

# College of Engineering and Applied Sciences

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[www.eas.asu.edu](http://www.eas.asu.edu)



Engineering students assemble ASUSat1. The satellite, designed to map earth features, is a student-initiated project that has involved more than 400 students over the past six years.

Tim Trumble photo

<b>Del E. Webb School of Construction . . . . .</b>	<b>.202</b>	<b>Department of Computer Science and Engineering . . . . .</b>	<b>.230</b>
<b>School of Engineering . . . . .</b>	<b>.205</b>	<b>Department of Electrical Engineering . . . . .</b>	<b>.235</b>
<b>Department of Bioengineering . . . . .</b>	<b>.209</b>	<b>Department of Industrial Engineering . . . . .</b>	<b>.241</b>
<b>Department of Chemical and Materials Engineering . . . . .</b>	<b>.214</b>	<b>Department of Mechanical and Aerospace Engineering . . . . .</b>	<b>.245</b>
<b>Department of Civil and Environmental Engineering . . . . .</b>	<b>.223</b>	<b>Programs in Engineering Special Studies . . . . .</b>	<b>.253</b>

## PURPOSE

The purpose of the College of Engineering and Applied Sciences is to provide students with a range of educational opportunities by which they may achieve competence in the major branches of engineering, in computer science, and construction. Considerable effort is spent on the development and delivery of well-rounded programs that enhance student preparation for professional careers, lifelong learning, and responsible participation as a member of society.

For more information, visit the college's Web site at [www.eas.asu.edu](http://www.eas.asu.edu).

## ORGANIZATION

The College of Engineering and Applied Sciences is composed of the following academic and service units (with seven departments making up the School of Engineering):

Del E. Webb School of Construction

### School of Engineering

Department of Bioengineering

Department of Chemical and Materials Engineering

Department of Civil and Environmental Engineering

Department of Computer Science and Engineering

Department of Electrical Engineering

Department of Industrial Engineering

Department of Mechanical and Aerospace Engineering

**Research Centers.** The college is committed to the development of research programs of national prominence and to the concept that research is an important part of its educational role. The college encourages the participation of both qualified undergraduate students and graduate students in various research activities. Most of the faculty are involved in government or industry-sponsored research programs in a wide variety of topics. A partial list of these topics includes aerodynamics, biotechnology, computer design, computer-integrated manufacturing, environmental fluid dynamics, innovative engineering education, microelectronics manufacturing, power systems, semiconductor materials and devices, signal processing, solar energy, solid-state electronic devices, structural dynamics, telecommunications, thermosciences, and transportation systems. This research is carried out in the departments and schools listed above and in the following interdisciplinary research centers:

Center for Low Power Electronics

Center for Research on Education in Science,

Mathematics, Engineering, and Technology

Center for Research in Engineering and Applied Sciences

Center for Solid-State Electronics Research

Center for System Science and Engineering Research Manufacturing Institute

Telecommunications Research Center

**Center for Professional Development.** The Center for Professional Development, often in cooperation with the college's academic units and research centers, provides a variety of technical conferences, seminars, short courses, and televised and satellite-transmitted programs to enable engineers, scientists, and managers to continue the lifelong learning that is so necessary in a constantly changing world.

Programs may be conducted on campus, at various off-campus locations, or at company sites upon request. For more information, contact the Center for Professional Development, located in ECG 148, at 480/965-1740, by e-mail at [asu.cpd@asu.edu](mailto:asu.cpd@asu.edu), or visit the center's Web site at [www.eas.asu.edu/cpd](http://www.eas.asu.edu/cpd).

## ADMISSION

Individuals wishing to be admitted to freshman standing in the College of Engineering and Applied Sciences should have completed certain secondary-school units. These units are identified in the requirements for each of the two schools in the college. If these conditions are not met, additional university course work, possibly unacceptable for degree credit, may be required.

