller, A. Nilsen, D. Nilsen, Rhodes, Roen, Tobin, van Gelderen

Associate Professors: Bates, Bivona, Castle, Chancy, Corse, DeLamotte, M. Goggin, Johnson, Lussier, Mahoney, McNally, Morgan, Nelson, Perry, Pritchard, Ramage, Savard, Schwalm, Tohe, Voaden

Assistant Professors: Blasingame, Fox, Fuse, P. Goggin, Lockard, Milun, Parchesky, Webb Peterson

Senior Lecturers: Cook, Cooper, Duerden, Dugan, Dwyer, Heenan, Norton, Sudol, Wheeler

Lecturers: Binkley, Duttagupta, Stancliff

Academic Associate: McNeil

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>LHU</i>	3
ENG 213 Introduction to the Study of Language	3
ENG 221 Survey of English Literature <i>HU</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” (2.00) 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</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” (2.00) 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</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” (2.00) 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</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>L/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” (2.00) or higher is required in all courses taken for the minor.

B.I.S. CONCENTRATIONS

Four concentrations in English (creative writing, linguistics concentration, literature concentration, and writing certificate) are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

WRITING CERTIFICATE

The Writing Certificate consists of 19 semester hours. Initial entry into the program requires a minimum GPA of 3.00 in ENG 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 Internship: Writing Certificate	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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

SECONDARY EDUCATION—B.A.E.

This degree is offered through the Initial Teacher Certification (ITC) program in the College of Education. Students pursuing a major in Secondary Education with an academic specialization in English have an advisor in the College of Education and an advisor within the Department of English.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

Academic Specialization ITC Admission Requirements.

The following courses must be completed with a grade of “C” (2.00) or higher before applying to the ITC professional program:

ENG 200 Critical Reading and Writing About Literature <i>L/HU</i>	3
At least three additional required courses in the academic specialization	9

English. The major teaching field consists of 39 semester hours with an additional six hours of teaching methods in English. A grade of “C” (2.00) or higher is required in all academic specialization courses. 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</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
or ENG 422 Studies in Shakespeare <i>HU</i> (3)	
ENG 471 Literature for Adolescents <i>HU</i>	3
An upper-division course in women’s literature	
or American ethnic literature	3
Electives	3
Upper-division electives.....	6
Total	39

Teaching Methods

ENG 480 Methods of Teaching English: Composition <i>L</i>	3
ENG 482 Methods of Teaching English: Language <i>L</i>	3
Total	6

Minor Teaching Field. 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</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)	
ENG 352 Short Story <i>L/HU</i> (3)	
A course in women’s or American ethnic literatures (3)	
Total	24

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” (2.00) 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.

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 76, and “First-Year Composition Requirement,” page 87.

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” (2.00) 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 76, and “First-Year Composition Requirement,” page 87.

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" (2.00) 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, G, 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" (3.00) 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***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

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 91.

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ENG 325 Restoration and the 18th Century. (3)

once a year

Writers and movements in nondramatic literature of the restoration and early 18th 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.

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.

General Studies: HU

ENG 330 19th-Century British Poetry. (3)

selected semesters

Romantic and Victorian poets studied in context. May be repeated for credit when topics vary. Lecture, discussion. 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/HU

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.

General Studies: HU

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 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: L/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.

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.

General Studies: HU

ENG 372 Document Production. (3)

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.

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.

General Studies: L

ENG 400 History of Literary Criticism. (3)

selected semesters

Major critics and critical traditions in the Western world. See ENG Notes 1, 2, 3. 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, 3. 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: ENG 213 or 312 or 314 or 413 or instructor approval.

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: 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. Topics may include the following:

- Feminist Political Writing in Contemporary Europe. (3)
Examines the discourse of gender-politics in Central Eastern Europe before and after Soviet hegemony. Cross-listed as FLA 461. Credit is allowed for only ENG 429 or FLA 461.
- Literature and Film in 20th-Century Eastern Europe. (3)
Evaluates literary texts and films as a massive propaganda machine of the totalitarian state. Cross-listed as FLA 476. Credit is allowed for only ENG 429 or FLA 476.
- Literature and Politics in Pre- and Post-Communist Europe. (3)
Interdisciplinary examination of the cultures of Eastern Europe from WWI to the present. Cross-listed as FLA 472. Credit is allowed for only ENG 429 or FLA 472.
- Politics of Drama in 20th-Century Europe. (3)
Interdisciplinary examination of European drama before and after WWII. Cross-listed as FLA 464. Credit is allowed for only ENG 429 or FLA 464.

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.

General Studies: HU, C

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.

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 91.

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ENG 444 Studies in American Romanticism. (3)

once a year

Fiction, poetry, and essays of such 19th-century authors as Hawthorne, Emerson, Melville, Thoreau, Fuller, Whitman, and Dickinson. May be repeated for credit when topics vary. 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.

General Studies: HU

ENG 447 Studies in Postmodernism. (3)

selected semesters

Literary, social, and cultural issues. 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 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. Topics may include the following:

- African American Short Story

General Studies: L

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: L/HU

ENG 465 Studies in Film. (3–4)

selected semesters

Advanced topics in cinema. May be repeated for credit when topics vary. 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.

General Studies: L/HU

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" (2.00) 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)
 - Fee.
 - Writing Certificate. (3)

ENG 493 Honors Thesis. (1–6)

selected semesters

General Studies: L

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)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

LINGUISTICS (LIN)

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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 63.

Department of Family and Human Development

www.asu.edu/clas/fhd

480/965-6978

COWDN 106

Richard A. Fabes, Chair

Professors: Christopher, Fabes, Griffin, Ladd, Martin, Roosa

Associate Professors: Dumka, Hanish, Madden-Derdich, Neff, Updegraff

Assistant Professors: Gager, Liu, Spinrad, Valiente

Senior Lecturers: Bodman, Weigand

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. The mathematics proficiency must be met by completing MAT 117 or higher.

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 338 Child Development Practicum	3
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
FAS 484 Internship	3
or FAS 390 Supervised Research Experience (3)	

FAS 498 Pro-Seminar	3
Total	33

In addition, nine semester hours of unrestricted electives must be taken from the following:

CDE 337 Early Childhood Intervention	3
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)	
FAS 499 Individualized Instruction	3
or CDE 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 484 Internship	1-3

One statistics course is required; students may choose from courses such as PSY 230 Introduction to Statistics or EDP 454 Statistical Data Analysis in Education.

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 semester 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

B.I.S. CONCENTRATION

A concentration in family studies/child development is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see "Bachelor of Interdisciplinary Studies," page 123.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

SECONDARY EDUCATION—B.A.E.

Family and Human Development. Applications are not being accepted at this time.

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 337 Early Childhood Intervention. (3)

fall

Explores how child development theory affects practice with children and families, emphasizing development of young children and early intervention. Prerequisite: CDE 232 (or its equivalent).

CDE 338 Child Development Practicum. (2–4)

fall, spring, summer

Supervised practicum in the Child Development Lab preparing students for work in child care centers and agencies serving young children and families. May be repeated for credit. 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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

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 and spring

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

FAS 331 Marriage and Family Relationships. (3)

fall and spring

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 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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

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 63.

Department of Geography

geography.asu.edu
480/965-7533
SCOB 330

Breandán Ó hUallacháin, Chair

Professors: Arreola, Balling, Brazel, Burns, Cervený, Dorn, Gober, Ó hUallacháin, Pasqualetti, Zehnder

Associate Professors: Fall, Kuby, McHugh

Assistant Professors: Edsall, Ellis, Keys, Li, Lukinbeal, Schmeckle, 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” (2.00) 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 a minimum 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), core geographic skills (12 semester hours), a regional course (three semester hours), and electives (12 semester hours), for a minimum of 37 semester hours in geography. At least 18 semester hours in geography must be in upper-division courses. The remaining 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>SQ</i>	4
or GPH 411 Physical Geography (3)	
Total	10–11

* Completion of three semester hours of transfer course work can also be used to fulfill this requirement.

Core Geographic Skills

GCU 495 Quantitative Methods in Geography <i>CS</i>	3
GCU 496 Geographic Research Methods <i>L</i>	3
GPH 371 Introduction to Cartography and Georepresentation <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.....

GCU 322 Geography of U.S. and Canada <i>SB, C</i> (3)	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 326, and “Southeast Asian Studies,” page 329.

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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

15 hours in geography (or in courses approved by the Department of Geography advisor) and 15 in other disciplines. A reading knowledge of either 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 328, for more information.

GEOGRAPHY—B.S.

The B.S. degree consists of courses in core geographic knowledge (10–11 semester hours), core geographic skills (12 semester hours) and a geographic techniques course (from three to four semester hours), and electives (12 semester hours)—for a minimum of 37 semester hours in geography. At least 18 semester hours in geography must be in upper-division courses. The remaining 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>SQ</i>	4
or GPH 411 Physical Geography (3)	
Total	10–11

* Completion of three semester hours of transfer course work can also be used to fulfill this requirement.

Core Geographic Skills

GCU 495 Quantitative Methods in Geography <i>CS</i>	3
GCU 496 Geographic Research Methods <i>L</i>	3
GPH 371 Introduction to Cartography and Georepresentation <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.....	3–4
GPH 372 Air Photo Interpretation (3)	
GPH 373 Geographic Information Science I <i>CS</i> (4)	
GPH 471 Geographics: Interactive and Animated Cartography and Geovisualization <i>CS</i> (3)	

The remaining four courses (12 semester 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 40 semester hours in geography plus course work in mathematics and physics:

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 370 Geographic Information Technologies <i>CS</i>	3
GPH 371 Introduction to Cartography and Georepresentation <i>CS</i>	3
GPH 491 Geographic Field Methods.....	3
Total	25–26

* Completion of three semester hours of transfer course work can also be used to fulfill this requirement.

Required Meteorology Courses

GPH 213 Introduction to Climatology <i>SG</i> *.....	3
GPH 215 Introduction to Climatology Laboratory <i>SG</i> *.....	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

* Both GPH 213 and 215 must be taken to secure *SG* credit.

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> 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.

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 Introduction to Cartography and Georepresentation <i>CS</i>	3
GPH 373 Geographic Information Science I <i>CS</i>	4
GPH 491 Geographic Field Methods.....	3
Total	26–27

* Completion of three semester hours of transfer course work can also be used to fulfill this requirement.

Required Urban Studies Courses

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)	
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)	
Urban studies total	15

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” (2.00) 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> or GPH 411 Physical Geography (3)	4
Total	6-7

The remaining courses are selected in conjunction with an advisor. At least one course should be a geographic skill. Possible courses include: Geographic Information Technologies (GPH 370), Introduction to Cartography and Georepresentation (GPH 371), Air Photo Interpretation (GPH 372), Geographic Field Methods (GPH 491), or a course in Geographic Information Science (GPH 373). At least four courses should be upper-division courses in geography.

UNDERGRADUATE CERTIFICATE IN GEOGRAPHIC INFORMATION SCIENCE

This cross-disciplinary certificate is designed for undergraduates wishing to pursue a GIS-related career. The certificate is awarded to students completing the following 19 semester hours with a grade of “C” or higher.

Required courses

CSE 100 Principles of Programing with C++ <i>CS</i>	3
GCU 495 Quantitative methods in Geography <i>CS</i>	3
GPH 370 Geographic Information Technologies <i>CS</i>	3
GPH 373 Geographic Information Science I <i>CS</i>	4
GPH 473 Geographic Information Science II (Capstone course) <i>CS</i>	3

Elective Courses

Choose one courses below	3
ABS 485 GIS in Natural Resources (3)	
ABS 586 Remote Sensing in Environmental Resources (3)	
GCU 361 Urban Geography <i>SB</i> (3)	
GCU 441 Economic Geography <i>SB</i> (3)	
GCU 442 Geographical Analysis of Transportation <i>SB</i> (3)	
GPH 371 Introduction to Cartography and Georepresentation <i>CS</i> (3)	
GPH 372 Air Photo Interpretation (3)	
GPH 471 Geographics: Interactive and Animated Cartography and Geovisualization <i>CS</i> (3)	
GPH 481 Environmental Geography (3)	
GPH 483 Geographic Information Analysis (3)	
GPH 484 Three credit hour GIS based internship (3)	

PLB 434 Landscape Ecological Modeling (3)	
Total	19

B.I.S. CONCENTRATIONS

Five concentrations in Geography (geography, environmental geography, geographical information science, geography for business, and international geography) are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

SECONDARY EDUCATION—B.A.E.

This degree is offered through the Initial Teacher Certification (ITC) program in the College of Education. Students pursuing a major in Secondary Education (Geography) have an advisor in the College of Education and an advisor within the Department of Geography.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

Academic Specialization ITC Admission Requirements.

At least three required courses in the academic specialization must be completed with a grade of “C” (2.00) or higher before applying to the ITC professional program.

Geography. The major teaching field consists of 30 semester hours and six hours in teaching methods. A grade of “C” (2.00) or higher is required in all academic specialization courses. Required major courses are as follows:

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
GPH 210 Society and Environment <i>G</i> or GPH 211 Landform Processes <i>L</i> (3) or GPH 212 Introduction to Meteorology <i>SQ</i> ¹ (3) and GPH 214 Introduction to Meteorology Lab <i>SQ</i> ¹ (1) or GPH 314 Global Change <i>HU, G</i> (3)	3-4
GCU 141 Introduction to Economic Geography <i>SB, G</i> or GCU 351 Population Geography <i>SB, G</i> (3) or GCU 361 Urban Geography <i>SB</i> (3)	3
Electives ²	12-13
Minimum total	30

¹ Both GPH 212 and 214 must be taken to secure *SQ* credit.

² Electives must be upper-division level geography courses chosen in conjunction with an advisor.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

Teaching Methods

GCU 414 Teaching Geography Standards	3
SED 480 Social Studies Methods.....	3
Total	6

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. Fee.

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 and spring

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: HU, 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 and spring

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)

fall and spring

Broad and systematic overview of Europe, emphasizing physical, economic, and cultural phenomena.

General Studies: SB, G

GCU 326 Geography of Asia. (3)

once a year

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)

selected semesters

Spatial distribution of relevant physical, economic, and cultural phenomena in Australia, New Zealand, and Pacific Islands.

General Studies: SB, G

GCU 344 Geography of Hispanic Americans. (3)

fall

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. Fee.

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

Introduces 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)
selected semesters

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. Field trips. 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 432 Geography of China. (3)
selected semesters

Examines the physical, economic, cultural, social, demographic, agricultural, political, historical, and environmental aspects of the geography of China. Lecture, discussion. Prerequisite: GCU 326 or instructor approval.

General Studies: SB, G

GCU 433 Geography of Southeast Asia. (3)
selected semesters

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)
selected semesters

Current urban transportation issues in metropolitan Phoenix. Lecture, team project. Fee. 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 in the K–12 Classroom. (3)
- 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. Fee. Prerequisite: MAT 119.

General Studies: CS

GCU 496 Geographic Research Methods. (3)
fall and spring

Scientific techniques used in geographic research. Fee. Prerequisites: GCU 495; GPH 371, 491.

General Studies: L

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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)

once a year

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: SQ (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.

General Studies: SG (if credit also earned in GPH 215)

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: SQ (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.

General Studies: SG (if credit also earned in GPH 213)

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

GPH 271 Maps and Map Reading. (3)

selected semesters

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 Introduction to Cartography and Georepresentation. (3)

fall and spring

Study and creation of maps. Fundamental mapping principles (projection, scale, generalization, symbolization) and computer-based cartographic production. Lecture, lab. 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)

fall and spring

History and basic aspects of GIS, including map and data file structure, conversions, and synthesis with a computerized environment. Fee. 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

GPH 401 Topics in Physical Geography. (1–3)

selected semesters

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. Fee. Prerequisite: a course in physical or life sciences or instructor approval.

