



**EXECUTIVE VICE PRESIDENT AND PROVOST**  
THE UNIVERSITY OF TEXAS AT AUSTIN

110 Inner Campus Drive, Suite 201 • G1000 • Austin, Texas 78712-1701 • (512) 471-4363 • FAX (512) 475-7385

January 29, 2016

Dr. Steven Leslie  
Executive Vice Chancellor for Academic Affairs  
The University of Texas System  
OHH 304 (P4300)

Dear Dr. Leslie:

Enclosed for your approval are proposed changes to the Bachelor of Science in Engineering Degree Programs in the Cockrell School of Engineering chapter of the *Undergraduate Catalog 2016-2018* (D 13832-13846). The proposal was approved by the Faculty Council on January 26, 2016. The authority to grant final approval on this change resides with UT System.

Sincerely,

A handwritten signature in blue ink, appearing to read "Judith H. Langlois".

Judith H. Langlois  
Executive Vice President and Provost, *ad interim*

JHL: lac

Enclosure

cc: Gregory L. Fenves, President of the University

ec: Hillary Hart, Secretary, Office of the General Faculty  
Carol Longoria, Assistant Deputy to the President  
Sharon L. Wood, Dean, Cockrell School of Engineering  
Gerald Spietel, Associate Dean, Cockrell School of Engineering  
Brenda Schumann, Associate Registrar  
IRRIS Team  
Suzanne Revisore, Assistant to the EVCAA, UT System  
Debbie Roberts, Executive Assistant, Office of the General Faculty  
Victoria Cervantes, Sr. Administrative Associate, Office of the General Faculty



OFFICE OF THE FACULTY COUNCIL  
THE UNIVERSITY OF TEXAS AT AUSTIN

P. O. BOX 7816 • Austin, TX 78713-7816  
(512) 471-5934 • Fax: (512) 471-5984 • <http://www.utexas.edu/faculty/council>

January 27, 2016

Judith H. Langlois  
Interim Executive Vice President and Provost  
The University of Texas at Austin  
MAI 201  
Campus Mail Code: G1000

EXECUTIVE VICE PRESIDENT AND PROVOST UT AUSTIN	
REC'D	FEB 01 2016 ✓
REFER TO _____	
HANDLE _____	
COMMENT & RETURN _____	
FILE OR DISCARD _____	

Dear Dr. Langlois:

Enclosed for your consideration and action are proposed changes to the Bachelor of Science in Engineering Degree Programs in the Cockrell School of Engineering chapter in the *Undergraduate Catalog, 2016-2018* (D 13832-13846). The changes were classified as being of *general* interest to more than one college or school and were approved by the Faculty Council on a no-protest basis on January 26, 2016. The authority to grant final approval on these changes resides with UT System.

Please let me know if you have questions or if I can provide other information concerning these items.

Sincerely,

Hillary Hart, Secretary  
General Faculty and Faculty Council

HH:dlr

Enclosures

xc: Gregory L. Fenves, president  
Janet Dukerich, senior vice provost

ec (letter only): Sharon L. Wood, dean, Cockrell School of Engineering  
Gerald Speitel, associate dean for academic affairs, Cockrell School of Engineering  
Carol Longoria, deputy to the president  
Allen Walser, manager of reporting and analysis, IRRIS  
Brenda Schumann, associate registrar  
Lydia Cornell, Program Coordinator  
Michelle George, administrative manager for faculty affairs, provost's office

## DOCUMENTS OF THE GENERAL FACULTY


**PROPOSED CHANGES TO THE BACHELOR OF SCIENCE IN ENGINEERING DEGREE  
PROGRAMS IN THE COCKRELL SCHOOL OF ENGINEERING CHAPTER IN THE  
UNDERGRADUATE CATALOG, 2016-2018**

Dean Sharon L. Wood in the Cockrell School of Engineering has filed with the secretary of the Faculty Council the following changes to the *Undergraduate Catalog, 2016-2018*. The secretary has classified this proposal as legislation of *general* interest to more than one college or school.