Students who are not admissible to programs in this college and who enroll in another college at ASU may not register for any 300- or 400-level courses in this college unless they are required in their degree programs and the students have the proper course prerequisites.

Entrance requirements of this college may differ from those of other ASU academic units. Students may be admitted under one of two different classifications, professional or preprofessional.

**Professional Status.** For admission to professional status, Arizona residents and nonresidents must meet one of the requirements as listed in the appropriate section of the "Professional Status Requirements" table, page 196. In addition, an international student must satisfy minimum Test of English as a Foreign Language (TOEFL) score requirements as shown in the table.

Students admitted to the university after successful completion of the General Education Development (GED) examination are admitted as preprofessional students within their major. Professional status is attained by meeting the minimum ACT or SAT score required for admission as listed in the "Professional Status Requirements" table, page 196.

**Preprofessional Status.** A student not admissible to professional status within the college but otherwise regularly admissible to ASU as stated in "Undergraduate Admission," page 62, may be admitted as a *preprofessional* student to any one of the academic programs of the college. International students whose TOEFL scores do not meet the required minimum shown in the "Professional Status Requirements" table, page 196 may also be admitted to preprofessional status. A student admitted into this classification follows the freshman-sophomore sequence of courses as required by the chosen major. Courses are selected with the assistance of an academic advisor. After completing a minimum of 30 semester hours of required or approved elective courses with a cumulative GPA equivalent to that required of transfer students and corresponding to the chosen major, students may apply for admission to professional status. International students must also submit a TOEFL score equivalent to that required for admission to professional status (see the "Professional Status Requirements" table, page 196). Preprofessional students are not permitted to register for 300- and 400-level courses in the College of Engineering and Applied Sciences until their status is changed to the professional classification.

## Professional Status Requirements

Student	School	High School Rank	Minimum Scores			Transfer GPA <sup>1</sup>	
			ACT	SAT	TOEFL <sup>2</sup>	Resident	Nonresident
Resident	Construction	Upper 25%	23	1140	—	—	—
	Engineering	Upper 25%	23	1140	—	—	—
Nonresident or International	Construction	Upper 25%	24	1140	550	—	—
	Engineering	Upper 25%	24	1140	550	—	—
Transfer	Construction	—	—	—	550	2.25	2.50
	Engineering	—	—	—	550	2.50	2.50

<sup>1</sup> The cumulative GPA is calculated using all credits from ASU as well as those from other colleges and universities.

<sup>2</sup> This test is for international students (see "TOEFL," page 67).

**Readmission.** Students applying for readmission to professional status for any program in this college must have a cumulative GPA for all college course work equal to that of the transfer admission requirements shown in the "Professional Status Requirements" table, on this page.

**Transfer into and Within the College.** Students transferring between academic programs within the college or from other colleges within the university must meet both the cumulative GPA requirement and the catalog requirements of the desired program in effect at the time of transfer. Students who are transferring from an Arizona community college and have been in continuous residence may continue under the catalog in effect at the time of their entrance into the community college.

**Transfer Students.** A student who contemplates transferring into this college from another institution, whether a community college or four-year institution, should carefully study the catalog material pertaining to the particular program and consult an advisor in this college before enrolling in the other institution. These steps assure a smooth transition at the time of transfer. Transfer students may request admission to either preprofessional or professional status in any of the programs offered by this college.

The minimum requirements for admission of resident, nonresident, and international transfer students to the professional program are listed in the "Professional Status Requirements" table, on this page. The academic units may impose additional admission and graduation requirements beyond the minimum specified by the college.

Credit is granted for transferred courses deemed equivalent to corresponding courses in the selected program of study, subject to grade and ASU resident credit requirements. No grades lower than "C" are accepted as transfer credit to meet the graduation requirements of this college. Credits transferred from a community college or two-year institution are applied only as lower-division credits. For a listing of the acceptable courses transferable to the various college degree programs, prospective Arizona community college transfer students should consult their advisors and refer to the ASU transfer guides available on the Web at [www.asu.edu/provost/articulation](http://www.asu.edu/provost/articulation).