GPH 409 Synoptic Meteorology I. (4)

selected semesters

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)

selected semesters

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)

once a year

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)

once a year

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 Geographics: Interactive and Animated Cartography and Geovisualization. (3)

selected semesters

Advanced cartography, stressing influence and application of the computer on geographic representation. Emphasizes creation of maps for the Internet. Lecture, lab. Fee. Prerequisite: 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. Fee. Prerequisites: GPH 373 (or instructor approval); CSE 100.

General Studies: CS

GPH 474 Dynamic Meteorology I. (3)

selected semesters

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)

selected semesters

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)

selected semesters

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)

selected semesters

Basics of spatial data analysis. Topics include point pattern analysis, spatial autocorrelation, spatial regression, and kriging. Lecture, lab. Fee. 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 Internship. (1–12)

selected semesters

Topics may include the following:

- Physical Geography Internship. (3)
fall and spring
Assist in teaching sixth-grade students a simplified version of GPH 111 using hands-on activities.
- Service Learning
fall, spring, summer
Fee.

GPH 491 Geographic Field Methods. (3)
once a year

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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

Department of Geological Sciences

geology.asu.edu

480/965-5081

PS F686

James A. Tyburczy, Chair

Regents’ Professors: Buseck, Christensen, Greeley

Dee and John Whiteman Dean’s Distinguished Professor: Leshin

Professors: Burt, Farmer, Fink, Holloway, Knauth, Peacock, Reynolds, Shock, Stump, Tyburczy, Williams

Associate Professors: Anbar, Arrowsmith, Sharp

Assistant Professors: Clarke, Fouch, Garnero, Hartnett, Semken

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 <i>L</i>	3

GLG 452 Field Geology II <i>L</i>	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 418 Geophysics	3
GLG 430 Paleontology	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 318.

Supporting courses required in related fields include the following:

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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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.

B.I.S. CONCENTRATION

A concentration in geological sciences is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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

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)

fall

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)

spring

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 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 404 Fundamentals of Planetary Geology. (3)

fall

Surveys planetary topics, including impacts, tectonics, and volcanism on planetary objects, and use of spacecraft data, including geological mapping. Lectures, problem sets, weekend field trip. Fee. Prerequisite: Geology major or degree 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 430 Paleontology. (3)*fall*

Introduces concepts and analytical techniques in biogeology, paleontology, 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 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. Fee. Prerequisites: GLG 310, 321.

*General Studies: L***GLG 452 Field Geology II. (3)***summer*

Continuation of GLG 451. Lab. Fee. 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 Internship. (1-4)*selected semesters*

Topics may include the following:

- Geology Internship. (3)

fall and spring

Assist in teaching fifth-grade students a simplified version of GLG 103 using hands-on activities.

- Service Learning

fall, spring, summer

Fee.

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.

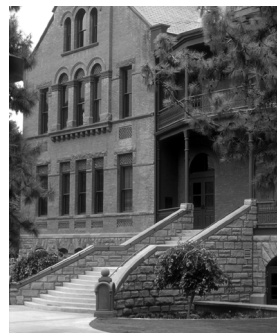
GLG 495 Undergraduate Thesis. (3)*fall, spring, summer*

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*

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.



Old Main

Tim Trumble photo

Department of History

www.asu.edu/clas/history

480/965-5778

COOR 4595

Noel J. Stowe, Chair

CORE FACULTY

Regents' Professor: Iverson

Professors: Adelson, Batalden, Burg, Davis, Fuchs, Gratton, Green, Lavrin, MacKinnon, Rosales, Simpson, Stowe, Tillman, Warnicke

Associate Professors: Barnes, Carroll, El Hamel, Gray, Gullett, Longley, Powers, Rush, Samuelson, Smith, Soergel, Stoner, Thompson, Thornton, VanderMeer, Warren-Findley, Wright

Assistant Professors: Kaplan, Koopmans, Manchester, Pitti, Plotkin, Whitaker, Wilson

Senior Instructional Professional: Luey

AFFILIATED FACULTY

Art

Associate Professor: Brown

Chicana and Chicano Studies

Associate Professor: Escobar

Interdisciplinary Humanities

Assistant Professor: Taylor

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 302–307 “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 302–307 “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 326, 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 327, 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 328, 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 328, 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 328, 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 329, 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 330, 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 complete one 12 hour HST concentration (geographic or thematic), HST 300, and 498. The Department of History requires a grade of at least “C” (2.00) in all courses in the minor. A minimum of six upper-division hours in the minor must be taken in residence at ASU Main.

B.I.S. CONCENTRATION

A concentration in history is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

SECONDARY EDUCATION—B.A.E.

This degree is offered through the Initial Teacher Certification (ITC) program in the College of Education. Students pursuing a major in Secondary Education with an academic specialization in history have an advisor in the College of Education and an advisor within the Department of History.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

Academic Specialization ITC Admission Requirements.

At least four required courses in the academic specialization must be completed with a grade of “C” (2.00) or higher before applying to the ITC professional program.

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. Six hours of teaching methods courses are also required. A minimum grade of “C” (2.00) is required in all academic specialization courses. Required major courses are as follows:

HST 300 Historical Inquiry <i>L/SB, H</i>	3
HST 498 PS: History Pro-Seminar <i>L</i>	3
U.S. history courses	15
HST electives* (non-U.S. history courses)	9
Related areas*	12
Total	42

* Choose in consultation with a department advisor.

Teaching Methods

HST 480 Methods of Teaching History: Classroom Resources	3
HST 481 Methods of Teaching History: Community Resources	3
Total	6

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 the ITC program and for graduation. HST 480 and 481 may not be counted as part of the 42-hour requirement for the academic specialization.

Social Studies. An academic specialization in social studies is also available. Students pursuing a major in Secondary Education have an advisor in the College of Education and an advisor within the department of their academic specialization area.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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 205 Historical Themes in Africa. (3)

fall and spring

General introduction to selected themes in African history. May be repeated for credit when topics vary.

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

HST 240 Introduction to Southeast Asia. (3)

fall and spring

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: HU, 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. May be repeated for credit when 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. May be repeated for credit when topics vary.

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. May be repeated for credit when topics vary.

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. May be repeated for credit when topics vary.

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. May be repeated for credit when topics vary.

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. May be repeated for credit when topics vary.

General Studies: SB, H

HST 307 Studies in African History. (3)

fall and spring

Specialized topics in African history. Explores countries, cultures, and issues in history, and their interpretation in historical scholarship. May be repeated for credit when topics vary.

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 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, C, 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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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, HU, 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

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 379 Rebellion and Revolution in South America. (3)

fall and spring

Political, economic, and social development of Spanish-speaking nations in South America.

General Studies: SB, 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*

1920s 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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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 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

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. Pre- or corequisites: SED 403, 598.

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. Prerequisite: HST 480.

HST 484 Internship. (1–6)

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 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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

SCHOLARLY PUBLISHING (PUB)

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

Interdisciplinary Humanities Program

www.asu.edu/clas/humanities

480/965-6747

LL 641

Peter Lehman, Director

Interdisciplinary Humanities

Professors: Kugelmass, Lehman

Associate Professors: Baker, Privateer, Taylor

Assistant Professors: Duncan, Lund, Romeyn

Academic Professional: Gonzales-Macias

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 42 semester hours of interdisciplinary humanities courses from two components: (1) an interdisciplinary core of 18 hours and (2) an area of concentration of 24 hours.

Interdisciplinary Core

Issues, Methods, and Theory

HUM 200 Encountering the Humanities.....	3
HUM 394 ST: Humanities in the Western World.....	3
HUM 440 Los Angeles and Cultural Theory <i>HU, C</i>	3
HUM 498 Pro-Seminar in the Humanities.....	3

Electives

Three semester hours in each of the remaining areas of study.....	6
Total	18

Areas of Study

Required courses from list obtained from advisor.....	24
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Courses must be selected from an approved list or be approved in advance by the undergraduate advisor. Areas of study include cultures in contact, visual culture, and the body. An undergraduate major may also earn a certificate in Classical Studies.

Students must receive grades of “C” (2.00) or higher in all courses for the major.

MINOR IN HUMANITIES

The following courses are required for the minor:

HUM 110 Contemporary Issues in Humanities <i>HU</i>	3
or HUM 200 Encountering the Humanities <i>HU</i> (3)	
HUM 394 ST: Humanities in the Western World.....	3
HUM 440 Los Angeles and Cultural Theory <i>HU, C</i>	3
Three approved upper-division HUM courses.....	9
Total	18

B.I.S. CONCENTRATION

A concentration in humanities is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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 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)
- Introduction to Film

Fee.

• Introduction to Southeast Asia

• Non-Western Cultures. (3)

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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

- Humanities in the Western World. (3)
- 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: 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 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

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: 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)
- Gender and Sexuality in the Ancient World. (3)
- Global Media Studies. (3)
- Italian/American Culture. (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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

Department of Kinesiology

www.asu.edu/clas/kines

480/965-3875

PEBW 218

Daniel M. Landers, Interim Chair

Regents’ Professor: Landers

Professors: Darst, Matt, Stelmach

Associate Professors: Hinrichs, Morgan, Treasure, Willis

Assistant Professors: Etnier, Kulinna, Ringenbach, Santello

Senior Lecturer: Landers

Lecturers: Broman, Orlowicz

KINESIOLOGY—B.S.

The B.S. degree in Kinesiology consists of 42 semester hours, including 21 semester hours of required KIN core courses (KIN 110 may be repeated for credit). The remaining 21 semester hours of KIN and other courses are prescribed by the specific concentration the student selects.

Each KIN 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.

The required KIN core courses are as follows:

KIN 110 Movement Analysis Laboratory.....	6
KIN 200 Introduction to Kinesiology	2
KIN 335 Biomechanics	3
KIN 340 Physiology of Exercise	3
KIN 345 Motor and Developmental Learning	3
KIN 352 Psychosocial Aspects of Physical Activity <i>SB, C</i>	3
KIN 498 PS: Kinesiology and the Future	1
Total	21

All prerequisite and KIN courses must be completed with a minimum grade of “C” (2.00). The requirements for the specific concentrations are described below.

Majors must elect either the exercise science, movement science, or teacher preparation concentration.

Concentrations

Each concentration requires 21 semester hours.

Exercise Science. This concentration is designed for the student interested in more applied aspects of exercise and sport performance, e.g., strength and conditioning, sports medicine, sport skill acquisition, exercise physiology, biomechanical techniques in exercise and sport, and sport psychology.

- Choose from among the courses below9
 - KIN 334 Functional Anatomy and Kinesiology (3)
 - KIN 448 Applied Sport Psychology *L* (3)
 - KIN 484 Internship (6)
 - KIN 494 ST: Interpretation of Exercise Performance (3)
- Choose from among the courses below12
 - KIN 283 Prevention and Care of Athletic Injuries (3)
 - KIN 348 Psychological Skills for Optimal Performance *SB* (3)
 - KIN 370 Advanced First Aid (3)
 - KIN 412 Biomechanics of the Skeletal System (3)
 - KIN 413 Qualitative Analysis in Sport Biomechanics (3)
 - KIN 441 Physiology of Women in Sport *L* (3)
 - KIN 442 Fuel Metabolism (3)
 - KIN 444 Metabolic Adaptations to Exercise Training (3)
 - KIN 445 Exercise Physiology for Children and Adolescents (3)
 - KIN 450 Biopsychosocial Perspectives on Physical Activity and Health (3)
 - KIN 460 Theory of Strength Training *L* (3)
 - KIN 485 Advanced Techniques of Athletic Training (3)
 - KIN 494 ST: Environmental Exercise Physiology (3)
 - KIN 494 ST: Physiological Bases for Exercise and Sport (3)
 - KIN 494 ST: Sport and Social Issues (3)

Other KIN courses may be substituted with advisor approval.

Movement Science. This concentration is designed for students interested in prehealth professions, biomechanical, physiological, motor control, and/or psychological mechanisms underlying human movement performance. Students interested in pursuing postbaccalaureate training in one of several possible professions in the health care industry (e.g., physical therapy, recreational therapy, occupational therapy, physician’s assistant, medicine, dentistry, podiatry, chiropractic, etc.) will also find this concentration applicable. Additional course work in the sciences must be completed (consult with the department for a list).

- Choose from among the courses below9
 - KIN 484 Internship (6)
 - KIN 492 Honors Directed Study: Research (6)
 - KIN 493 Honors Thesis (6)
 - KIN 494 ST: Research Methods (3)
 - KIN 499 Individualized Instruction (1–6)
- Choose from among the courses below12
 - KIN 334 Functional Anatomy and Kinesiology (3)
 - KIN 370 Advanced First Aid (3)
 - KIN 412 Biomechanics of the Skeletal System (3)
 - KIN 414 Electromyographic Kinesiology *L* (3)
 - KIN 421 Human Motor Control (3)

- KIN 422 Motor Control in Special Populations (3)
- KIN 423 Motor Control and Aging (3)
- KIN 440 Exercise Biochemistry (3)
- KIN 442 Fuel Metabolism (3)
- KIN 443 Exercise Endocrinology *L* (3)
- KIN 445 Exercise Physiology for Children and Adolescents (3)
- KIN 450 Biopsychosocial Perspectives on Physical Activity and Health (3)
- KIN 452 Exercise Psychology *SB* (3)
- KIN 494 ST: Muscle Physiology (3)
- KIN 494 ST: Voluntary and Reflex Control of Movement (3)

Teacher Preparation. This concentration is designed for the student interested in a physical education teaching career at the elementary or secondary school level; the concentration is also appropriate for students interested in coaching, youth sports, and recreation.

Required Courses

- KIN 361 Physical Education in the Secondary School.....3
- KIN 376 Physical Education for the Elementary School.....3
- KIN 382 Adaptive and Inclusive Physical Education.....3
- Choose from among the courses below12
 - KIN 100 Introduction to Health Wellness *SB* (3)
 - KIN 283 Prevention and Care of Athletic Injuries (3)
 - KIN 290 Sports Officiating (3)
 - KIN 292 Sports Officiating (3)
 - KIN 334 Functional Anatomy and Kinesiology (3)
 - KIN 348 Psychological Skills for Optimal Performance *SB* (3)
 - KIN 370 Advanced First Aid (3)
 - KIN 400 Teaching Physical Activity Concepts *L* (3)
 - KIN 413 Qualitative Analysis in Sport Biomechanics (3)
 - KIN 441 Physiology of Women in Sport *L* (3)
 - KIN 445 Exercise Physiology for Children and Adolescents (3)
 - KIN 448 Applied Sport Psychology *L* (3)
 - KIN 460 Theory of Strength Training *L* (3)
 - KIN 484 Internship (6)
 - KIN 494 ST: Administration of Athletics (3)
 - KIN 494 ST: Research and Teaching in Physical Education (3)
 - KIN 494 ST: Sport and Social Issues (3)

SECONDARY EDUCATION—B.A.E.

This degree is offered through the Initial Teacher Certification program in the College of Education. Students pursuing a major in Secondary Education have an advisor in the College of Education and an advisor within the department of their academic specialization area.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

Physical Education. Candidates for the B.A.E. degree are required to complete the following courses in physical education in addition to the required KIN 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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

KIN 361 Physical Education in the Secondary School.....	3
KIN 376 Physical Education for the Elementary School.....	3
KIN 382 Adaptive and Inclusive Physical Education.....	3
KIN 480 Methods of Teaching Physical Education.....	3
KIN elective*	3
Total	15

* See an advisor for approved electives.