The Committee on Undergraduate Degree Program Review recommended approval of the changes on January 6, 2016, and forwarded the proposal to the Office of the General Faculty. The Faculty Council has the authority to approve this legislation on behalf of the General Faculty. The authority to grant final approval on this legislation resides with UT System.

If no objection is filed with the Office of the General Faculty by the date specified below, the legislation will be held to have been approved by the Faculty Council. If an objection is filed within the prescribed period, the legislation will be presented to the Faculty Council at its next meeting. The objection, with reasons, must be signed by a member of the Faculty Council.

To be counted, a protest must be received in the Office of the General Faculty by January 26, 2016.

  
Hillary Hart, Secretary  
General Faculty and Faculty Council

**PROPOSED CHANGES TO THE BACHELOR OF SCIENCE IN ENGINEERING DEGREE  
PROGRAMS IN THE COCKRELL SCHOOL OF ENGINEERING CHAPTER IN THE  
UNDERGRADUATE CATALOG, 2016-2018**

Type of Change     Academic Change  
                              Degree Program Change (THECB form required)

Proposed classification     Exclusive      General      Major

**1. IF THE ANSWER TO ANY OF THE FOLLOWING QUESTIONS IS YES, THE COLLEGE MUST CONSULT LINDA DICKENS, DIRECTOR OF ACCREDITATION AND ASSESSMENT, TO DETERMINE IF SACS-COC APPROVAL IS REQUIRED.**

- Is this a new degree program?    Yes  No
- Does the program offer courses that will be taught off campus?            Yes  No
- Will courses in this program be delivered electronically?                      Yes  No

**2. EXPLAIN CHANGE TO DEGREE PROGRAM AND GIVE A DETAILED RATIONALE FOR EACH INDIVIDUAL CHANGE:**

- A. Change (Repetition of Course section): Wording change of the Repetition of Course Policy. Rationale: A proposal to eliminate major sequence has been approved by the school. Major sequence is referenced in the current Repetition of Course policy. As a result, the wording is being changed to maintain the intent of the current Repetition of Course policy, while deleting the reference to major sequence.
- B. Change (Academic Standards section): Wording change in the description of academic probation. Rationale: The Civil, Architectural and Environmental Engineering Department is adding an undergraduate degree in Environmental Engineering.
- C. Change (Academic Standards section): Delete wording "courses required to overcome admission or prerequisite deficiencies are not considered in decisions on engineering probation". Rationale: The catalog already states "In the Cockrell School of Engineering, the grade point average used in all academic decisions is the average of grades the student has earned in residence in courses applicable to the degree. Academic decisions are decisions about engineering probation,..." In addition, students no longer take M 305G, PHY 306 or CH 304K as prerequisites.
- D. Change (Internal Transfer section): Math, physics and technical courses must be taken for a letter grade to the internal transfer policy. Rationale: Students should take the courses for a letter grade and not on a pass/fail basis.
- E. Change (External Transfer #5 and Major Sequence Section): Eliminate Admission to a Major Sequence Policy. Rationale: Major Sequence was implemented in the 1982-1984 Undergraduate Catalog as an enrollment management system in the College of Engineering. At that time, no enrollment management system existed at the University Admissions level, and the Electrical and Computer Engineering Department was inundated with students. We now have control over admissions at every point of entry into the Cockrell School. Major Sequence is an impediment to our goals of increasing retention and graduate rates. It is illogical and unfair to have an intermediate GPA (2.5) that is higher than that required for graduation. UT policy on internal transfer has changed in a way that conflicts with the Major Sequence program.
- F. Change (The Minor section): Eliminate The Minor. Rationale: The University is implementing transcriptable minors. Engineering students will need to complete a transcriptable minor if they choose to pursue a minor.
- G. Change (Second Degrees section): Delete "(1) completes at least twenty-four hours of approved coursework beyond the work counted toward the first bachelor's degree; and (2). Rationale: This University policy was eliminated by the Faculty Council.
- H. Change (Requirements Included in All Engineering Degree Plans section): Modifying M 427K to M 427J or 427K. Rationale: To reflect the changes made by the Mathematics department that denote either 427K or 427J will count toward the Advanced Calculus requirement for all Bachelor of Science in engineering degrees.