It should be noted that some courses taken in other colleges of this university or other universities may be acceptable for general university credit but may not be acceptable toward the degree requirements of this college. Determina-

tion of those particular courses acceptable to a specific degree program is made within the appropriate academic unit with the approval of the dean.

**Cooperative Education.** The co-op program is a work-study plan of education that alternates periods of academic study with periods of employment in business, industry, or government. Students who choose this program ideally complete 12 months of employment and graduate with both the academic background and practical experience gained from working with professionals in a chosen field.

A student in the college is eligible to apply to the co-op program upon completion of 45 or more hours of classes required for the selected major. Transfer students are required to complete at least one semester at ASU before beginning work. All student applicants must have a GPA of at least 2.50 and the approval of an advisor.

To maintain continuous student status in the university, each co-op student must be enrolled in ASE 399 Cooperative Work Experience for one semester hour during each work session. Such credit cannot be applied toward degree requirements. For more information, contact the director of Student Academic Services at 480/965-1750 (ECG 205) or the Career Services office at 480/965-2350 (SSV 329).

## ADVISING

For assistance and counseling in planning a program of study, each student in this college is assigned a faculty advisor who is familiar with the chosen field of specialization and who must be consulted before registering each semester. The student should inform the advisor of any outside work or activity so that course loads may be adjusted accordingly.

Most students attending college find it necessary to obtain part-time employment; consequently, it is suggested that a careful balance of work and class requirements be considered in order to avoid academic problems.

Students enrolled in an undergraduate degree program in this college may register for a maximum of 19 semester hours each semester. Any student wanting to register for more than the maximum must petition the CEAS Standards Committee and must have an approval on file before registering for the overload.

Students who are enrolled in an undergraduate nondegree status in this college must obtain advising and approval to register before registering each semester from the director of Student Academic Services in ECG 205. For more

## College of Engineering and Applied Sciences Baccalaureate Degrees and Majors

Major	Concentration	Degree	Administered By
<b>Del E. Webb School of Construction</b>			
Construction <sup>1</sup>	General building construction, heavy construction, residential construction, specialty construction	B.S.	Del E. Webb School of Construction
<b>School of Engineering</b>			
Aerospace Engineering <sup>1</sup>	—	B.S.E.	Department of Mechanical and Aerospace Engineering
Bioengineering <sup>1</sup>	—	B.S.E.	Department of Bioengineering
Chemical Engineering <sup>1</sup>	—	B.S.E.	Department of Chemical and Materials Engineering
Civil Engineering <sup>1</sup>	Construction engineering, environmental engineering	B.S.E.	Department of Civil and Environmental Engineering
Computer Science <sup>1</sup>	—	B.S.	Department of Computer Science and Engineering
Computer Systems Engineering <sup>1</sup>	—	B.S.E.	Department of Computer Science and Engineering
Electrical Engineering <sup>1</sup>	—	B.S.E.	Department of Electrical Engineering
Engineering Interdisciplinary Studies <sup>2</sup>	—	B.S.	School of Engineering
Engineering Special Studies <sup>1</sup>	Premedical engineering	B.S.E.	School of Engineering
Industrial Engineering <sup>1</sup>	—	B.S.E.	Department of Industrial Engineering
Materials Science and Engineering <sup>1</sup>	—	B.S.E.	Department of Chemical and Materials Engineering
Mechanical Engineering <sup>1</sup>	—	B.S.E.	Department of Mechanical and Aerospace Engineering

<sup>1</sup> This major requires more than 120 semester hours to complete.

<sup>2</sup> Applications for this program are not being accepted at this time.

information, see “Admission of Undergraduate Nondegree Applicants” section, page 68.