Academic Specialization Admission Requirements. The following courses must be completed with a “C” (2.00) or higher *before* applying to the ITC program:

At least three KIN core courses	9
At least four semester hours of KIN 110	4
MAT 117 College Algebra <i>MA</i>	3

The following courses must be completed or in progress when applying to the ITC program:

BIO 201 Human Anatomy and Physiology I <i>SG</i>	3
BIO 202 Human Anatomy and Physiology II.....	3
CHM 101 Introductory Chemistry <i>SQ</i>	3
PGS 101 Introduction to Psychology <i>SB</i>	3
PHY 111 General Physics <i>SQ</i> *.....	3

* Both PHY 111 and 113 must be taken to secure *SQ* credit.

Students must also complete a three-semester Physical Education Teacher Certification Program professional sequence in the College of Education (23 semester hours).

MINOR IN KINESIOLOGY

The minor in Kinesiology consists of the core sequence in exercise science and physical education as follows, plus all prerequisite courses:

KIN 110 Movement Analysis Laboratory.....	4
KIN 200 Introduction to Kinesiology	2
Choose from among the courses below	9
KIN 335 Biomechanics (3)	
KIN 340 Physiology of Exercise (3)	
KIN 345 Motor and Developmental Learning (3)	
KIN 352 Psychosocial Aspects of Physical Activity <i>SB, C</i> (3)	
KIN upper-division electives*	6
Total	21

* Excluding KIN 305, 310, 484, 492, and 493

The minor is not open to Kinesiology majors or Secondary Education majors in the College of Education pursuing an academic specialization in physical education.

B.I.S. CONCENTRATION

A concentration in kinesiology is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

GRADUATE PROGRAMS

The faculty in the Department of Kinesiology offer programs leading to the Master of Physical Education degree and the M.S. degree in Kinesiology. 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.

HEALTH SCIENCE (HES)

HES 100 Introduction to Health and Wellness. (3)

fall and spring

Current concepts in health, exercise, and wellness. Emphasis placed on personal health, theories, attitudes, beliefs, and behaviors. Cross-listed as EXW 100/KIN 100. Credit is allowed for only EXW 100 or HES 100 or KIN 100.

General Studies: SB

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

KINESIOLOGY (KIN)

KIN 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.

KIN Note 2. Physical education activity classes (KIN 105, 205, 305, 310) may not be taken for audit. Excessive absences and/or tardiness are considered disruptive behavior.

KIN 100 Introduction to Health and Wellness. (3)

fall and spring

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 EXW 100 or HES 100 or KIN 100.

General Studies: SB

KIN 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. See KIN Notes 1, 2.

- Aerobics
Fee.
- Archery
Fee.
- Fencing
Fee.
- Golf
Fee.
- Rock Climbing
Fee.

KIN 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. See KIN Note 1.

- Archery
Fee.
- Fencing
Fee.
- Golf
Fee.

Prerequisites: KIN 105 proficiency; Kinesiology major.

KIN 191 First-Year Seminar. (1–3)

fall and spring

KIN 200 Introduction to Kinesiology. (2)*fall, spring, summer*

Introduces the disciplines and professions associated with kinesiology, including an overview of historical and philosophical foundations.

KIN 205 Physical Education Activity. (1)*fall, spring, summer*

Intermediate levels. Continuation of KIN 105. 3 hours per week. May be repeated for credit. See KIN Notes 1, 2.

- Aerobics
Fee.
- Archery
Fee.
- Golf
Fee.
- Rock Climbing
Fee.

KIN 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.

KIN 290 Sports Officiating. (3)*fall*

Rules and mechanics of officiating used in football, basketball, and volleyball.

KIN 292 Sports Officiating. (3)*spring*

Rules and mechanics of officiating used in softball (slow and fast pitch), baseball, and track and field.

KIN 305 Physical Education Activity. (1)*fall, spring, summer*

Advanced levels. Continuation of KIN 205. 3 hours per week. May be repeated for credit. See KIN Notes 1, 2.

- Golf
Fee.

Prerequisite: instructor approval.

KIN 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.

KIN 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.

KIN 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.

KIN 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.

KIN 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.

KIN 348 Psychological Skills for Optimal Performance. (3)*fall and spring*

Applies psychological techniques and their use to improve effectiveness and performance in sport and related areas.

General Studies: SB

KIN 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

KIN 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.

KIN 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.

KIN 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.

KIN 382 Adaptive and Inclusive Physical Education. (3)*fall and spring*

Teaching individuals with handicapping conditions physical skills and activities.

KIN 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); KIN 200 (or its equivalent).

General Studies: L

KIN 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: KIN 335 or instructor approval.

KIN 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: KIN 335.

KIN 414 Electromyographic Kinesiology. (3)*spring*

Muscular contributions to human movement, muscle mechanics, electrophysiological basis, and practical application of electromyography. Lecture, discussion. Fee. Prerequisites: KIN 335, 340; instructor approval.

General Studies: L

KIN 421 Human Motor Control. (3)*spring*

Focuses on understanding how the human central nervous system controls, regulates, and learns movements. Prerequisite: KIN 345 or instructor approval.

KIN 422 Motor Control in Special Populations. (3)*spring*

Discusses principles of motor control theories and related practical applications for certain special developmental populations. Lecture, discussion. Cross-listed as PSY 422. Credit is allowed for only KIN 422 or PSY 422. Prerequisite: KIN 345.

KIN 423 Motor Control and Aging. (3)*spring*

Functional and behavioral changes to the motor control system as humans age, how specifically it impacts motor control and learning. Prerequisite: KIN 345 or instructor approval.

KIN 440 Exercise Biochemistry. (3)*fall*

Study of bioenergetics and metabolism of cellular (skeletal muscle, heart, and liver) organelles and proteins during exercise. Prerequisite: KIN 340.

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 91.



ASU's newest building, Lattie F. Coor Hall, was dedicated in January 2004. Named in honor of ASU's 15th president, the facility is the largest building on campus, housing 25 state-of-the-art mediated classrooms.

Tim Trumble photo

KIN 441 Physiology of Women in Sport. (3)

fall

Physiological aspects of women engaging in physical activity. Emphasizes factors affecting performance and health throughout life. Prerequisite: KIN 340.

General Studies: L

KIN 442 Fuel Metabolism. (3)

fall

Discusses current research concerning the metabolism of carbohydrate, fat, and protein during exercise. Credit is allowed for only KIN 442 or 536. Prerequisite: KIN 340 or instructor approval.

KIN 443 Exercise Endocrinology. (3)

spring

Discusses current research and theory concerning hormonal changes during exercise. Lecture, discussion. Prerequisite: KIN 340 or instructor approval.

General Studies: L

KIN 444 Metabolic Adaptations to Exercise Training. (3)

summer

Examines physiologic adaptations to exercise training as they relate to metabolism and tissue functions. Prerequisite: KIN 340.

KIN 445 Exercise Physiology for Children and Adolescents. (3)

spring

Understanding the influence of physical growth and maturation on the development of the functional capacities of the exercising child. Credit is allowed for only KIN 445 or 535. Lecture, discussion. Prerequisite: KIN 340 or 530 or instructor approval.

KIN 448 Applied Sport Psychology. (3)

fall, spring, summer

Psychological theories and techniques applied to a sport to enhance the performance and personal growth of athletes and coaches. Lecture, discussion. Prerequisite: KIN 352 (or its equivalent).

General Studies: L

KIN 450 Biopsychosocial Perspectives on Physical Activity and Health. (3)

fall

Uses a biopsychosocial perspective to examine the interrelationships on physical activity and health (physical and mental). Prerequisite: KIN 352.

KIN 452 Exercise Psychology. (3)

spring

Contemporary research and theory as related to human behavior and health in an exercise setting. Prerequisite: KIN 352.

General Studies: SB

KIN 460 Theory of Strength Training. (3)

fall

Research and theories on developing muscular strength; programs for developing muscular strength. Lecture, discussion. Prerequisites: KIN 335, 340.

General Studies: L

KIN 478 Student Teaching in Secondary Schools. (3-12)

fall and spring

Practice of teaching. Relationship of practice and theory in teaching. Fee. Prerequisite: two complete semesters of block (or its equivalent).

KIN 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: KIN 361, 376. Corequisite: student teaching or instructor approval.

KIN 484 Internship. (6)

selected semesters

KIN 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: KIN 283, 370; CPR certification.

KIN 492 Honors Directed Study: Research. (1-6)

selected semesters

KIN 493 Honors Thesis. (1-6)

selected semesters

KIN 494 Special Topics. (1-4)

selected semesters

Topics may include the following:

- Administration of Athletics. (3)
- Environmental Exercise Physiology. (3)
- Interpretation of Exercise Performance. (3)
- Motivation in Exercise and Sport. (3)
- Muscle Physiology. (3)
- Physiological Bases for Exercise and Sport. (3)
- Research and Teaching in Physical Education. (3)
- Research Methods. (3)
- Sport and Social Issues. (3)
- Voluntary and Reflex Control of Movement. (3)

KIN 498 Pro-Seminar. (1-7)

selected semesters

Topics may include the following:

- Kinesiology and the Future. (1)

KIN 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 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

**Department of Languages
and Literatures**

www.asu.edu/languages/index.htm

480/965-6281

LL 440

Deborah N. Losse, Chair

Regents' Professors: Foster, Keller

Professors: Alexander, Baldini, Ballon-Aguirre, Chambers, Croft, Carlos Garcia-Fernández, Horwath, Losse, Volek, Wetsel, Williams, T. Wong

Associate Professors: Acereda, Candela, Canovas, Choi, Colina, Carmen Garcia-Fernández, Hernández-G., B. Lafford, Orlich, Ossipov, Rees, Reiman, Sanchez, Suwarno, Tompkins, Urioste-Azcorra, Vitullo

Assistant Professors: Cashman, George, Gilfillan, Ginsburg, Gruzinska, Haberman, Owen, Siegel-Valdes

Senior Lecturer: Foard

Lecturers: Deal, Garcia, Hendrickson, Lage, Le, Martinez, Oh, Pang, Petersen, Poudrier, Shimomura, Siriprakob, Stiftel, Walton-Ramirez, E. Wong, Zhang

Associate Research Professional: P. Lafford

Academic Associate: Glessner-Calkins

Research Associate Professor: Sipka

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. For French and Spanish, all courses counting for the major must be taken at the upper-division (300 and 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 318. Consult the Languages and Literatures Web site at asu.edu/languages/index.htm for assessment requirements.

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.

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. Choices include six semester hours of JPN prefix courses such as Japanese language and calligraphy, Japanese Literature in Translation (FLA 421), KOR prefix courses such as Korean language and/or Korean culture, three semester hours of approved course work which provides an overview of Chinese history, or six semester hours from appropriate courses in art, humanities, social and behavioral sciences, and business.

Recommended

Two 200-level CHI courses.....6

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>HU</i>	3
CHI 322	Chinese Literature <i>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

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.

Recommended

Two 200-level JPN courses.....6

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)	

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 91.

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JPN 494 Special Topics (1-4)	
JPN 499 Individualized Instruction (1-3)	
Total	9

In addition to these 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 six hours may consist of appropriate courses in art, humanities, literature, public programs, social and behavioral sciences, business, etc.

French—B.A.

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
FRE 322 French Literature <i>HU</i>	3
Total	12

Select 18 semester hours from the following list, including at least 12 semester hours from the 400 level:

FRE 315 French Phonetics	3
FRE 319 Business French <i>G</i>	3
FRE 394 Special Topics	1-3
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 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 related courses from appropriate social and behavioral sciences, humanities, business courses, and other language courses.

German—B.A.

Required

Two 200-level GER courses	6
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 319 Business Correspondence and Communication <i>G</i> (3)	
GER 394 Special Topics (1-4)	
GER 415 German Civilization <i>HU, G, H</i> (3)	
GER 416 German Civilization <i>HU, G, H</i> (3)	
GER 494 Special Topics (1-4)	
Total	30

In addition to these courses, the student must meet with an advisor and choose at least 15 semester hours of related courses from appropriate social and behavioral sciences, humanities, business courses, and other language courses.

Italian—B.A.

Required

Two 200-level ITA courses	6
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
Total	15

Note: ITA 315 Italian for Business may be substituted 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 315 Italian for Business	3
ITA 394 Special Topics	1-4
ITA 415 Italian Civilization <i>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 related courses from appropriate social and behavioral sciences, 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)	
RUS 498 PS: Senior Seminar*	3
or SLV 498 PS: Senior Seminar (3)	
SLV 304 Computational Linguistics of Slavic Languages <i>CS</i>	3
Total	21

* RUS 493 may be taken instead.

Note: Heritage speakers and other advanced speakers of Russian are, with permission from the Slavic language section head, admitted into a separate track for completion of the major. That track entails completion of 12 of the above semester hours (six semester hours of RUS 495, RUS 498 [or SLV 498], and SLV 304), to be accompanied by 18 additional semester hours from the list below (excluding RUS 411, 412, and 417). At least 12 of the additional 18 semester hours must be at the 400 level.

Nine semester hours are required from the following list, including at least six semester hours from the 400 level:

RUS 321 Foundations of Russian Literature <i>HU, H</i>	3
RUS 322 Great Russian Writers of the 19th Century <i>L/HU</i>	3
RUS 323 Modern Russian Literature and the Soviet Legacy <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 430 Russian Short Story <i>L/HU</i>	3
RUS 441 Survey of Russian Culture <i>L/HU, G, H</i>	3
RUS 495 Russian for Heritage Speakers	3
SLV 426 Contemporary East European and Eurasian Literatures <i>L/HU, G</i>	3
SLV 440 History of Slavic Languages	3

In addition to the 30 semester hours of course work required for the major, students majoring in Russian must take 15 additional semester hours from a list of approved courses in related fields, at least six semester hours of which must be taken at the upper-division level. Related fields courses should be chosen in consultation with an advisor. Russian majors are encouraged to take related Slavic/East European language courses in the annual summer Critical Languages Institute (CLI). CLI courses may be applied toward the related field requirements.

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

Electives

Two upper-division (300–400-level) SPA courses

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 sciences, humanities, business, and other romance language courses.

SPA 311 and 312 are not counted toward the major or minor in Spanish.

MINORS

Each minor in Asian Languages (Chinese/Japanese), German, Italian, and Russian consists of 18 semester hours, of which 12 semester hours must be in the upper division. The Spanish and French minors require 18 upper-division semester hours. In addition, specific required courses for each area follow and are in a brochure in the department. Course substitutions are allowed for heritage and advanced speakers of the language.

Chinese

Required

Two CHI 200-level courses	6
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 an additional six hours of Chinese course credit.

French

Required

FRE 311 French Conversation <i>G</i>	3
FRE 312 French Composition <i>G</i>	3
FRE 321 French Literature <i>HU, H</i>	3
or FRE 322 French Literature <i>HU</i> (3)	

Nine hours of upper-division French courses with at least three hours from the 400 level are also required.

German

Required

Two GER 200-level courses	6
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

Italian

Required

ITA 201 Intermediate Italian <i>G</i>	3
ITA 202 Intermediate Italian <i>G</i>	3
ITA 311 Italian Composition and Conversation <i>G</i>	3
or ITA 312 Italian Composition and Conversation <i>G</i> (3)	
or ITA 315 Italian for Business (3)	
ITA 325 Introduction to Italian Literature <i>HU</i>	3
One 300 or 400-level ITA course	3
One 400-level ITA course	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 91.

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Japanese

Required

Two 200-level JPN courses	6
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 additional JPN courses.

Russian

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

Six semester hours of upper-division RUS courses are also required.

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)	
One elective course (SPA 319 or above).....	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 325.

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 predominantly 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 328.