- I. Update wording in the Liberal Education of Engineers section: update the wording to reflect more accurate guidance for the social and behavioral sciences and visual and performing arts requirements, due to changes in the ABET general education criterion.

**3. THIS PROPOSAL INVOLVES (Please check all that apply)**

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Courses in other colleges                               | <input type="checkbox"/> Courses in proposer's college that are frequently taken by students in other colleges                                 | <input type="checkbox"/> Flags  |
| <input type="checkbox"/> Course in the core curriculum                           | <input type="checkbox"/> Change in course sequencing for an existing program   | <input type="checkbox"/> Courses that have to be added to the inventory |
| <input type="checkbox"/> Change in admission requirements (external or internal) | <input type="checkbox"/> Requirements not explicit in the catalog language (e.g., lists of acceptable courses maintained by department office) |   |

**4. SCOPE OF PROPOSED CHANGE**

- a. Does this proposal impact other colleges/schools? Yes  No   
If yes, then how?
- b. Do you anticipate a net change in the number of students in your college? Yes  No   
If yes, how many more (or fewer) students do you expect?
- c. Do you anticipate a net increase (or decrease) in the number of students from outside of your college taking classes in your college? Yes  No   
If yes, please indicate the number of students and/or class seats involved.
- d. Do you anticipate a net increase (or decrease) in the number of students from your college taking courses in other colleges? Yes  No   
If yes, please indicate the number of students and/or class seats involved.

**If 4 a, b, c, or d was answered with yes, please answer the following questions. If the proposal has potential budgetary impacts for another college/school, such as requiring new sections or a non-negligible increase in the number of seats offered, at least one contact must be at the college-level.**

How many students do you expect to be impacted?

Impacted schools must be contacted and their response(s) included:

Person communicated with:

Date of communication:

Response: Pending

- e. Does this proposal involve changes to the core curriculum or other basic education requirements (42-hour core, signature courses, flags)? If yes, explain:

**If yes, undergraduate studies must be informed of the proposed changes and their response included:**

Person communicated with:

Date of communication:

Response:

- f. Will this proposal change the number of hours required for degree completion? If yes, explain:

**5. COLLEGE/SCHOOL APPROVAL PROCESS**

Department approval date: April 10, 2015 on items A-H; September 11, 2015 on item I

College approval date: April 10, 2015 on items A-H; September 17, 2015 on item I

Dean approval date: April 29, 2015 on items A-H; September 25, 2015 on item I

**PROPOSED NEW CATALOG TEXT:****UNDER ACADEMIC POLICIES AND PROCEDURES****Repetition of a Course**

An undergraduate in the Cockrell School ~~who has not earned admission into major sequence~~ may not enroll in any lower division courses in engineering, geology or natural sciences courses required by the engineering degree plan more than twice. A symbol of *Q* or *W* counts as an enrollment unless it is recognized as nonacademic by the dean's office.

To request permission to enroll in a course for a third or more attempt a student must submit a written appeal at [https://utdirect.utexas.edu/link2/appeal\\_entry.WBX](https://utdirect.utexas.edu/link2/appeal_entry.WBX). A student may receive departmental adviser approval to enroll in a course a third or more times only if the student has a substantiated nonacademic reason for not successfully completing the course in earlier attempts. Documentation may be required by the departmental adviser to support the substantiated nonacademic reason. If the student is denied approval to enroll in a required course, he or she will be placed in the undeclared major code and must consider other degree options.

A student who is denied approval to repeat a course in residence at the University will also be denied approval to complete the course by transfer, extension, correspondence, distance education, or credit by examination and then count it toward the degree.

A student in the Cockrell School may not repeat for a letter grade a course in which he or she has earned a grade of C- or better.

**Academic Standards**

In addition to the scholastic standards described in General Information, the Cockrell School imposes the following academic standards. Students who fail to meet the standards stated in General Information are placed on "scholastic probation" by the University. The probationary status given to those who fail to meet the following school standards is "engineering probation."

In cases with extenuating circumstances, the student may appeal to the dean for a waiver of any of the following requirements.