## DEGREES

The faculty in the College of Engineering and Applied Sciences offer programs leading to the B.S. and B.S.E. degrees with majors in the subjects shown in the "College of Engineering and Applied Sciences Baccalaureate Degrees and Majors" table, on this page. Each major is administered by the academic unit indicated.

**Integrated B.S.E.—M.S. Program.** To provide greater program flexibility, qualified students of the School of Engineering may undertake a program with an integrated fourth- and fifth-year sequence of study in one of several fields of specialization in engineering. This program provides an opportunity to meet the increasing demands of the profession for graduates who can begin their engineering careers at an advanced level.

Students admitted to this program are assigned a faculty committee that supervises a program of study in which there is a progression in the course work and in which earlier work is given application in the later engineering courses for both the bachelor's and master's degrees. Entry into the integrated program requires an application submitted to the dean through the faculty advisor and the department chair. Applications are reviewed by a school committee that recommends the appropriate action to the dean. The application may be submitted in the fifth semester.

## GRADUATE PROGRAMS

The faculty in the College of Engineering and Applied Sciences offer master's and doctoral degrees as shown in the “College of Engineering and Applied Sciences Graduate Degrees and Majors” table, page 199. School of Engineering faculty participate in offering the Master of Engineering (M.E.) as a collaborative degree program offered by Arizona's three state universities. For more information on courses, faculty, and programs, see the *Graduate Catalog*.

## DEGREE REQUIREMENTS

For detailed information on the degree requirements of a major in the College of Engineering and Applied Sciences, refer to that department's or school's individual description on the following pages.

## UNIVERSITY GRADUATION REQUIREMENTS

In addition to department and school requirements, students must meet all university graduation requirements (see “University Graduation Requirements,” page 83). A well-planned program of study enables students to meet all requirements in a timely fashion. Students are encouraged to consult with an academic advisor in planning a program to ensure that they comply with all necessary requirements.

### General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35

hours of approved course work in General Studies. General Studies courses are listed in the “General Studies Courses” table, page 90, in the course descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*. Consult your advisor for an approved list of courses.

### First-Year Composition Requirement

As a minimum, completion of ENG 101 and 102, or ENG 107 and 108, or ENG 105 with grades of “C” or higher is required for graduation from ASU in any baccalaureate program. See “First-Year Composition Requirement,” page 83. Any student whose written or spoken English in any course is unsatisfactory may be required by the appropriate director or department chair to take additional course work.

## COLLEGE DEGREE REQUIREMENTS

### Pass/Fail Grades

Students enrolled in the College of Engineering and Applied Sciences do not receive degree credit for pass/fail courses taken at this institution. In addition, no course in this college is offered for pass/fail credit. Students requesting credit for pass/fail courses taken at another institution must file a Petition for Adjustment to Curriculum Requirements to the department of their major. Each request is judged on its particular merits.

### Entry into Upper-Division Courses

Before enrolling in courses at the 300 level and above, students must be in good academic standing in professional program status and have the approval of their advisors. A student who is not in good academic standing must secure approval from his or her advisor and the college’s Student Academic Services. Students whose grades in 300-level courses are unsatisfactory may be required to retake one or more courses for which credit has previously been granted.

The departments and schools have certain additional requirements that must be met in addition to the above college requirements and students should consult them for details.

### Currency of Course Work

Courses taken more than five years before admission to degree programs in this college are not normally accepted for transfer credit at the option of the department in which the applicant wishes to enroll. Courses completed within the five years preceding admission are judged as to their applicability to the student’s curriculum.

## MAJOR REQUIREMENTS

For detailed information on the degree requirements of a major in the College of Engineering and Applied Sciences, refer to that department’s or school’s individual description on the following pages.

## ACADEMIC STANDARDS

**Retention.** A student is expected to make satisfactory progress toward completion of degree requirements in order to continue enrollment in the College of Engineering and Applied Sciences. Any one of the following conditions is considered unsatisfactory progress and results in the student being placed on probationary status:

1. a semester or summer session with a GPA less than or equal to 1.50;

2. two successive semesters with GPAs less than 2.00; or
3. an ASU cumulative GPA less than 2.00.