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 15 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 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 entrance requirements to this certificate program are (1) a written proficiency examination in the source and the receptor languages at the level of completion of an advanced composition course in Spanish (SPA 412) and English (ENG 301), and (2) an academic year at a university in both a Spanish-speaking country and an English-speaking country, extensive work experience using Spanish and English, or demonstrated bilingual writing competence 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 494 ST: Lexicography	3

Required

FLA 401 Translation Theory and Practice	3
SPA 412 Advanced Conversation and Composition <i>G</i>	3

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. CONCENTRATIONS

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, Spanish, Spanish for native speakers, and translation (Spanish/English). They may also choose from any of the approved certificate programs. The requirements for the Bachelor of Interdisciplinary Studies (B.I.S.) concentrations are the same as for the minor in that language. See “Minors,” page 385, for specific course requirements. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

SECONDARY EDUCATION—B.A.E.

This degree is offered through the Initial Teacher Certification (ITC) program in the College of Education. Students pursuing a major in Secondary Education (French, German, Japanese or Spanish) have an advisor in the College of Education and an advisor within the Department of Languages and Literatures.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

French, German, Japanese, and Spanish. Each of the major teaching fields in French, German, Japanese, 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 department 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 or in the College of Education. FLA 394 ST: Introduction to Teaching Foreign Languages and FLA 480 Methods of Teaching Foreign Languages are required courses.

Applications are not being accepted at this time for Chinese 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 must take LAT 201 before entering LAT 202 or must have completed at least three years of high school Latin before entering LAT 202 to satisfy the College of Liberal Arts and Sciences foreign language requirement.

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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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" (2.00) in the last course of the required sequence; or
3. by achieving a grade of at least "C" (2.00) 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, 300, or 400 level. Once a grade of "C" (2.00) or higher is earned in a 300-level class in a language, students may not earn lower-division credit in that language. Moreover, once a grade of "C" (2.00) or higher is earned in a 200-level language course, students may not earn credit in any 100-level course 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 461 Feminist Political Writing in Contemporary Europe. (3)

selected semesters

Examines the discourse of gender-politics in Central Eastern Europe before and after Soviet hegemony. Cross-listed as ENG 429. Credit is allowed for only ENG 429 or FLA 461.

FLA 464 Politics of Drama in 20th-Century Europe. (3)

selected semesters

Interdisciplinary examination of European drama before and after WWII. Cross-listed as ENG 429. Credit is allowed for only ENG 429 or FLA 464.

FLA 472 Literature and Politics in Pre- and Post-Communist Europe. (3)*selected semesters*

Interdisciplinary examination of the cultures of Eastern Europe from WWI to the present. Cross-listed as ENG 429. Credit is allowed for only ENG 429 or FLA 472.

FLA 476 Literature and Film in 20th-Century Eastern Europe. (3)*selected semesters*

Evaluates literary texts and films as a massive propaganda machine of the totalitarian state. Cross-listed as ENG 429. Credit is allowed for only ENG 429 or FLA 476.

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.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

ARABIC (ARB)**ARB 101 Elementary Arabic. (4)***fall and summer*

Reading, writing, speaking, and understanding basic Arabic. 4 hours lecture, 1 hour lab. Fee.

ARB 102 Elementary Arabic. (4)*spring and summer*

Reading, writing, speaking, and understanding basic Arabic. 4 hours lecture, 1 hour lab. Fee. 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. Fee. 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. Fee. 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 63.

SERBO-CROATIAN (BCS)**BCS 101 Elementary Serbo-Croatian. (4)***fall and summer*

Structural grammar, basic vocabulary; introduction and reinforcement of aural/oral, reading, and writing skills. 4 hours lecture, 1 hour lab. Lecture, lab, group activities.

BCS 102 Elementary Serbo-Croatian. (4)*spring and summer*

See BCS 101. Lecture, lab, group activities. Prerequisite: BCS 101 (or its equivalent).

BCS 201 Intermediate Serbo-Croatian. (4)*fall and summer*

Systematic review of grammar. Development of vocabulary through reading and writing. Drill in aural/oral skills. 4 hours lecture, 1 hour lab. Lecture, lab, group activities. Prerequisite: BCS 102 (or its equivalent).

BCS 202 Intermediate Serbo-Croatian. (4)*spring and summer*

See BCS 201. Lecture, lab, group activities. Prerequisite: BCS 201 (or its equivalent).

BCS 298 Serbo-Croatian Practicum. (2)*summer*

On-site summer practicum in Yugoslavia following intensive summer Serbo-Croatian language study in the ASU Critical Languages Institute. Lecture, lab, group activities. Prerequisite: BCS 102 (or its equivalent).

BCS 495 Serbo-Croatian for Heritage Speakers. (1–6)*selected semesters*

Generates professional proficiency by developing communicative and written competency in standard literary Serbo-Croatian. Lecture, lab, tutorial. Prerequisite: instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

CHINESE (CHI)**CHI 101 First-Year Chinese I. (5)***fall and spring*

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)*fall and spring*

See CHI 101. Fee. Prerequisite: CHI 101 (or its equivalent).

CHI 201 Second-Year Chinese I. (5)*fall and spring*

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.

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 91.

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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: HU

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: 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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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. Credit is allowed for only FRE 101 or 111. 4 hours lecture, 1 hour lab. Fee.

FRE 102 Elementary French. (4)

fall, spring, summer

See FRE 101. Credit is allowed for only FRE 102 or 111. 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. Credit is allowed for only FRE 107 or 111. 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. Credit is allowed for only FRE 111 or 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: HU

FRE 325 Introduction to French Film. (3)

spring

Studies French artistic contribution from 1895 to present, with emphasis on recent films starting with the New Wave. Short lecture before film, discussion after. Prerequisite for French majors: FRE 202.

FRE 394 Special Topics. (1–4)*selected semesters***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 432 Gay Identities in Modern French Literature. (3)*spring*

Examines the representation of homosexuals as well as the emergence of homosexuality as a theme in modern French literature. Lecture, discussion. Prerequisites: both FRE 322 and 6 hours of 300-level French 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 Mir-

beau. 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 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***Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.**Graduate-Level Courses.** For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.**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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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 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 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, G, H

GER 416 German Civilization. (3)

fall

From 1600 through 1945. Prerequisite: a 300-level course in German or instructor approval.

General Studies: HU, G, 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 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

GER 494 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 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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. Ancient Greek syntax and grammar. Prerequisite: GRK 101.

GRK 301 Ancient Greek Literature I. (3)

fall

Readings in ancient Greek prose; advanced grammar. May be repeated for credit. Prerequisite: GRK 201.

General Studies: HU

GRK 302 Ancient Greek Literature II. (3)

spring

Continuation of GRK 301. Readings in ancient Greek poetry. Prerequisite: GRK 301.

General Studies: HU

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

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 63.

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***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 63.

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, spring, summer*

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, spring, summer*

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 315 Italian for Business. (3)***fall*

Conversation and composition course in Italian; focuses on business, culture, and communication in Italy. Readings, discussion, research, lab (computer and audio-video), Blackboard support. Prerequisite: ITA 202 or instructor approval.

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: 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)*selected semesters*

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 63.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

JAPANESE (JPN)

JPN 101 First-Year Japanese I. (5)

fall and spring

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)

fall and 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 and spring

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)

fall and 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: preferably JPN 314 (or 313) 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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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)

fall

Survey of Korean culture and society, covering history, religious traditions, gender, and popular culture. Lecture, discussion.

General Studies: HU, 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. (3)

spring

Continuation of KOR 313. Reading, writing, discussion. Prerequisite: KOR 313 (or its equivalent).

KOR 347 Korean Film and Literature. (3)

spring

Introduces aspects of Korean history, culture, and society through Korean film and literature. Lecture, discussion.

General Studies: HU

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.

General Studies: H

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

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).

LAT 201 Intermediate Latin I. (4)*fall and spring*

Final semester of grammar. Prerequisite: LAT 102 or instructor approval.

*General Studies: HU***LAT 202 Intermediate Latin II. (4)***fall and spring*

Beginning reading of Latin authors. Prerequisite: LAT 201 (or its equivalent) 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 63.

MACEDONIAN (MAK)

MAK 101 Elementary Macedonian. (4)*summer*

Structural grammar, basic vocabulary; introduction and reinforcement of aural/oral, reading, and writing skills. 4 hours lecture, 1 hour lab. Lecture, lab, group activities.

MAK 102 Elementary Macedonian. (4)*summer*

See MAK 101. Lecture, lab, group activities. Prerequisite: MAK 101 (or its equivalent).

MAK 201 Intermediate Macedonian. (4)*summer*

Systematic review of grammar. Development of vocabulary through reading and writing. Drill in aural/oral skills. 4 hours lecture, 1 hour lab. Lecture, lab, group activities. Prerequisite: MAK 102 (or its equivalent).

MAK 202 Intermediate Macedonian. (4)*summer*

See MAK 201. Lecture, lab, group activities. Prerequisite: MAK 201 (or its equivalent).

MAK 298 Macedonian Practicum. (2)*summer*

On-site summer practicum in Macedonia following intensive summer Macedonian language study in the ASU Critical Languages Institute. Lecture, lab, group activities. Prerequisite: MAK 102 (or its equivalent).

MAK 311 Macedonian Composition and Conversation. (1–8)*once a year*

Advanced communicative proficiency and writing development. Intended for students enrolled in "ASU Study Abroad University of Ss. Kiril and Metodij." Tutorial. Prerequisite: MAK 202 (or its equivalent).

MAK 312 Macedonian Composition and Conversation. (1–8)*once a year*

Advanced communicative proficiency and writing development. Intended for students enrolled in "ASU Study Abroad University of Ss. Kiril and Metodij." Tutorial. Prerequisite: MAK 202 (or its equivalent).

MAK 411 Advanced Macedonian Composition and Conversation. (1–8)*once a year*

Improves self-expression in oral and written skills, emphasizing vocabulary building and use of newspapers and other materials published in Macedonia. Tutorial. Prerequisite: MAK 312 (or its equivalent).

MAK 412 Advanced Macedonian Composition and Conversation. (1–8)*once a year*

Improves self-expression in oral and written skills, emphasizing vocabulary building and use of newspapers and other materials published in Macedonia. Tutorial. Prerequisite: MAK 411 (or its equivalent).

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

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 63.

PORTUGUESE (POR)

POR 101 Elementary Portuguese. (5)*fall and spring*

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)*fall and 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

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 91.

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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

POR 494 Special Topics. (1–4)

selected semesters

Topics may include the following:

- Advanced Portuguese Composition and Conversation. (3)
- Brazilian Film. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

ROMANIAN (ROM)

ROM 101 Elementary Romanian. (5)

fall and spring

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 and spring

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)

fall and 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 63.

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 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 Foundations of Russian Literature. (3)

selected semesters

Literary movements, prose, poetry, and drama from early Kievan writings to 19th-century works of Pushkin, Lermontov, Gogol. Open to nonmajors. Prerequisite: readings in translation.

General Studies: HU, H

RUS 322 Great Russian Writers of the 19th Century. (3)

selected semesters

Surveys the great age of prerevolutionary Russian prose, including works of Gogol, Turgenev, Dostoevski, Tolstoy, and Chekhov. Open to nonmajors. Prerequisite: readings in translation.

General Studies: L/HU

RUS 323 Modern Russian Literature and the Soviet Legacy. (3)

selected semesters

See also FLA 323. 20th-century Russian writers: their prose, poetry, drama; problems of the writer in Soviet and post-Soviet society. Open to nonmajors. Prerequisite: readings in translation.

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. (2)

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 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 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 493 Honors Thesis. (1–6)***selected semesters***RUS 494 Special Topics. (1–4)***selected semesters***RUS 495 Russian for Heritage Speakers. (1–6)***selected semesters*

Generates professional proficiency by developing advanced communicative and written competency in standard literary Russian. Lecture, lab, tutorial. Prerequisite: instructor approval.

RUS 498 Pro-Seminar. (1–7)*selected semesters*

Topics may include the following:

- Senior Seminar. (3)

RUS 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 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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 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.

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 63.

SLAVIC (SLV)**SLV 304 Computational Linguistics of Slavic Languages. (3)***spring*

Information technology and Slavic languages, including Web design, digitalized resources, information retrieval, math/statistical analysis, and PERL. Lecture, lab.

*General Studies: CS***SLV 426 Contemporary East European and Eurasian Literatures. (3)***selected semesters*

Readings in non-Russian literatures and literary criticism from Eastern Europe and Eurasia: Milosz, Mrozek, Kis, Andric, Kadare, Ajtmator. Lecture, discussion.

*General Studies: L/HU, G***SLV 440 History of Slavic Languages. (3)***selected semesters*

Comparative evolution of East Slavic, West Slavic, and South Slavic languages from the earliest record to the standardizing of national languages in the 19th and 20th centuries. Lecture, discussion.

SLV 498 Pro-Seminar. (1–7)*selected semesters*

Topics may include the following:

- Senior Seminar. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

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

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 91.

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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 474 Mexican Culture. (3)***fall and spring*

Examines diverse aspects of Mexican culture since the 1910 Revolution. Lecture, discussion. Prerequisite: SPA 325.

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:

- Lexicography. (3)
- Introduction to Hispanic Linguistics. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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 equivalent).

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 63.

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 63.

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 63.

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 91.

School of Life Sciences

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 LSE 207

Morton E. Munk, Interim Director

Ronald L. Rutowski,
Associate Director for Undergraduate Programs

Andrew N. Webber,
Associate Director for Graduate Programs

Willem F. J. Vermaas,
Associate Director for Research Initiatives

Regents' Professors: Alcock, Arntzen, Maienschein, Pyne

Professors: Burke, Capco, Chandler, Church, Collins, Creath, Deviche, Dowling, Elser, Faeth, Fisher, Frasch, Grimm, Harrison, Hedrick, Jacobs, Klopatek, Lawson, Misra, Moore, Mossman, Munk, Nash, Rutowski, Satterlie, Schmidt, Smith, Sommerfeld, Trelease, Vermaas, Walsberg, Webber

Associate Professors: Armendt, Briggs, Chang, Clark, Day, Fewell, Fouquette, Garcia-Pichel, Goldstein, Hoffman, Hogue, Kumar, Mason, McGregor, Orchinik, Pigg, Ramakrishna, Rawls, Roberson, Stout, Stromberg, Szarek, Towill, Wu

Assistant Professors: Anderies, DeNardo, Gerber, Kaye, Kinzig, Laubichler, Mor, Newfeld, Rhoads, Rosenberg, Sabo, Wilson-Rawls, Wojciechowski

Clinical Faculty: Downs, Lefevre, Mass, Roberts

Research Professors: Cardineau, Davidson, Lyubchenko, Mahoney

Associate Research Professor: Lopez

Assistant Research Professors: Hope, Hu, Minter, Neuer, Walmsley

Senior Research Scientists: Bingham, Landrum, LoBrutto

Curator: Gill

Senior Research Professional: Kazilek

BIOLOGY—B.S.

The major in Biology consists of a minimum of 37 semester hours in biology, and a minimum of 17 semester hours in related fields, plus a three-semester-hour calculus course, and a three-semester-hour statistics course. One upper-division PLB or MIC course is also required. A minimum grade of "C" (2.00) is required for all course work in the major and related fields. Required major courses are as follows:

BIO 187 General Biology I <i>SG</i>	4
BIO 188 General Biology II <i>SQ</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)	
and MIC 206 Microbiology Laboratory <i>SG</i> (1)	
PLB 300 Comparative Plant Diversity <i>LSG</i> (4)	
BIO 340 General Genetics	4
or BIO 341 Genetic Analysis (5)	
BIO 345 Organic Evolution	3
Choose one of the courses below	3-4
BIO 351 Developmental Anatomy (3)	
BIO 353 Cell Biology (3)	
BIO 360 Animal Physiology (3)	
MIC 360 Bacterial Physiology (3)	
PLB 308 Plant Physiology (4)	
Total	21-24

The remaining hours to bring the total to 37 are selected from among upper-division courses, approved for major credit, in BIO, MIC, PLB, and approved BCH courses, in consultation with an 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 course approved by an advisor	
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 <i>CS</i>	3
or STP 294 ST: Statistics for Biosciences (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.