A student is placed on academic probation in engineering under the following circumstances:

- If his or her grade point average in courses in the major area of study taken in residence falls below 2.00. The "major area of study" includes all courses in the student's discipline (biomedical, chemical, electrical, mechanical, or petroleum and geosystems engineering) and required under the student's engineering degree plan. For architectural engineering and civil, and environmental engineering majors, the major area includes all courses in both architectural engineering and civil engineering; for aerospace engineering majors, the major area includes all courses in both aerospace engineering and engineering mechanics; for geosystems engineering and hydrogeology majors, the major area includes all courses in both geological sciences and petroleum and geosystems engineering.
- If the student's grade point average in required technical courses taken in residence falls below 2.00. "Required technical courses" are courses taken in the Cockrell School, the College of Natural Sciences, or the Jackson School of Geosciences and required under the student's engineering degree plan; they include approved technical elective courses.

~~Courses required to overcome admission or prerequisite deficiencies are not considered in decisions on engineering probation.~~

Grades received at the University in all courses in the major area, including grades in courses that have been repeated, are included in computing the student's grade point average.

A student on engineering probation will be removed from probation at the end of a long-session semester or summer session if the student is no longer subject to engineering probation under either of the criteria above.

After being placed on engineering probation, a student must be removed from probation within the next two long-session semesters in which he or she is registered. A student who fails to be removed from engineering probation within this time will be placed on engineering dismissal from the school.

A student seeking to reenter the school after having been scholastically dismissed from the University must enroll as an undeclared major unless there is a reasonable likelihood that the student can complete the degree plan under which he or she last registered. A student seeking to reenter the school after having been dismissed from engineering must enroll as an undeclared major. Students who are undeclared majors may not enroll in engineering courses.

Any student having academic difficulty should discuss his or her status with an academic adviser in the Engineering Student Services and Advising Office. Call (512) 471-4321 to set up an appointment with an academic adviser.

## Under **ADMISSION AND REGISTRATION**

### **Admission**

Admission and readmission of undergraduate students to the University is the responsibility of the director of admissions. All students who wish to major in engineering must be admitted to the University according to the procedures given in *General Information*.

Information is available from The University of Texas at Austin, Engineering Student Services and Advising, Cockrell School of Engineering, 2407 Speedway, C2108, Austin TX 78712. The telephone number is (512) 471-4321.

Students who have questions about the requirements of a specific degree plan should contact the appropriate departmental advising office. Additional information about academic advising can be found at <http://www.engr.utexas.edu/undergraduate/advising>.

### **Freshman Admission**

Freshman applicants seeking admission to the Cockrell School must meet the calculus readiness requirement by the official admissions application deadline. More information about calculus readiness is available at <http://www.engr.utexas.edu/undergraduate/admission/calculus/>.

Applicants to the Cockrell School should use the online application at <http://www.applytexas.org/> and select engineering as a first-choice major. When selecting a second-choice major, freshman applicants may choose from one of the many other majors offered at the University, but are encouraged to choose a second engineering major when applying to the Cockrell School.

### **Transfer Admission**

#### **Internal Transfer**

##### *Internal transfer within the Cockrell School*

An engineering student who wants to transfer to another major within the Cockrell School of Engineering must submit an application by the December 15 deadline for spring admission and the May 15 deadline for summer/fall admission. Students who are applying during their first semester enrolled must meet the following requirements to be eligible for consideration:

1. Completion of at least fourteen semester hours of coursework in residence.

2. Completion of Mathematics 408C for a letter grade, or a subsequent calculus course, taken in residence.
3. Completion of a second technical course in residence for a letter grade that counts toward the engineering degree. Technical courses include courses offered in math, physics, chemistry, biology, geology, or engineering.

Engineering students who are applying after completing at least one semester must meet the requirements listed in the internal transfer from another division of the University section below.

*Internal transfer from another division of the University*

A student may transfer to the Cockrell School of Engineering from another division of the University in accordance with the regulations given in *General Information*. All students must submit an internal transfer application by the May 15 deadline for summer/fall admission.