Students on probation are subject to disqualification if

1. they do not attain a semester GPA of 2.25;
2. their cumulative GPA is below 2.00 at the end of the probationary semester; or
3. they are placed on probation for two consecutive semesters.

Courses completed during the summer sessions may not be used to reevaluate a student’s fall semester probationary status.

Students on academic probation are not allowed to register for more than 13 semester hours of course work. Probationary students may not register for the next semester without a special permit from an advisor in Student Academic Services. Special permits are not given until grades are recorded by the registrar for the current semester.

**Disqualification.** During a semester on academic probation, a student who fails to meet the retention standards specified above is disqualified. Students may request a review of their disqualification status by contacting the director of Student Academic Services in ECG 205. Any disqualified student who is accepted by another college at ASU may not register for courses in this college unless the courses are required for the new major. Disqualified students who do register for courses in this college may be withdrawn from these courses any time during that semester. Furthermore, students at the university who have been disqualified academically by this college are not eligible to enroll in summer session courses in this college until the disqualification period has expired and they have been reinstated.

**Reinstatement.** The College of Engineering and Applied Sciences does not accept an application for reinstatement until the disqualified student has remained out of this college for at least a 12-month period. Merely having remained in a disqualified status for this period of time does not, in itself, constitute a basis for reinstatement. Proof of ability to do satisfactory college work in the chosen discipline is required, for example, completing at least 15 semester hours of pertinent courses in the discipline at a community college with higher than average grades, and a cumulative GPA of 2.50 or higher for all courses completed.

## STUDENT RESPONSIBILITIES

**Course Prerequisites.** Students should consult the *Schedule of Classes* and the catalog for course prerequisites. Students who register for courses without the designated prerequisites may be withdrawn without the student’s consent at any time before the final examination. Such withdrawal may be initiated by the instructor, the chair of the department offering the course, the director of Student Academic Services, or the dean of the college. In such cases, students will not receive monetary reimbursement. However, such withdrawal is considered to be unrestricted as described under “Grading System,” page 76, and does not count against the number of restricted withdrawals allowed.

## College of Engineering and Applied Sciences Graduate Degrees and Majors

Major	Concentration	Degree	Administered By
<b>Del E. Webb School of Construction</b>			
Construction	Construction science, facilities, management	M.S.	Del E. Webb School of Construction
<b>School of Engineering</b>			
Aerospace Engineering	—	M.S., M.S.E., Ph.D.	Department of Mechanical and Aerospace Engineering
Bioengineering	—	M.S., Ph.D.	Department of Bioengineering
Chemical Engineering	Biomedical and clinical engineering, chemical process engineering, chemical reactor engineering, energy and materials conversion, environmental control, solid-state processing, transport phenomena	M.S., M.S.E., Ph.D.	Department of Chemical and Materials Engineering
Civil Engineering	—	M.S., M.S.E., Ph.D.	Department of Civil and Environmental Engineering
Computer Science	—	M.C.S., M.S., Ph.D.	Department of Computer Science and Engineering
Electrical Engineering	—	M.S., M.S.E., Ph.D.	Department of Electrical Engineering
Engineering	—	M.E. <sup>1</sup>	School of Engineering
Engineering Science	—	M.S., M.S.E., Ph.D.	School of Engineering
Industrial Engineering	—	M.S., M.S.E., Ph.D.	Department of Industrial Engineering
Materials Engineering	—	M.S., M.S.E.	Department of Chemical and Materials Engineering
Materials Science	—	M.S. <sup>2</sup>	Committee on the Science and Engineering Materials
Mechanical Engineering	—	M.S., M.S.E., Ph.D.	Department of Mechanical and Aerospace Engineering
Science and Engineering of Materials	High-resolution nanostructure analysis, solid-state device materials design	Ph.D. <sup>2</sup>	Committee on the Science and Engineering of Materials

<sup>1</sup> This collaborative program is offered by the three state universities. See the *Graduate Catalog* for more information.