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 46 semester hours in life sciences and societal interface courses, and 12 hours in related fields, plus a

three-semester-hour mathematics proficiency. A minimum grade of "C" (2.00) is required in all course work in the major or related fields. Required courses are as follows:

BIO 187 General Biology I <i>SG</i>	4
BIO 188 General Biology II <i>SQ</i>	4
BIO 311 Biology and Society.....	3
BIO 314 Research Colloquium in Biology and Society I <i>L*</i>	2
BIO 320 Fundamentals of Ecology.....	3
or BIO 345 Organic Evolution (3)	
BIO 340 General Genetics.....	4
or BIO 341 Genetic Analysis (5)	
BIO 414 Research Colloquium in Biology and Society II* <i>L</i>	1
BIO 493 Honors Thesis <i>L</i>	3
or BIO 495 Undergraduate Thesis (3)	
or BIO 499 Individualized Instruction (3)	
or approved hours in research (3)	
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

* Both BIO 314 and 414 must be taken to secure L credit.

The remaining courses to complete the major are determined by the student in consultation with an advisor and must be distributed in the following areas:

1. 10 hours of upper-division electives from BIO, MIC, PLB;
2. 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;
3. 11 hours of physical sciences (CHM recommended); and
4. three to four hours of an approved course in statistics.

CLINICAL LABORATORY SCIENCES—B.S.

The Clinical Laboratory Sciences degree program prepares individuals to practice in the field of clinical laboratory sciences, which includes the major disciplines of clinical chemistry, hematology, immunohematology, 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 major in Clinical Laboratory Sciences consists of 40 semester hours in clinical laboratory sciences courses. A minimum grade of "C" (2.00) is required in all course work in the major or related fields. 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 school for a program brochure. For proper course planning, students must meet with a clinical laboratory sciences advisor.

CONSERVATION BIOLOGY—B.S.

The major in Conservation Biology consists of a minimum of 41 semester hours in the required major courses and a minimum of 16 hours in related fields, plus a three-semester-hour calculus course and a three-semester-hour statistics course. A minimum grade of "C" (2.00) is required for all course work in the major and related fields. Required courses are as follows:

BIO 187 General Biology I <i>SG</i>	4
BIO 188 General Biology II <i>SQ</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 41 are selected from among relevant upper-division courses in BIO and PLB courses or in related departments, in consultation with an 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)	

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 91.

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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	
STP 226	Elements of Statistics <i>CS</i>	3
	or STP 294 ST: Statistics for Biosciences (3)	
Total	.....	19 or 23

* Both CHM 231 and 235 must be taken to secure SQ credit.

MICROBIOLOGY—B.S.

The B.S. degree in Microbiology consists of a minimum of 41 semester hours in microbiology and 17 hours in approved related fields. A minimum grade of “C” (2.00) is required for all course work in the major and related fields. 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
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 life science fields must be taken. These elective hours must include two courses chosen from the following:

MIC 421	Experimental Immunology	2
MIC 442	Bacterial Genetics Laboratory	1
MIC 446	Techniques in Molecular Biology/Genetics Lab.....	2
MIC 470	Bacterial Diversity and Systematics	4
MIC 484	Internship	3
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 251, 270, 290, or 294) as their MA course and BIO 406 (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.

MOLECULAR BIOSCIENCES AND BIOTECHNOLOGY—B.S.

The 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 School of Life Sciences and the Department of Chemistry and Biochemistry.

The major in Molecular Biosciences and Biotechnology consists of a minimum of 59 semester hours of course work plus two courses in mathematics specifically designed for this program. A minimum grade of “C” (2.00) is required for all course work in the major. The required major courses (22 total semester hours) are as follows:

BIO 340	General Genetics	4
MBB 245	Cellular and Molecular Biology <i>SQ</i>	3
MBB 246	Cellular and Molecular Biology Laboratory <i>SQ</i>	1
MBB 247	Applied Biosciences: Biotechnology	3
MBB 248	Applied Biosciences: Biotechnology Laboratory	1
MBB 343	Genetic Engineering and Society <i>L</i>	4
MBB 484	Internship	6
	or MBB 499 Individualized Instruction (6)	
MBB 490	Capstone: Issues in Biotechnology <i>L</i>	4
MIC 206	Microbiology Laboratory <i>SG</i> *	1
MIC 220	Biology of Microorganisms	3
Total	.....	30

* Both MIC 205 and 206 must be taken for SG credit.

Choose at least one of the following courses (or combinations) for a minimum of one to five semester hours. Although only one advanced lab course is required, students are encouraged to take two:

BIO 451	Cell Biotechnology Laboratory.....	3
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
MIC 442	Bacterial Genetics Laboratory	1

¹ MBB 446 is taken with MBB 445.
² MIC 421 is taken with MIC 420.

Required supplemental courses in biology, chemistry, mathematics and physics (28 total semester hours) are as follows (a minimum grade of “C” (2.00) 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
Choose between the organic chemistry course combinations below		4 or 8

CHM 231 Elementary Organic Chemistry SQ ¹ (3)	
CHM 235 Elementary Organic Chemistry Laboratory SQ 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 MA	3
PHY 111 General Physics SQ ²	3
PHY 112 General Physics SQ ³	3
PHY 113 General Physics Laboratory SQ ²	1
PHY 114 General Physics Laboratory SQ ³	1
Total	28–32

- 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 grade of “C” (2.00) is required.

Additional courses are available in the life or physical sciences for elective credit.

PLANT BIOLOGY—B.S.

The School of Life Sciences offers three options to meet the needs of students whose interests are in the rapidly expanding areas within plant biology. 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 two optional concentrations: environmental science and ecology; plant biochemistry and molecular biology.

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 three 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.

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. A minimum grade of “C” (2.00) is required for all course work in the major and related fields. Required courses are as follows:

BIO 320 Fundamentals of Ecology	3
or BIO 340 General Genetics (4)	
BIO 353 Cell Biology	3
PLB 200 Biology of Plants SQ*	3
PLB 201 Biology of Plants Laboratory SQ*	1
PLB 306 Plant Anatomy	4
PLB 308 Plant Physiology	4

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 grade of “C” [2.00] is required for all course work):

CHM 113 General Chemistry SQ	4
CHM 115 General Chemistry with Qualitative Analysis SQ	5
Choose between the organic chemistry course combinations below	4 or 8
CHM 231 Elementary Organic Chemistry SQ* (3)	
CHM 235 Elementary Organic Chemistry Laboratory SQ* (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 MA	3
Total	16 or 20

* Both CHM 231 and 235 must be taken to secure SQ credit.

One of the following courses is also required:

PLB 430 Statistical Analyses in Environmental Science CS	3
or PLB 432 Computer Applications in Biology CS (3)	
or BIO 415 Biometry CS (4)	

Special Concentration Programs

Two 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 Plant Biology 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. A minimum grade of “C” (2.00) is required for all course work in the major and related fields. Required courses are as follows:

BIO 320 Fundamentals of Ecology	3
Choose between the geology course combinations below	4
GLG 101 Introduction to Geology I (Physical) SQ, G ¹ (3)	
GLG 103 Introduction to Geology I—Laboratory SQ ¹ (1)	
— or —	
GLG 110 Geologic Disasters and the Environment SG, G ² (3)	
GLG 111 Geologic Disasters Laboratory SG ² (1)	
— or —	
GPH 111 Introduction to Physical Geology SQ (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 91.

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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.

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.

One of the following courses is also required:

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. A minimum grade of "C" (2.00) is required for all course work in the major and related fields.

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 grade of "C" (2.00) 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 (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	3
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.

One of the following courses is also required:

BIO 406	Computer Applications in Biology <i>CS</i>	3
	or MAT 351 Mathematical Methods for Genetic Analysis <i>CS</i> (3)	

CERTIFICATE IN HISTORY AND PHILOSOPHY OF SCIENCE

The School of Life Science 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 HPS or PHI prefix of which 12 semester hours must be upper-division. Included with the 18 semester hours, at least nine must bear the HPS prefix. HPS 314 or PHI 314 Philosophy of Science is also required. All courses counting toward the certificate must be approved for this purpose by a School of Life Sciences academic advisor and passed with a grade of "C" (2.00) or higher.

MINORS

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; at least 12 hours must be in the upper division. Courses not available for credit in the life sciences majors (BIO, MBB, MIC, and PLB) cannot be used for the minors (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.

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.

Plant Biology

The minor can be designed after the curricular options offered. 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 16 hours are selected by the student through consultation with an academic advisor. Eight of these 16 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 16 to 17 hours are selected by the student through consultation with an academic advisor. Eight to nine of these 16 to 17 hours must be in upper-division courses in the life sciences or other advisor-approved areas.

B.I.S. CONCENTRATIONS

Concentrations in biology, history and philosophy of science, microbiology, molecular biosciences and technology, or plant biology are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see "Bachelor of Interdisciplinary Studies," page 123.

SECONDARY EDUCATION—B.A.E.

This degree is offered through the Initial Teacher Certification (ITC) program in the College of Education. Students pursuing a major in Secondary Education (Biological Sciences) have an advisor in the College of Education and an advisor within the School of Life Sciences.

See "College of Education," page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

Academic Specialization ITC Admission Requirements.

The following courses must be completed with a grade of "C" (2.00) or higher before applying to the ITC professional program:

BIO 187 General Biology I <i>SG</i>	4
BIO 188 General Biology II <i>SQ</i>	4

In addition, at least 12 hours of biology course work from the major teaching field may be in progress when applying to the ITC but must be completed before starting the program.

Biological Sciences. The major teaching field consists of a minimum of 39 semester hours, at least 22 hours in supporting courses, and six hours in teaching methods. A minimum grade of "C" (2.00) is required for all course work in the major and related fields. Required major courses are as follows:

BIO 187 General Biology I <i>SG</i>	4
BIO 188 General Biology II <i>SQ</i>	4
BIO 320 Fundamentals of Ecology	3
BIO 340 General Genetics	4
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/SQ</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	1
PLB 308 Plant Physiology	4
Electives ²	6
Total	39

¹ Both MIC 205 and 206 must be taken to secure SG credit.

² Should be selected from BIO, MIC, and PLB courses. BIO 100, 201, 202, 241, 300, and 319, or PLB 108 and 320 cannot be used to fulfill the elective requirement.

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

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 91.

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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.

Teaching Methods

BIO 480 Methods of Teaching Biology	3
BIO 482 Advanced Methods of Teaching Biology	3
Total	6

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 Programs

The School of Life Sciences offers programs leading to the degrees of Master of Natural Sciences, M.S., and Ph.D. See the *Graduate Catalog* for requirements. A combined B.S.-M.S. degree in Biology is also available.

MOLECULAR AND CELLULAR BIOLOGY

The school participates in the interdisciplinary program for the M.S. and Ph.D. degrees in Molecular and Cellular Biology as well.

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 the School of Life Sciences and the Department of Chemistry and Biochemistry, with additional faculty from the Departments of Anthropology and Physics and Astronomy.

For more information, contact the director or see the *Graduate Catalog*.

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 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. Fee. 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. Fee. 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 biological sciences. 3 hours lecture, 3 hours lab. Fee.

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 biological sciences. 3 hours lecture, 3 hours lab. Fee. Prerequisite: BIO 201 or instructor approval.

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 biological sciences. 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)

fall

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 314 Research Colloquium in Biology and Society I. (2)

spring

Develops critical thinking abilities, research methods, and writing skills for research in the interactions between biological sciences and society. Lecture, discussion. Prerequisite: BIO 311 or instructor approval.

General Studies: L (if credit also earned in BIO 414)

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.

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. Fee. 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. 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. Fee. 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 390 Medical/Dental Field Placement. (3)

fall, spring, summer

Field placement for students exploring a career in a health profession. Requires classroom sessions and field work. Lecture, lab. Prerequisites: application; instructor approval.

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.

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 91.

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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. Fee. 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 414 Research Colloquium in Biology and Society II. (1)

spring

Further develops critical thinking abilities, research methods, and writing skills for research in the interactions between biological sciences and society. Lecture, discussion. Prerequisites: both BIO 311 and 314 or only instructor approval.

General Studies: L (if credit also earned in BIO 314)

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. Fee. 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 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.

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 451 Cell Biotechnology Laboratory. (3)

fall

Mammalian cell culture techniques, including mouse embryonic stem cells, the use of bioreactors, cell fractionation, and digital video imaging. Lab. Cross-listed as BME 451. Credit is allowed for only BIO 451 or BME 451. Prerequisites: BIO 353; instructor approval.

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 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 490 Surgical Field Placement. (3)***fall, spring, summer*

Advanced field placement for students exploring a career in a health profession. Requires classroom sessions and field work. May be repeated for credit. Lecture, lab. Prerequisites: application; instructor approval. Pre- or corequisite: BIO 390.

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*

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

**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.

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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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 63.

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 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. Cross-listed as PHI 314. Credit is allowed for only HPS 314 or PHI 314.

General Studies: HU

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)

fall

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.

General Studies: L/HU

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 63.

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 247 Applied Biosciences: Biotechnology. (3)

fall and spring

Applies concepts of molecular and cellular biology of bacteria, animals, and plants to real-world problems. Prerequisite: MBB 245, 246. Corequisite: MBB 248.

MBB 248 Applied Biosciences: Biotechnology Laboratory. (1)

fall and spring

Applies concepts of molecular and cellular biology of bacteria, animals, and plants to real-world problems. Lab. Prerequisite: MBB 245, 246. Corequisite: MBB 247.

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. Fee. 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; mutageneses; 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; mutageneses; 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. May be repeated for credit. Prerequisite: Molecular Biosciences/Biotechnology major or instructor approval.

*General Studies: L (must be taken twice to secure L credit)***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 63.

MOLECULAR AND CELLULAR BIOLOGY (MCB)

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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:

- HIV Disease and AIDS in America
- Medical Immunology

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)*fall*

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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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)

selected semesters

Biology, classification, and enrichment culture of the nonpathogenic bacteria. 2 hours lecture, 6 hours lab. Fee. Prerequisite: MIC 302.

MIC 484 Internship. (1–12)

fall, spring, summer

Topics may include the following:

- Service Learning Internship. (3)
Fee.

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 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.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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, spring, summer

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, spring, summer

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)

selected semesters

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).

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. Fee. 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.



Recently renovated, the Memorial Union provides many community needs. In addition to a large amount of meeting space, it features a variety of amenities including a bowling alley, a food court, and a convenience store.

Tim Trumble photo

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. (1–12)

selected semesters

Topics may include the following:

- Plant Biology Internship. (3)
fall and spring
Applies a simplified version of PLB 108 to teach fifth-grade children by planting gardens and conducting indoor plant experiments.
- Service Learning
fall, spring, summer
Fee.

PLB 498 Pro-Seminar. (1–7)

fall and spring

PLB 499 Individualized Instruction. (3)

selected semesters

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. Fee. 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. Fee. 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).

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.

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 91.