Internal transfer applicants must meet the following requirements to be eligible for consideration:

1. Completion of at least twenty-eight semester hours of coursework in residence at the University.
2. A cumulative in-residence grade point average of at least 3.00.
3. Completion of Mathematics 408D, Physics 303K, and 103M for a letter grade or their equivalents.
4. Completion of a minimum of four technical courses in residence for a letter grade that count toward the engineering degree, including the mathematics and physics coursework listed above. Technical courses include courses offered in math, physics, chemistry, biology, geology, or engineering.

Additional information for all internal transfer applicants:

- Only currently enrolled students may apply.
- Students may apply during the semester they are completing the minimum requirements to be eligible for consideration.
- Application forms are available online at <http://www.engr.utexas.edu/undergraduate/admissions/changeofmajor>.
- Admission to all engineering majors is offered as space is available to the students who are best qualified. For equally qualified applicants, preference is given to the student who has completed more of the required technical courses for the requested major.

Some degree programs may have additional admission considerations; these are described in the individual degree plans.

**External Transfer**

External transfer applicants will be required to meet the following minimum criteria to be considered for admission to an engineering major:

- Transfer credit for Mathematics 408L, 408M, or 408D
- Transfer credit for Physics 303K and 103M
- Transfer credit for a minimum of at least four technical courses, including the mathematics and physics coursework listed above. Technical courses include courses offered math, physics, chemistry, biology, geology, computer science, or engineering.

Admission applications that are not complete by the March 1 deadline may be held to a higher admissions standard than those that are complete if enrollment limits are reached.

*Guidelines for Transfer Students*

- 1 Students who wish to transfer to the University from another college or university must apply to the Office of Admissions as described in *General Information*. Requirements for admission as a transfer student vary, but all transfer applicants must submit transcripts of all college and high school



- coursework.
- 2 Only courses listed in the student's engineering degree program, or equivalent courses accepted by the department chair and approved by the dean, may be counted toward an engineering degree. A course may therefore be accepted for transfer credit but not be applicable toward an engineering degree.
  - 3 Courses that are common to all degree programs in the Cockrell School are listed in Requirements Included in All Engineering Degree Plans. These may be taken at any school offering courses acceptable for transfer to the University.
  - 4 Completion of sequences of technical courses in the major area sometimes requires five or more semesters. Therefore, most transfer students should anticipate a minimum of five semesters or the equivalent in residence at the University.
  - 5 ~~Transfer students with more than forty semester hours of credit in an engineering or pre-engineering program may be eligible for admission to a major sequence as explained in the following section.~~

#### Admission to a Major Sequence

~~The major sequence in an engineering degree program is a set of courses in which the student learns to put to engineering use the concepts learned in the basic sequence. Major sequence courses are normally taken in the last two years of undergraduate study.~~

~~Students must apply online for admission to a major sequence. The following requirements apply both to students seeking to transfer to the school from another institution and to those currently enrolled at the University, either in another college or school or in a basic sequence of courses in the Cockrell School. Those in another college or school must also meet the requirements given in General Information for transfer from one division to another within the University.~~

- ~~1. Applications for admission to the major sequence are evaluated by the engineering departments each semester. The criteria for admission vary from semester to semester; current criteria are published at <http://www.engr.utexas.edu/undergraduate/policies/sequence/>.~~
- ~~2. To be eligible for admission to a major sequence, the applicant must have received credit from the University for the basic sequence of courses of the degree plan, either by completing the courses at the University or by receiving transfer credit for equivalent courses taken elsewhere. The student must not be on scholastic probation according to University regulations and must not be on engineering probation according to the regulations of the Cockrell School. For the basic sequence of courses in each degree plan, see the outline of the plan later in this section.~~
- ~~3. No engineering student may register for a course identified as a major sequence course in any of the degree plans of the Cockrell School unless the student has been admitted to the major sequence.~~
- ~~4. An applicant who has not previously been registered at the University must be admitted to the University as described in General Information. Admission to the University does not imply or guarantee admission to a major sequence in the Cockrell School. A student's application to the major sequence is considered only after the student has been admitted to the University.~~
- ~~5. Application for admission to a major sequence must be made online at <http://www.engr.utexas.edu/undergraduate/policies/sequence/>.~~
- ~~6. Priority deadlines for submitting completed applications for admission to a major sequence are October 1 for entrance in the following spring semester and March 1 for entrance in either the following summer session or the following fall semester.~~
- ~~7. A student who has been admitted to a major sequence but does not enroll, and who wishes to enter in a subsequent semester, must reapply for admission to a major sequence and must meet all requirements in place at the time of reapplication. A student who has been out of the University for at least one long-session semester must apply for readmission to the University.~~
- ~~8. Any student who has been denied admission to a major sequence will not be considered for admission for a subsequent semester unless reapplication is made.~~