<sup>2</sup> This program is administered by the Graduate College. See "Graduate College," page 304.

## SPECIAL PROGRAMS

**Foundation Coalition.** ASU is a member of the Foundation Coalition, a National Science Foundation-funded group of seven institutions of higher learning across the U.S. that is working to improve engineering education. Foundation Coalition programs are intended to

1. demonstrate and promote the interrelationships of subject matter within the curriculum;
2. improve the interpersonal skills of students and the understanding of concepts through the use of more teaming and cooperative learning environments;
3. increase the use of technology in the curriculum; and
4. assess and evaluate intended improvements.

Such changes address the desires of employers, increase the numbers of baccalaureate degrees earned by members of currently underrepresented groups, and promote curriculum improvement. Foundation Coalition programs are available to all freshmen and sophomores except those majoring in Bioengineering, Chemical Engineering, Computer Science, Construction and Materials Science Engineering, and to

juniors and seniors in Electrical Engineering and Industrial Engineering.

Foundation Coalition programs offer students a more hands-on, team-based, computer-intensive approach to the curriculum. The freshman programs provide an important opportunity for new students to get to know a small group of students, making a large university seem less overwhelming. The programs also involve more interactions with faculty and access to special tutors. All students will get a team-based, computer-intensive education in ECE 194 Introduction to Engineering Design, but the Foundation Coalition program extends this experience to many more subjects and courses.

Freshmen Foundation Coalition programs offer both an integrated set of courses which include engineering, calculus, physics, and English in both the first and second semesters, and smaller integration packages that include engineering and English. In these packages, the same set of students take all of the courses in the package in high-tech, team-promoting classrooms while the faculty work together to deliver a unified set of courses. Sophomore programs presently involve courses in mathematics, mechanics, and electrical circuits.

Students interested in these programs should see their department advisor, inquire at the Foundation Coalition office in room ECG 303, call 480/965-5350, or access the Web site at [www.eas.asu.edu/~asufc](http://www.eas.asu.edu/~asufc).

**Minority Engineering Program.** The staff of the Minority Engineering Program (MEP) is available to assist the academic and professional development of prospective, newly admitted, and continuing students through a variety of support services. In addition, advice on financial aid, scholarships, and employment is provided. Visit the MEP office located in room ECG 307 or call 480/965-8275, or access the Web site at [www.eas.asu.edu/~omep](http://www.eas.asu.edu/~omep).

**Women in Applied Sciences and Engineering Program.** The Women in Applied Sciences and Engineering (WISE) Program hosts seminars and workshops, and provides outreach programs to high school and community college students. WISE offers a professional development course, STE 194 ST: Engineering for Undecided, to acquaint students with a variety of technical careers. The WISE Center, located in room ECG 214, is open for study groups, tutoring, and informal discussions. The phone number is 480/965-6882. The Web address is [www.eas.asu.edu/~wise](http://www.eas.asu.edu/~wise).

**Student Academic Services.** The dean's office of the College of Engineering and Applied Sciences maintains a special office staffed to assist students in various matters. This office coordinates the work of the College Admissions and Standards Committee and administers the probation, disqualification, and readmission processes for students who are academically deficient.

**Academic Honors.** Students completing baccalaureate degree requirements receive the appropriate honors designations on their diplomas consistent with the requirements specified by the university.

Students in the College of Engineering and Applied Sciences are encouraged to seek information concerning entry into those honor societies for which they may qualify. Membership in such organizations enhances the student's professional stature. The following honor societies are active within the college:

Alpha Pi Mu—Industrial Engineering Honor Society  
Chi Epsilon—Civil Engineering Honor Society  
Eta Kappa Nu—Electrical Engineering Honor Society  
Pi Tau Sigma—Mechanical Engineering Honor Society  
Sigma Gamma Tau—Aerospace Engineering Honor Society  
Sigma Lambda Chi—Construction Honor Society  
Tau Beta Pi—National Engineering Honor Society  
Upsilon Pi Epsilon—National Computer Science Honor Society

Information on any of these organizations may be obtained from the respective department or school offices.