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.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

**Department of Mathematics
and Statistics**

math.la.asu.edu

480/965-3951

PS A216

Andrew Bremner, Chair

Professors: Armbruster, Bremner, Gardner, Hoppensteadt, Ihrig, Z. Jackiewicz, Kadell, Kawski, Kierstead, Kostelich, Kuang, Kuiper, Lai, Lohr, Lopez, Mahalov, Mittelman, Nicolaenko, Quigg, Renaut, Ringhofer, Smith, Thieme, Young

Associate Professors: Baer, Barcelo, Blount, Carlson, Childress, Farmer, Gelb, Hurlbert, D. Jones, J. Jones, McCarter, Moore, Nikitin, Prewitt, Spielberg, Suslov, Taylor, Welfert

Assistant Professors: Czygrinow, Kaliszewski, Oehrtman, Oleson, Zandieh

Senior Lecturers: Abramson, Isom, Kolossa, Miller, Odish, Rody, Ruedemann, Surgent, Trapuzzano, Vaz, Zhu

Lecturers: Arce, Ashbrook, Bloom, Coombs, Downs, Gust, E. Jackiewicz, E. Jones, Kellgren, Kim, Maris, Martin, Masilamani, Pecuch-Herrero, Reynolds, Tracogna, Turner, Ward, Williams

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 department 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" (2.00) 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
or MAT 343 Applied Linear Algebra (3)	
MAT 370 Intermediate Calculus	3
or MAT 371 Advanced Calculus I (3)	
Total	21

Computer Science Requirement

CSE 100 Principles of Programming with C++ <i>CS</i>	3
or CSE 110 Principles of Programing Java (3)	
or CSE 200 Concepts of Computer Science <i>CS</i> (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 I (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 statistics¹.....9

Related Field Course Work
 Course work in mathematics, statistics, or related fields²12

¹ Acceptable mathematics courses are MAT 243, 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 414.

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” (2.00) 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. Credit may not be earned for both MAT 274 and 275 or for both MAT 342 and 343. 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
or MAT 343 Applied 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 courses	6
MAT 415 Introduction to Combinatorics (3)	
MAT 416 Introduction to Graph Theory (3)	
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 473 Intermediate Real Analysis II (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

<i>Algebra, Topology, and Number Theory</i>	
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)	
<i>Analysis and Applications</i>	
MAT 372 Advanced Calculus II (3)	
MAT 461 Applied Complex Analysis (3)	
MAT 472 Intermediate Real Analysis I (3)	
<i>Applied Mathematics and Dynamics</i>	
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)	
<i>Computational Mathematics</i>	
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)	
<i>Differential Equations</i>	
MAT 462 Applied Partial Differential Equations (3)	
MAT 475 Differential Equations (3)	
MAT 476 Partial Differential Equations (3)	
<i>Discrete Mathematics</i>	
MAT 415 Introduction to Combinatorics (3)	
MAT 416 Introduction to Graph Theory (3)	
MAT 419 Introduction to Linear Programming <i>CS</i> (3)	
<i>Statistics and Probability</i>	
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 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 243, 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 414.

COMPUTATIONAL MATHEMATICAL SCIENCES—B.S.

The B.S. degree in Computational Mathematical Sciences curriculum strives to provide students with a background in

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 91.

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computer science and the natural or physical sciences in addition to a core of course work in mathematics. The requirements for the B.S. degree in Computational Mathematical Sciences and for the B.S. degree in Mathematics are distinct; neither is a subset of the other. A minimum grade of "C" (2.00) is required in all courses taken for the major.

The B.S. degree in Computational Mathematical Sciences requires a minimum of 32 semester hours of course work in mathematics and statistics, a minimum of 12 to 14 semester hours in science, nine hours in computer science, and a three hour advanced science course or internship/research credit. This adds up to a minimum of 56 to 58 semester hours of study related to the major.

Core Courses

MAT 243 Discrete Mathematical Structures	3
or MAT 300 Mathematical Structures <i>L</i> (3)	
MAT 271 Calculus with Analytic Geometry II <i>MA</i>	4
MAT 272 Calculus with Analytic Geometry III <i>MA</i>	4
Total	11

Core Courses in Computational Mathematics

MAT 274 Elementary Differential Equations <i>MA*</i>	3
or MAT 275 Modern Differential Equations <i>MA</i> (3)	
MAT 342 Linear Algebra*	3
or MAT 343 Applied Linear Algebra (3)	
MAT 420 Scientific Computing	3
MAT 421 Applied Computational Methods <i>CS</i>	3
Total	12

* MAT 275 and 343 are recommended.

Advanced Courses in Mathematics and Statistics

Choose one course from group one and two from group two.....9

Group One

MAT 362 Advanced Mathematics for Engineers and Scientists (3)
MAT 370 Intermediate Calculus (3)
MAT 371 Advanced Calculus I (3)
MAT 460 Vector Calculus (3)

Group Two

MAT 351 Mathematical Methods for Genetic Analysis <i>CS</i> (3)
MAT 415 Introduction to Combinatorics (3)
MAT 416 Introduction to Graph Theory (3)
MAT 419 Introduction to Linear Programming <i>CS</i> (3)
MAT 423 Numerical Analysis I <i>CS</i> (3)
MAT 425 Numerical Analysis II <i>CS</i> (3)
MAT 447 Cryptography (3)
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)
MAT 461 Applied Complex Analysis (3)
MAT 462 Applied Partial Differential Equations (3)
MAT 475 Differential Equations (3)
MAT 476 Partial Differential Equations (3)
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)

Computer Science Requirement

CSE 200 Concepts of Computer Science <i>CS</i>	3
CSE 210 Object-Oriented Design and Data Structures <i>CS</i>	3

CSE 240 Introduction to Programming Languages	3
or CSE 310 Data Structures and Algorithms (3)	
Total	9

Science Requirement. Two one-year science course and lab sequences (for a total of 14–17 hours) are required. Upon advisor approval, two advanced courses for which the first one-year science and lab sequence is a prerequisite may be substituted for the second one-year science and lab sequence. Allowable one-year sequences include the following:

Astrophysics

Astrophysics sequence	8
AST 113 Astronomy Laboratory I <i>SQ</i> ¹ (1)	
AST 114 Astronomy Laboratory II <i>SQ</i> ¹ (1)	
AST 321 Introduction to Planetary and Stellar Astrophysics <i>SQ</i> ¹ (3)	
AST 322 Introduction to Galactic and Extragalactic Astrophysics <i>SQ</i> ¹ (3)	

Biology

Choose one of the following sequences	8
BIO 187 General Biology I <i>SG</i> (4)	
BIO 188 General Biology II <i>SQ</i> (4)	
— or —	
BIO 188 General Biology II <i>SQ</i> (4)	
BIO 193 The Nature of Biological Science <i>SQ</i> (4)	

Chemistry

Choose one of the following sequences	5–9
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 115 General Chemistry with Qualitative Analysis <i>SQ</i> ² (4)	
CHM 117 General Chemistry for Majors I <i>SQ</i> ² (4)	
— or —	
CHM 114 General Chemistry for Engineers <i>SQ</i> ³ (4)	
CHM 231 Elementary Organic Chemistry <i>SQ</i> ⁴ (3)	
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> ³ (1)	

Geology

Geology sequence	8
GLG 101 Introduction to Geology I (Physical) <i>SQ</i> , <i>G</i> ⁴ (3)	
GLG 103 Introduction to Geology I—Laboratory <i>SG</i> ⁴ (1)	
GLG 102 Introduction to Geology II (Historical) <i>SG</i> , <i>H</i> ⁴ (3)	
GLG 104 Introduction to Geology II—Laboratory <i>SG</i> ⁴ (1)	

Microbiology and Molecular Biosciences/Biotechnology

Choose one of the following sequences	4
MBB 245 Cellular and Molecular Biology <i>SQ</i> ⁶ (3)	
MBB 246 Cellular and Molecular Biology Laboratory <i>SQ</i> ⁶ (1)	
— or —	
MIC 205 Microbiology <i>SG</i> ⁵ (3)	
MIC 206 Microbiology Laboratory <i>SG</i> ⁵ (1)	
— or —	
MIC 206 Microbiology Laboratory <i>SG</i> ⁵ (1)	
MIC 220 Biology of Microorganisms (3)	

Physics

Choose one of the following sequences	8
PHY 121 University Physics I: Mechanics <i>SQ</i> ⁷ (3)	
PHY 122 University Physics Laboratory I <i>SQ</i> ⁷ (1)	

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PHY 131	University Physics II: Electricity and Magnetism	SQ ⁷	(3)
PHY 132	University Physics Laboratory II	SQ ⁷	(1)
— or —			
PHY 150	Physics I	SQ	(4)
PHY 151	Physics II	SQ	(4)

Plant Biology

Choose one of the following sequences.....4			
PLB 200	Biology of Plants	SQ ⁸	(3)
PLB 201	Biology of Plants Laboratory	SQ ⁸	(1)
— or —			
MBB 245	Cellular and Molecular Biology	SQ ⁶	(3)
MBB 246	Cellular and Molecular Biology Laboratory	SQ ⁶	(1)

Internship, Research, or Advanced Science Requirement

Choose one of the following courses.....3			
MAT 484	Internship		⁹ (3)
MAT 493	Honors Thesis/Research		¹⁰ (3)
MAT 494	ST: Independent Study/Research		⁹ (3)
One advanced course in science for which a one-year sequence in the same science is required			

- ¹ Both AST 113 and 321 or both AST 114 and 322 must be taken to secure SQ credit.
- ² CHM 115 and 117 are strongly recommended for qualified students.
- ³ Both CHM 231 and 235 must be taken to secure SQ credit.
- ⁴ Both GLG 101 and 103 must be taken to secure SQ credit, and both GLG 102 and 104 must be taken to secure SG credit.
- ⁵ Both MIC 205 and MIC 206 must be taken to secure SG credit.
- ⁶ Both MBB 245 and 246 must be taken to secure SQ credit.
- ⁷ Both PHY 121 and 122 and both PHY 131 and 132 must be taken to secure SQ credit.
- ⁸ Both PLB 200 and 201 must be taken to secure SQ credit.
- ⁹ This course requires prior department approval.
- ¹⁰ Enrollment is restricted to students in the Barrett Honors College.

Restrictions: MAT 370 and 371 may not both be counted toward major requirements in Computational Mathematical Sciences. Credit may not be earned for both MAT 274 and 275, or for both MAT 342 and 343.

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” (2.00) 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	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 342	Linear Algebra		.....3
or MAT 343 Applied Linear Algebra (3)			
MAT 371	Advanced Calculus I		.....3
STP 420	Introductory Applied Statistics	CS	.....3

STP 421	Probability		.....3
STP 427	Mathematical Statistics		.....3
STP 429	Experimental Statistics	CS	.....3
Total			

Computer Science Requirement

CSE 200	Concepts of Computer Science	CS	.....3
Total			

Additional Advanced Courses in Mathematics and Statistics

Three courses from the following list.....9			
MAT 274	Elementary Differential Equations	MA	(3)
or MAT 275 Modern Differential Equations (3)			
MAT 372	Advanced Calculus II		(3)
MAT 423	Numerical Analysis I	CS	(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 414.

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.

Cryptographic Science. The faculty in the Department of Mathematics and Statistics offer courses that prepare students for graduate studies and careers in cryptography. See the department’s advisors 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	MA	.....4
MAT 272	Calculus with Analytic Geometry III	MA	.....4
MAT 342	Linear Algebra		.....3
or MAT 343 Applied Linear Algebra (3)			
Total			

Electives must be upper-division courses in mathematics (MAT) or Statistics and Probability (STP). Students may not apply MAT 485 or a course not offered at the ASU Main campus to the minor, unless otherwise approved by a 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	MA	.....4
MAT 272	Calculus with Analytic Geometry III	MA	.....4
MAT 300	Mathematical Structures	L	.....3
STP 420	Introductory Applied Statistics	CS	.....3
STP 421	Probability		.....3
STP 427	Mathematical Statistics		.....3
or STP 429 Experimental Statistics CS (3)			
Total			

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 91.

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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
	or MAT 343 Applied 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.

B.I.S. CONCENTRATIONS

Concentrations in computational mathematical sciences, mathematics, and statistics are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

SECONDARY EDUCATION—B.A.E.

Mathematics. This degree is offered through the Initial Teacher Certification program in the College of Education. Students pursuing a major in Secondary Education have an advisor in the College of Education and an advisor within the department of their academic specialization area.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

The academic specialization consists of the following required courses:

CSE 100	Principles of Programming with C++ <i>CS</i>	3
	or CSE 110 Principles of Programming Java (3)	
	or CSE 200 Concepts of Computer Science <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 300	Mathematical Structures <i>L</i>	3
MAT 310	Introduction to Geometry	3
MAT 342	Linear Algebra	3
	or MAT 343 Applied 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 <i>CS</i>	3
Total		36

The methods in academic specialization courses for mathematics are MTE 482 Methods of Teaching Mathemat-

ics in Secondary School and MTE 494 ST: 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.

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 <i>MA</i>	4
MAT 272	Calculus with Analytic Geometry III <i>MA</i>	4
MAT 300	Mathematical Structures <i>L</i>	3
MAT 310	Introduction to Geometry	3
MAT 342	Linear Algebra	3
	or MAT 343 Applied 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. Credit is allowed for only MAT 106 or 113. Prerequisite: 1 year of high school algebra.

MAT 113 College Algebra Plus. (5)

fall and spring

A union of topics from intermediate algebra and college algebra, including exponents, factoring, graphing, polynomials, logarithmic, and exponential functions. Credit is allowed for only MAT 113 or 106 or 117. Prerequisite: 2 years of high school mathematics.

General Studies: MA

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. Credit is allowed for only MAT 117 or 113. Fee (online only). 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 113 or 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” (2.00) or higher: MAT 113 or 117 (or its equivalent) or 2 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. Fee (online only). Prerequisite: MAT 113 or 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***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" (2.00) 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" (2.00) 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" (2.00) or higher: MAT 271 (or its equivalent).

*General Studies: MA***MAT 274 Elementary Differential Equations. (3)***fall and spring or summer*

Introduces ordinary differential equations, adapted to the needs of students in engineering and the sciences. Credit is allowed for only MAT

274 or 275 toward a mathematics degree. Prerequisites: 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. Credit is allowed for only MAT 275 or 274 toward a mathematics degree. 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 and spring or summer*

Linear equations, matrices, determinants, vector spaces, bases, linear transformations and similarity, inner product spaces, eigenvectors, orthonormal bases, diagonalization, and principal axes. Credit is allowed for only MAT 342 or 343 toward a mathematics degree. 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. Credit is allowed for only MAT 343 or 342 toward a mathematics degree. Lecture, computing lab. Fee. Prerequisite: 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 275) (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 91.

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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" (2.00) or higher in MAT 371. Credit is allowed for only MAT 370 or 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. Credit is allowed for only MAT 371 or 370 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 or 343.

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 343) 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 343) 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 343) 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 (or 275) and 342 (or 343) (or their equivalents) or only instructor approval.

MAT 421 Applied Computational Methods. (3)

fall and spring

Numerical methods for quadrature, differential equations, roots of nonlinear 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 (or 343) 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 (or 275) 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 343) 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 343) 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 343) 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: CSE 100 (or 110); MAT 242 (or 342 or 343), 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 or 343) and 274 (or 275) 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 (or 275), 342 (or 242 or 343); 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 (or 275), 342 (or 242 or 343); 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 or 343), 272, 274 (or 275).

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 or 343), 274 (or 275).

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 (or 343).

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*

Linear and nonlinear ordinary differential equations, asymptotic behavior of solutions, stability, existence and uniqueness, limit sets, Poincaré-Bendixson theorem. Prerequisites: MAT 242 (or 342 or 343), 274 (or 275), 370 (or 371) (or their equivalents) or instructor approval.

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 242 (or 342 or 343), 274 (or 275 or 475), 370 (or 371) (or their equivalents) or instructor approval.

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 493 Honors Thesis/Research. (3)*selected semesters***MAT 494 Special Topics. (1–4)***selected semesters*

Topics may include the following:

- Independent Study/Research. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

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. Prerequisites: MAT 113, 114 (or 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 Internship. (1–12)*selected semesters*

Topics may include the following:

- Theory of Elementary Mathematics Internship. (1–4)
fall and spring
Employs hands-on activities and manipulatives to advance mathematical understanding in second- to fourth-grade students.
- Service Learning
fall, spring, summer
Fee.