## Registration

*General Information* gives information about registration, adding and dropping courses, transfer from one division of the University to another, and auditing a course. The *Course Schedule*, published online before registration each semester and summer session, includes registration instructions, advising locations, and the times, places, and instructors of classes.

To register for a course, a student must fulfill the prerequisite given in the catalog or course schedule. If the student has not fulfilled the prerequisite, he or she must obtain the approval of the department offering the course before registering for it.

### Concurrent Enrollment

Concurrent enrollment refers to taking courses through The University of Texas at Austin Extension (UEX) program, or taking courses at another university or a community college. An engineering student must have the approval of the dean for concurrent enrollment. Application for this approval should be made online at <http://www.engr.utexas.edu/undergraduate/forms>. A student may not enroll concurrently in any course counted toward the degree in the semester he or she will be graduating. More information about the approval process is available in the Engineering Student Services and Advising Office (ESSA), located in the Engineering Student Services Building (ESS), by email at [studentservices-affairs@engr.utexas.edu](mailto:studentservices-affairs@engr.utexas.edu); or by phone at (512) 471-4321.

## Under DEGREES AND PROGRAMS

To satisfy the course requirements for an engineering degree, a student must earn credit for all of the courses listed in the curriculum for that degree.

All University curricula leading to bachelor's degrees in engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012—telephone: (410) 347-7700—<http://www.abet.org>. ABET sets minimum standards for engineering education, defined in terms of curriculum content, the quality of the faculty, and the adequacy of facilities. Graduation from an accredited program is an advantage when applying for membership in a professional society or for registration as a professional engineer.

## Dual Degree Programs

### Engineering/Plan II Honors Program

A limited number of students whose high school class standing and admission test scores indicate strong academic potential and motivation may pursue a curriculum leading to both a bachelor's degree in engineering and the Bachelor of Arts, Plan II. This dual degree option, offered jointly by the Cockrell School and the Plan II Honors Program of the College of Liberal Arts, provides the student with challenging liberal arts courses while he or she also pursues a professional degree in engineering. Admission to this program requires at least two separate applications: one to the University and one to the Plan II Honors Program. Students should contact both the Cockrell School Engineering Student Services and Advising Office, located in the Engineering Student Services Building (ESS), and the Plan II office, located in the Liberal Arts Building (CLA), for more information on applications and early deadlines.

### Architectural Engineering/Architecture

A program that leads to both the Bachelor of Science in Architectural Engineering degree and the Bachelor of Architecture degree is available to qualified students. The program combines the course requirements of both degrees and requires six years for completion. Students who wish to pursue both degrees must apply for admission to the School of Architecture according to the procedures and deadlines established by the school. The program is described in Bachelor of Architecture/ Bachelor of Science in Architectural Engineering Dual Degree Program; additional information is available from the undergraduate adviser for architectural engineering.

### **Simultaneous Majors**

An engineering student may pursue two majors simultaneously. The student must follow all procedures and meet all requirements associated with both majors. An engineering student may not pursue two engineering majors simultaneously.

The simultaneous major option is available only to undergraduates who have completed thirty hours of coursework in residence at the University and who have been admitted to both degree programs.

### **Technical Area Options**

Several engineering degree programs require a student to select a "technical area option" and to complete a specified number of courses in that area. Other degree programs do not require a student to specify a particular option but allow the student to choose courses either within an area of specialty or more broadly across technical areas. Although most options are designed to help the student develop greater competence in a particular aspect of the major, others permit the student to develop background knowledge in areas outside the major. In many cases, students who elect the latter options intend to continue their education in professional or graduate school; these options are particularly appropriate for students who plan to work in those interdisciplinary areas where the creation of new technology through research and development is very important.