**University Honors College.** The College of Engineering and Applied Sciences participates in the programs of the University Honors College, which provides enhanced educational experiences to academically superior undergraduate students. Participating students can major in any academic program. A description of the requirements and the opportunities offered by the University Honors College can

be found in the "Craig and Barbara Barrett Honors College" section, page 323.

**Scholarships.** Information and applications for academic scholarships for continuing students may be obtained by contacting the college's Student Academic Services or the various department or school offices. Other scholarships may be available through the university Student Financial Assistance Office.

**ASU 3+2 Programs.** Students desiring to earn a baccalaureate degree from Grand Canyon University (Phoenix, Arizona) in Mathematics, Chemistry, Construction, or Physics or from Southwestern University (Georgetown, Texas) in Physical Science and a baccalaureate degree in one of the engineering majors or the Construction major from ASU can take advantage of a 3+2 program approved by these institutions. Such students complete the first three years of study at their respective university and the last two years of study at ASU. At the end of the fourth or fifth year, assuming all degree requirements have been met, the baccalaureate degree is awarded by the student's respective university and the appropriate engineering or construction baccalaureate degree is awarded by ASU.

A similar 3+2 program is available to qualified students from Long Island University/C.W. Post Campus, College of Arts and Sciences, who wish to earn both a B.S. degree from C.W. Post in Mathematics or Physics and a Bachelor of Science in Engineering degree from ASU in Civil, Chemical, Electrical, Industrial, or Mechanical Engineering.

More information can be obtained by writing to one of the following offices:

OFFICE OF THE ADMINISTRATIVE VICE  
PRESIDENT  
GRAND CANYON UNIVERSITY  
3300 W CAMELBACK RD  
PHOENIX AZ 85017-1097

PROVOST AND DEAN OF THE BROWN COLLEGE  
OF ARTS AND SCIENCES  
SOUTHWESTERN UNIVERSITY  
GEORGETOWN TX 78626-6100

DEAN, COLLEGE OF ARTS AND SCIENCES  
C.W. POST CAMPUS  
LONG ISLAND UNIVERSITY  
700 NORTHERN BLVD  
GREENVALE NY 11548-1327

OFFICE OF THE DEAN  
COLLEGE OF ENGINEERING AND  
APPLIED SCIENCES  
ARIZONA STATE UNIVERSITY  
PO BOX 875506  
TEMPE AZ 85287-5506

**ROTC Students.** Students pursuing a commission through either the Air Force or Army ROTC programs are required to take courses in the Department of Aerospace Studies or Department of Military Science. To preclude excessive overloads, these students should plan on at least one additional semester to complete degree requirements. Because of accreditation requirements, aerospace studies (AES) or military science (MIS) courses are not acceptable for degree credit in engineering as social and behavioral science or

humanities and fine arts under General Studies. ROTC students must also meet all other degree requirements of this college.

### GENERAL INFORMATION

**Definition of Terms.** The terms used in this college to describe offerings are defined below for purposes of clarity.

*Program of Study.* This broad term describes the complete array of courses included in the study leading to a degree.

*Major.* This term describes a specialized group of courses contained within the program of study. Example: program of study—engineering; major—Civil Engineering.

*Area of Study (Technical Electives) or Concentration.* Each of these terms describes a selection of courses within a major or among one or more majors. The number of technical electives varies from curriculum to curriculum. In a number of the majors, the technical electives must be chosen from preselected groups. For this reason the choice of specific technical electives for an area of study should be done with the advice and counsel of an advisor. Example: major—Mechanical Engineering; area of study—thermosciences.



Memorial Union

Michael Martin photo