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.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

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. Prerequisites: MAT 113, 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. Prerequisites: MAT 113, 114 (or 117 or its equivalent).
General Studies: CS

STP 294 Special Topics. (1–4)*selected semesters*

Topics may include the following:

- Statistics for Biosciences. (3)

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

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 113 or 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. Prerequisite: MAT 272 (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 91.

STP 425 Stochastic Processes. (3)

spring

Markov chains, stationary distributions, pure jump processes, 2-D 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: a combination of MAT 371 and STP 420 and 421 or only instructor approval.

STP 429 Experimental Statistics. (3)

spring

Statistical inference for controlled experimentation. Multiple regression, correlation, analysis of variance, multiple comparisons, and non-parametric procedures. Prerequisite: STP 420 (or its equivalent).

General Studies: CS

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

Department of Military Science

Army ROTC

www.asu.edu/clas/military

480/965-3318

SS 330

Major Herbert M. Chong, Chair

Professor: Chong

Assistant Professors: Caryl, Hopkins, Ramer, Rollins

Instructors: Fox, Ringenoldus, Suiter

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 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, 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 professionally related areas.

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. To be 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 regulations 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 and being approved for continuation by the department, 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 National Advanced Leadership Camp (NALC) 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, mathematics, military history, 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 standing. This program is open to all students with the exception of three- and four-year Army ROTC scholarship winners (see "Scholarship Programs," page 423). Students seeking enrollment in the two-year

program should make application before the semester of the year in which they desire to enter the program. They must also pass the Army physical fitness test. After successfully completing a paid five-week Leaders Training Course (LTC), 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 LTC or prior military service;
2. passing of the Army physical examination;
3. attainment of a minimum cumulative GPA of 2.00;
4. attainment of at least junior class standing; and
5. 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 five-week NALC. 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 LTC 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 \$350 per month (junior year) and \$400 per month (senior year).

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 between \$550–\$1,000 per month.

Scholarship Programs. The Army ROTC offers scholarship programs to outstanding young men and women. These scholarships provide 100 percent tuition and fees. In addition, the scholarship pays \$250 per month (freshman year), \$300 per month (sophomore year), \$350 per month (junior year), and \$400 per month (senior year) subsistence allowance and \$350 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. 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 Leader's Training Course. (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. 3 hours lecture/conference, 2 hours Leadership Practical Application, 1 2-day field exercise. Fee. Prerequisites: MIS 101 and 102 and 201 and 202 (or their equivalents).

MIS 302 Advanced Military Science II. (3)

spring

Theory and dynamics of military units in defensive combat operations. 3 hours lecture/conference, 2 hours Leadership Practical Application, 1 2-day field exercise. Fee. Prerequisites: MIS 101 and 102 and 201 and 202 (or their equivalents).

MIS 303 National Advanced Leadership 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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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. Fee. Prerequisites: MIS 301, 302.

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/conference, 2 hours Leadership Practical Application, 1 2-day field exercise. Fee. Prerequisites: MIS 301, 302.

MIS 410 American Defense Policy I. (3)

fall

Evolution, organization, and execution of U.S. national security policy. *General Studies: SB*

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 499 Individualized Instruction: Military Science Leadership. (1-3)

selected semesters

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

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 are granted 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" (2.00) is necessary for each course used to fulfill the major requirements. See "College Degree Requirements," page 318.

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" (2.00).

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" (2.00).

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 among 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

Department of Philosophy

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COOR 3307

Steven L. Reynolds, Interim Chair

Regents' Professor: Murphy

Professors: Cohen, Creath, Fitch, French, Humphrey, White

Associate Professors: Armendt, Blackson, de Marneffe, Guleserian, Kobes, McGregor, Reynolds

Assistant Professor: Devlin

Senior 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, H</i>	3
PHI 302 History of Modern Philosophy <i>HU, H</i>	3
PHI 305 Ethical Theory <i>HU</i>	3
or PHI 335 History of Ethics <i>HU</i> (3)	

courses must be passed with a minimum grade of “C” (2.00).

B.I.S. CONCENTRATIONS

Concentrations in ethics and philosophy (with options in history and philosophy of science, and symbolic systems) are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Students may also choose a concentration from any approved certificate program. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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.

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. Cross-listed as HPS 314. Credit is allowed for only HPS 314 or PHI 314.

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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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

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 320 Bioethics. (3)

once a year

Critical examination of moral questions arising in biomedical contexts, particularly due to new technologies and scientific discoveries.

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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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, Lindsay, Menéndez, Ponce, Rez, Ritchie, Sankey, Schmidt, Tillery, Treacy, Tsen, Tsong, Venables, Windhorst

Associate Professors: Culbertson, Drucker, Herbots, Marzke, Morse, Newman

Assistant Professors: Desch, Lebed, Ortiz, 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)

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 *CS*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

DEPARTMENT OF PHYSICS AND ASTRONOMY

PHY 314 Quantum Physics I.....	3
PHY 315 Quantum Physics II.....	3
PHY 333 Electronic Circuits and Measurements	3
PHY 334 Advanced Laboratory I <i>L</i>	2
PHY 412 Classical Particles, Fields, and Matter III	3
PHY 416 Quantum Physics III	3
PHY 441 Statistical and Thermal Physics I.....	3
PHY 465 Advanced Laboratory II.....	2
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.

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 <i>CS</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
PHY 315 Quantum Physics II.....	3
PHY 333 Electronic Circuits and Measurements	3
PHY 334 Advanced Laboratory I <i>L</i>	2
PHY 412 Classical Particles, Fields, and Matter III	3
PHY 441 Statistical and Thermal Physics I.....	3
Total	40

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, sci-

entific 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 <i>SQ</i> ¹	3
AST 322 Introduction to Galactic and Extragalactic Astrophysics <i>SQ</i> ²	3
AST 421 Astrophysics I.....	3
AST 422 Astrophysics II.....	3
AST 499 Individualized Instruction	3
Total	15

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 <i>SQ</i> ¹	1
AST 114 Astronomy Laboratory II <i>SQ</i> ²	1
AST 321 Introduction to Planetary and Stellar Astrophysics <i>SQ</i> ¹	3
AST 322 Introduction to Galactic and Extragalactic Astrophysics <i>SQ</i> ²	3

Choose between the course combinations below.....4

- PHY 150 Physics I *SQ* (4)
- or —
- PHY 121 University Physics I: Mechanics *SQ*³ (3)
- PHY 122 University Physics Laboratory I *SQ*³ (1)

Choose between the course combinations below.....4

- PHY 151 Physics II *SQ* (4)
- or —
- PHY 131 University Physics II: Electricity and Magnetism *SQ*⁴ (3)
- PHY 132 University Physics Laboratory II *SQ*⁴ (1)

PHY 252 Physics III *SQ*.....

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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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 <i>CS</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.

B.I.S. CONCENTRATIONS

Concentrations in astronomy and physics are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

SECONDARY EDUCATION—B.A.E.

Physics. This degree is offered through the Initial Teacher Certification program in the College of Education. Students pursuing a major in Secondary Education have an advisor in the College of Education and an advisor within the department of their academic specialization area.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

The following courses must be completed with a grade of “C” (2.00) or higher *before* applying to the ITC program: PHY 150 and 151 or PHY 121, 122, 131, and 132; and PHY 252.

The major teaching field consists of 42 semester hours.

Required 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
Choose between the course combinations below.....	8
PHY 150 Physics I <i>SQ</i> (4)	
PHY 151 Physics II <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)	
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 <i>CS</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 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 ³	10
Total.....	48

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 Electives are chosen in physics or other closely related fields, subject to the approval of the advisor.

Teaching Methods

PHY 480 Methods of Teaching Physics.....	3
PHY 484 Internship.....	3
Total.....	6

Minor Teaching Field. The minor teaching field consists of 24 semester hours. Required courses are as follows:

Choose between the course combinations below ⁸	
PHY 150 Physics I <i>SQ</i> (4)	
PHY 151 Physics II <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)	
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 <i>CS</i>	3
PHY 252 Physics III <i>SQ</i>	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	3
Total.....	24

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 Electives are chosen in physics or other closely related fields, subject to the 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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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

PHS 484 Internship. (1–12)

selected semesters

Topics may include the following:

- 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.

- Service Learning

fall, spring, summer

Fee.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

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)

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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. Prerequisites: MAT 272; Physics major. 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-D 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-D 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 Subatomic Physics. (3)

spring

Nuclear properties, models, decays and reactions; fundamental forces, field theories, symmetry principles; hadrons, quarks, and leptons; the Standard Model. 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 Materials Physics I. (3)

fall

Fundamentals of materials physics: crystal structure, diffraction, elasticity, point defects, dislocations, lattice vibrations, thermal properties, periodic potential, band structure. Credit is allowed for only PHY 481 or 511. Prerequisites: PHY 311, 315.

PHY 482 Materials Physics II. (3)

spring

Electronic behavior of materials: energy bands, electronic properties, metals, semiconductors, insulators, optical properties, magnetic properties, superconductivity, biophysics. Credit is allowed for only PHY 482 or 512. Prerequisite: PHY 481 (or its equivalent).

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.

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

Topics may include the following:

- Materials Physics II. (3)

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

Department of Political Science

www.asu.edu/clas/polisci

480/965-6551

COOR 6801

Patrick Kenney, Chair

Professors: Ball, Dagger, Jones, Kahn, Kenney, Simon, Youngblood

Associate Professors: Ashley, Crittenden, Dantico, Doty, M. Elman, Herrera, Keating, Mitchell, Simhony, Warner

Assistant Professors: Chin, C. Elman, Goren, Hoekstra

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” (2.00) or higher; no more than one “D” (1.00) grade in a lower-division course may be counted in the major. See “College Degree Requirements,” page 318. 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 Sociology, and the African American Studies and the Women’s Studies programs. At least 21 hours in political science must be in upper-division 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 91.

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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” (2.00) or higher; no more than one “D” (1.00) grade in a lower-division course may be counted in the major. See “College Degree Requirements,” page 318. 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 activists engaged 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 <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
or POS 325 Public Policy Development <i>SB</i> (3)	
or POS 426 Elements of Public Policy <i>SB</i> (3)	
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 313 The Congress <i>SB</i>	3
POS 333 Interest Groups <i>SB</i>	3
POS 401 Political Statistics <i>CS</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.

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 below	3
POS 110 Government and Politics <i>SB</i> (3)	
POS 310 American National Government <i>SB</i> (3)	
Choose two or three from the courses below	6 or 9
POS 220 Political Issues and Public Policy <i>SB</i> (3)	
POS 325 Public Policy Development <i>SB</i> (3)	
POS 426 Elements of Public Policy <i>SB</i> (3)	
Choose one or two from the courses below	3 or 6
POS 316 State and Local Government <i>SB</i> (3)	
POS 320 Public Administration <i>SB</i> (3)	
POS 410 Governing American Cities <i>SB</i> (3)	
Choose one from the courses below	3
POS 313 The Congress <i>SB</i> (3)	
POS 314 The American Presidency <i>SB</i> (3)	
POS 484 Internship (up to 3 semester hours for a policy/administration-related internship) (3)	
Minimum total	15

Certificate students must have a minimum GPA of 2.00; only courses in which students have a grade of “C” (2.00) 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 326, for more information.

Certificate in Civic Education. The Civic Education Certificate is designed to contribute to the preparation of undergraduate students for

- 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 <i>SB</i>	3
POS 346 Problems of Democracy <i>HU</i>	3
POS 442 American Political Thought <i>HU</i>	3
Choose one from the courses below	3
POS 340 History of Political Philosophy I <i>HU, H</i> (3)	
POS 341 History of Political Philosophy II <i>HU, H</i> (3)	
POS 443 Topics in Contemporary Political Theory <i>HU</i> (3)	
Choose one from the courses below	3
POS 110 Government and Politics <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i> (3)	
POS 160 Global Politics <i>SB, G</i> (3)	
POS 270 American Legal System <i>SB</i> (3)	
POS 300 Contemporary Controversies in Global Politics <i>SB, G</i> (3)	
POS 313 The Congress <i>SB</i> (3)	
POS 314 The American Presidency <i>SB</i> (3)	
POS 315 The Supreme Court <i>SB</i> (3)	
POS 330 Contemporary Controversies in Domestic Politics <i>SB</i> (3)	
POS 332 American Political Parties <i>SB</i> (3)	
POS 333 Interest Groups <i>SB</i> (3)	
POS 370 Law and Society <i>SB</i> (3)	
POS 417 The Arizona Political System <i>SB</i> (3)	
POS 435 Women and Politics <i>SB, C</i> (3)	
POS 439 Minority Group Politics in America <i>SB, C</i> (3)	
Total	15

Certificate students must have a minimum GPA of 2.00; only courses in which students have a grade of "C" (2.00) 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 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 National Security, Intelligence, and Terrorism <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 European Union <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 Koreans <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" (2.00) 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 328, for more information.

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 91.

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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” (2.00) or higher; no more than one “D” (1.00) 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.

B.I.S. CONCENTRATIONS

Concentrations in political science (with American public policy, civic education, and international studies options) are available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

SECONDARY EDUCATION—B.A.E.

This degree is offered through the Initial Teacher Certification (ITC) program in the College of Education. Students pursuing a major in Secondary Education with an academic specialization in political science have an advisor in the College of Education and an advisor within the Department of Political Science.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, call the Office of Student Services in the College of Education at 480/965-5555.

Academic Specialization ITC Admission Requirements

At least four required courses in the academic specialization must be completed with a grade of “C” (2.00) or higher before applying to the ITC professional program.

Political Science. The major teaching field consists of 41–42 semester hours and six hours in teaching methods. A minimum grade of “C” (2.00) is required in all academic specialization courses. Required major courses are as follows:

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 311 Arizona Constitution and Government	2
or POS 417 The Arizona Political System <i>SB</i> (3)	
POS 417 The Arizona Political System	3
Electives ¹	15
Related area ²	12
Total	41–42

¹ Six hours must be in the upper division.

² Choose in consultation with a department advisor.

Students are required to complete two methods courses, one of which is SED 480 Methods of Teaching Social Studies. For the second methods course, students select from the following:

GCU 414 Teaching Geography Standards	3
GCU 494 ST: Geography in the K–12 Classroom	3
HST 480 Methods of Teaching History: Classroom Resources	3
HST 481 Methods of Teaching History: Community Resources	3

The minor teaching field consists of 24 semester hours in political science courses.

The following six courses are required:

HST 480 Methods of Teaching History: Classroom Resources	3
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
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 specialization must have a grade of “C” (2.00) or higher; no more than one “D” (1.00) grade in a lower-division course may be counted in the minor.

Social Studies. This degree is offered through the Initial Teacher Certification program in the College of Education. Students pursuing a major in Secondary Education have an advisor in the College of Education and an advisor within the department of their academic specialization area.

See “College of Education,” page 189, for information on admission eligibility requirements, admission deadlines, field experiences, and student teaching. For more information, or to schedule an appointment with an advisor, 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 and spring*

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: HU, 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.

*General Studies: SB***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***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 Voters in America. (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

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 91.

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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 European Union. (3)

once a year

History and workings of EU member states, including single market, Euro, legal system, ethnonationalism, immigration, expansion, trade wars, and defense.

General Studies: SB, G

POS 357 South Asia Politics. (3)

once a year

Political culture and systems of South Asia examined through study of political writings, novels, and poetry. 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, government institutions, and political novels in Sub-Saharan Africa.

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. May be repeated for credit when topics vary.

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 National Security, Intelligence, and Terrorism. (3)

once a year

Theoretical and empirical assessment of U.S. national security policy in the post-cold war era.

General Studies: SB

POS 368 Ethics and Human Rights. (3)

spring

Explores issues of ethics, morality, and human rights in the global community. Lecture, discussion.

POS 369 War, Politics, and Society. (3)

fall in odd years

Relationships between techniques/technology of war and political/social structures in different time periods and locations. Who commands, dies, and pays?

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 Governing American Cities. (3)

once a year

Reviews modern urban problems, their sources, and potential solutions, including structural and policy alternatives.

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 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

Focuses on the uniqueness of women in modern political systems and political thought. Emphasis may vary 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 Koreas. (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*

Political institutions, process, and developmental problems of South American states examined through comparative analysis, novels, and poetry.

*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 484 Internship. (1–12)***selected semesters***POS 485 Political Economy. (3)***once a year*

Problems, policies, and possibilities of various political-economic systems and 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*

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

Department of Psychology

psych.la.asu.edu

480/965-3326

PSY 237

Darwyn E. Linder, Chair

Regents' Professors: Cialdini, Eisenberg, Russo, Sandler**Professors:** Aiken, Barrera, Braver, Castro, Chassin, Homa, Karoly, Kenrick, Killeen, Knight, Lanyon, Linder, MacKinnon, Millsap, Neisewander, Neuberg, Okun, Parkinson, Presson, Reich, Sadalla, Somerville, Van Orden, West, Wolchik, Zautra**Associate Professors:** Alexander, Castaneda, Conrad, Davis, Fabricius, Goldinger, Gonzales, Leshowitz, McBeath, Nagoshi, Nemeroff, Saenz, Stone**Assistant Professors:** E. Amazeen, P. Amazeen, Khoo, Lemery, Luecken**Senior Lecturers:** Barton, 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 advisor once each semester to ask questions regarding choices 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.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

PSYCHOLOGY—B.A.

The B.A. degree in Psychology consists of 37 semester hours in psychology, including at least 24 upper-division semester hours, and 12 semester hours of related course work. All courses must be passed with a minimum grade of “C” (2.00). The requirements are as follows:

I. Foundations of Psychology (10 semester hours)

PGS 101 Introduction to Psychology *SB* (3)
PSY 230 Introduction to Statistics *CS* (3)
PSY 290 Research Methods *L/SG* (4)

II. Breadth (12 semester hours)

One course from each of four of the following five clusters:

Biological: PSY 325
Personality/Mental Health: PGS 315, 466
Cognitive/Learning: PSY 320, 323, 324
Developmental: PGS 341
Social: PGS 306, 350, 351

III. Depth (six semester hours)

Two additional courses from one of the clusters used to meet the breadth requirements. At least one of the courses must be at the 400 level.

Biological: PSY 424, 425, 426, 470
Personality/Mental Health: PGS 315, 365, 443, 444, 462, 464, 465, 466, 468, 471, 472
Cognitive/Learning: PSY 320, 323, 324, 420, 434, 437
Developmental: PGS 344, 427, 441, 445, 446
Social: PGS 306, 350 or 351, 430, 451, 452, 458, 461

IV. Additional Psychology Courses (nine semester hours)

Three courses in psychology (two must be in the upper division) excluding PGS 270 and 394 or 494. Approved 200-level community college courses may be used in this category. These courses may not be used to also satisfy breadth or depth requirements. Students may count up to six semester hours in PGS or PSY 399 or 499 to satisfy this requirement. Honors students may count up to three semester hours of PSY 492 and three semester hours of PSY 493 (six semester hours total), in lieu of six semester hours of PGS or PSY 399 or 499, to satisfy this requirement.

V. Mathematics Foundation (three semester hours)

MAT 119, 251, or higher.

VI. Foundations of Behavior (nine semester hours)

Any three courses from among the following prefixes: ASB, ASM, BIO, GCU, SOC, PHI, and HPS.

For more information, see “College Degree Requirements,” page 318.

PSYCHOLOGY—B.S.

The B.S. degree in Psychology is focused on the science of psychology and is designed specifically for students planning to pursue an advanced degree in psychology or related disciplines. The requirements for the B.S. degree in Psy-

chology are identical to the requirements for the B.A. degree with the following three exceptions:

1. PSY 330 must be completed as one of the options in the additional psychology course requirements.
2. At least three semester hours of PSY 390 or PGS or PSY 399 or 499 must be completed as one of the options in the additional psychology course requirements.
3. MAT 251 or higher must be completed for the mathematics foundation requirement.

MINOR IN PSYCHOLOGY

The minor in Psychology consists of completing the 22 semester hours of course work in the foundations of psychology and the breadth categories described above. Students with an appropriate equivalent course may exclude PSY 230 from the requirements. All courses must be passed with a minimum grade of “C” (2.00).

B.I.S. CONCENTRATION

A concentration in psychology is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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*

Topics may include the following:

- Disease and AIDS in America

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; 3.00 GPA 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 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 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 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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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 63.

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

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 422 Motor Control in Special Populations. (3)

spring

Discusses principles of motor control theories and related practical applications for certain special developmental populations. Lecture, discussion. Cross-listed as KIN 422. Credit is allowed for only KIN 422 or PSY 422. Prerequisite: KIN 345.

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).

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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.

Department of Religious Studies

www.asu.edu/clas/religious_studies

480/965-7145

ECA 377

Joel D. Gereboff, Chair

Professors: Cady, Coudert, Feldhaus, Foard, Morrison, Samuelson

Associate Professors: Clay, Fessenden, Gereboff, Moore, Schober, Swanson, Woodward

Assistant Professors: Benn, Damrel, Leon, Park, 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.

B.I.S. CONCENTRATION

A concentration in religious studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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 325, 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.

Islamic Studies Certificate. Students majoring in Religious Studies may elect to earn an Islamic Studies Certificate by successfully completing the requirements mentioned in “Islamic Studies Certificate,” page 327.

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 328.

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 91.



Teaching Assistant Marea Baggetta leads a freshman-level BIO 188 lab. As part of the College of Liberal Arts and Sciences living-learning community concept, students learn scientific methods together during class and share the same residence hall.

Tim Trumble photo

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. A doctoral program is offered. 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 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.

General Studies: HU, C

REL 240 Introduction to Southeast Asia. (3)

fall and spring

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: HU, G

REL 260 Introduction to Islam. (3)

spring

Examines Islamic beliefs, ceremonies, festivals, and institutions. Assumes no prior knowledge about Islam. Lecture, discussion.

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.

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.

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 343 Taoism. (3)

fall

Introduces the history, doctrines, and practices of Taoism from the mid-second century CE up to the present. Lecture, discussion.

General Studies: L/HU, G, H

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

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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

REL 352 Modern Buddhism. (3)

fall

Examines diverse modernities with regard to Buddhist institutions, practices, colonialism and cultural transformations in Asia and the West. Lecture, discussion. Prerequisite: REL 100 or 345 or 351.

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 369 Women in Islam. (3)

fall

Examines the roles women have played through Islamic history (Middle East) and the changing discourse on gender identity. Lecture, seminar.

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/HU, 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 384 The Bible and Archaeological Discoveries. (3)

spring

Studies the Bible alongside the stories that architecture, pottery, metalwork, sculpture, tombs, and paintings of the ancient Near East have to tell. May be repeated for credit.

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: 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 394 Special Topics. (1–4)

selected semesters

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 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 427 American Religious Thought. (3)

selected semesters

Thought of representative American religious thinkers, i.e., Jonathan 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 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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

Department of Sociology

www.asu.edu/clas/sociology

480/965-3546

COOR 5681

Verna M. Keith, Chair

Professors: Bolin, Cobas, Hackett, Jacobson, Kronenfeld, Kulis, Thomas, Weitz

Associate Professors: Agadjanian, Benin, Harlan, Keith, Miller-Loessi, Sullivan

Assistant Professors: Glick, Padilla, Yabiku

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" (2.00) 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 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 of five focus areas: family issues, urban issues, diversity issues, work/organizational issues, and health issues. Students choosing this option must complete one required focus area course. Other requirements include four courses from a list of optional courses within that focus area and one additional sociology course. Internships (SOC 484) 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 486 Contemporary Theory <i>SB</i> (3)	
Total	6

The remaining four courses consist of sociology electives.

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

B.I.S. CONCENTRATION

A concentration in sociology is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see “Bachelor of Interdisciplinary Studies,” page 123.

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.

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 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

Global trends in population growth, composition, and distribution; theories, policies, and impact of population trends on environmental quality and development. 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.

General Studies: SB

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

Selected issues such as education, poverty, race relations, crime, drugs, and international issues such as population, environment, global inequality, conflict. Prerequisite: SOC 101 or 301.

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 101 (or 301); WST 100 (or 300).

General Studies: SB

SOC 365 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. Prerequisite: SOC 101 or 301 or 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)***selected semesters*

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)***selected semesters*

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 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***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)***fall and spring*

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*

How epidemics occur; how they are perceived in society; how epidemics affect society. 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 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)***selected semesters*

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. Topics may include the following:

- Service Learning 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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

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

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

Department of Speech and Hearing Science

www.asu.edu/clas/shs

480/965-2374

COOR 2211

David Ingram, Chair

Professors: S. Bacon, Dorman, D. Ingram, Sinex, Wilcox

Associate Professor: Liss

Assistant Professors: Azuma, Edgar, Gray

Clinical Professors: Mathy, Wiley

Clinical Associate Professors: C. Bacon, Brown, Mintz

Clinical Assistant Professors: K. Ingram, McBride, Wexler

Lecturers: Amann, Barto, Howard, O'Brien, Quinn, 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
SHS 496 Aural Rehabilitation	3
Total	40

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 394 ST: Brain, Memory, and Language	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

B.I.S. CONCENTRATION

A concentration in speech and hearing science is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see "Bachelor of Interdisciplinary Studies," page 123.

GRADUATE PROGRAMS

The faculty in the Department of Speech and Hearing Science offer programs leading to the M.S. degree in Communication Disorders, the Au.D degree in Audiology, and the 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" (2.00) 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" (2.00) 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 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).

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see "Graduate-Level Courses," page 62.

Women's Studies Program

www.asu.edu/clas/womens_studies

480/965-2358

ECA 209

Mary L. Rothschild, Director

CORE FACULTY

Professors: Koblitz, Rothschild
Associate Professor: Scheiner
Assistant Professors: Anderson, Leong

AFFILIATED FACULTY

African American Studies

Professor: Reyes

Anthropology

Professor: Brandt

Architecture

Associate Professor: Fish Ewan

Art

Professors: Codell, Fahlman, Magenta
Associate Professors: Schleif, Wolfthal

Asian Pacific American Studies

Assistant Professor: de Jesús

Curriculum and Instruction

Professors: Edelsky, Guzzetti

Educational Leadership and Policy Studies

Professor: Turner

English

Professors: Adams, Crowley, Gutierrez, Horan, Nilsen,
Reyes, Rhodes
Associate Professors: Chancy, DeLamotte, Pritchard, Tohe
Assistant Professors: Fox, Parchesky, Webb Peterson
Senior Lecturers: Heenan, Norton

Exercise and Wellness (ASU East)

Associate Professor: Swan

Family and Human Development

Professor: Martin

Geography

Professor: Burns

History

Professors: Fuchs, Lavrin, Warnicke
Associate Professors: Gray, Gullett, Stoner

Human Communication

Professors: Carlson, Nakayama
Associate Professors: Davis, Martinez
Assistant Professor: Park-Fuller

Interdisciplinary Humanities

Assistant Professor: Duncan

Interdisciplinary Studies

Lecturers: Lattouf, Nelson

Justice Studies

Professors: Jurik, Romero, Zatz
Associate Professor: Menjivar
Assistant Professor: Adelman

Kinesiology

Professor Emerita: Wells

Languages and Literatures

Regents' Professor: Foster
Professors: Honegger, Losse, Williams
Associate Professors: Choi, Pritchard, Rees, Tompkins
Assistant Professors: George, Gruzinska, Orlich

Management

Associate Professor: Cook

Music

Professor: Williamson
Assistant Professor: Sullivan

Philosophy

Associate Professor: McGregor

Psychology

Regents' Professors: Eisenberg, Russo
Professor: Chassin
Associate Professor: Saenz

Psychology in Education

Professors: Bernstein, Hackett, Kerr, Moore
Associate Professor: Arredondo

Recreation Management and Tourism

Professor: Allison

Religious Studies

Professor: Feldhaus
Associate Professor: Fessenden

Social Work

Professor: Segal
Associate Professors: Brzuzy, Gerdes, Stromwall
Assistant Professor: Larson

Sociology

Professors: Kronenfeld, Kulis, Weitz
Associate Professors: Agadjanian, Benin, Miller-Loessi

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" [2.00] or higher), of which 30 must be taken from WST or WSH prefixes or from other prefixes designated as part of the major. The other 15 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 these 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 History of American Feminist Thought <i>L, C</i>	3
WST 378 Contemporary Feminist Theory <i>L, C</i>	3
WST 380 Gender, Race, and Class <i>L/SB, C</i>	3
WST 484 Internship	3
WST 498 PS: Theoretical Issues in Women's Studies	3
Total	18

Electives. Students majoring in Women's Studies must complete four courses (12 semester hours) chosen from the WST or WSH course list.

Related Fields. Students majoring in Women's Studies must complete five courses (15 semester hours) in closely related fields from the WST or WSH course list, cross-listed or interdisciplinary courses, or other courses selected in consultation with a Women's Studies academic advisor.

Students must complete one course chosen from the electives or related fields on nonwestern women. A second course chosen from these same areas must also be completed on either nonwestern, racial or sexual minority women in the United States. For more information, see an academic advisor.

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 History of American Feminist Thought <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 330, for a description of the certificate program.

B.I.S. CONCENTRATION

A concentration in women's studies is available under the Bachelor of Interdisciplinary Studies (B.I.S.) degree, a program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations (or one double concentration) and an interdisciplinary core, students in the B.I.S. program take active roles in creating their educational plans and defining their career goals. For more information, see "Bachelor of Interdisciplinary Studies," page 123.

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, Gay, and Gender Studies. (3)

spring
Explores lesbian, gay, bisexual, transgender, and queer experiences in the U.S. and globally, from sociological, psychological, historical, and literary 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

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 91.

COLLEGE OF LIBERAL ARTS AND SCIENCES

WSH 494 Special Topics. (1–4)

fall and spring

Topics include a wide variety of interdisciplinary courses. Check department for current semester offerings.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

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 191 First-Year Seminar. (1–3)

selected semesters

Restricted to freshmen. Pass/fail. Topics may include the following:

- All About Feminism. (1)

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.

General Studies: SB, G

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)

selected semesters

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)

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 History of American Feminist Thought. (3)

fall

Explores the development of American feminist theory from its roots to 1975. Lecture, discussion. 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 394 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Feminist Voices of Color
- Gender and Performance
- Girlhood and Adolescence
- Women and Religion
- Women Warriors

WST 457 Gender, Culture, and Development. (3)

fall or 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 or 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 or spring

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 494 Special Topics. (1–4)

fall and spring

Topics may include the following:

- Women, Science, and Technology

WST 498 Pro-Seminar. (1–7)

fall and spring

Topics may include the following:

- Theoretical Issues in Women’s Studies. (3)
Reading and research on important theoretical issues in women’s studies. Prerequisite: WST 100 or 300 or instructor approval.

Omnibus Courses. For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 63.

Graduate-Level Courses. For information about courses numbered from 500 to 799, see the *Graduate Catalog*, or access www.asu.edu/aad/catalogs on the Web. In some situations, undergraduate students may be eligible to take these courses; for more information, see “Graduate-Level Courses,” page 62.