### **Preparation for Professional School**

Technical area options also allow the student to fulfill the special course requirements for admission to professional schools. For more information, students should consult an adviser who is familiar with the admission requirements of the professional program in which the student is interested.

### **Medical School**

A properly constructed program in engineering provides excellent preparation for entering medical school. The engineer's strong background in mathematics and natural science--combined with a knowledge of such subjects as applied mechanics, fluid dynamics, heat transfer, thermodynamics, chemical kinetics, diffusion, and electricity and magnetism--enhance the mastery of many aspects of medical science. An engineering background is also useful to those who develop and use new instruments for detecting and monitoring medical abnormalities. The engineering/premedical programs described in this catalog usually afford opportunities to pursue alternative vocations for those who do not enter medical school. Students who intend to apply for admission to a medical school should contact the University's Health Professions Office for information about admission requirements and application and test deadlines.

### **Dental School**

Much of the information above about medical school applies also to dental school. All applicants must take the Dental Admission Test. Certain courses not taken by all engineers are also required, but these vary markedly from school to school. Students who are interested in dentistry can obtain specific information from the University's Health Professions Office.

### **Law School**

Each year a few graduates, representing all engineering disciplines, elect to enter law school, where they find their training in careful and objective analysis is a distinct asset. Many of these students are preparing for careers in patent or corporate law that will enable them to draw on their combined knowledge of engineering and law. Others may not plan to use their engineering knowledge directly, but they still find that the discipline in logical reasoning acquired in an engineering education provides excellent preparation for the study of law. Students interested in admission to the law school of the University should consult the Law School Catalog.

## Graduate Study in Business

Since many engineering graduates advance rapidly into positions of administrative responsibility, it is not surprising that they often elect to do graduate work in the area of business administration. In addition to an understanding of the technical aspects of manufacturing, the engineer has the facility with mathematics to master the quantitative methods of modern business administration.

Requirements for admission to the University's graduate business programs are outlined in the *Graduate Catalog*. Many engineering degree programs offer technical area options that include business and management courses. These can be used with advantage by students who plan to do graduate-level work in business.

### The Minor

~~While a minor is not required as part of any engineering degree program, the student may choose to complete a minor in a field outside the Cockrell School. A student may complete only one minor. The minor consists of at least twelve semester hours in a single field, including at least six hours of upper division coursework. Six of these hours must be completed in residence. A course to be counted toward the minor may not be taken on the pass/fail basis, unless the course is offered only on that basis. Only one course counted toward the standard requirements of the student's degree may also be counted toward the minor.~~

~~If the minor is in a foreign language other than that used to fulfill the basic education foreign language requirement, the twelve hours may be lower division but must include at least six hours completed in residence and at least six hours beyond course 507 or the equivalent.~~

~~All minors must be approved by the student's major department faculty adviser and the Office of the Dean.~~

~~The Cockrell School allows the student to minor in any field outside the school in which the University offers a major. However, prerequisites and other enrollment restrictions may prevent the student from pursuing a minor in some fields. Before planning to use specific courses to make up the minor, the student should consult the department that offers those courses.~~

### ABET Criteria

To be accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), a degree plan of the Cockrell School must include the following:

1. One year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline. Basic sciences are defined as biological, chemical, and physical sciences.
2. One and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study. The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.
3. A general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

Students must be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.

Here, one year is defined as either thirty-two semester hours (or equivalent), or one-fourth of the total credits required for graduation, whichever is lesser.

## Liberal Education of Engineers

Each student must complete the University's core curriculum. The core curriculum includes the first-year signature course and courses in English composition, American and Texas government, American history, mathematics, science and technology, visual and performing arts, humanities, and social and behavioral sciences. It must be an integral part of all engineering degree programs, so that engineering graduates will be aware of their social responsibilities and the effects of technology on society. With the appropriate selection of courses, the University's core curriculum and ABET general education requirements can be satisfied simultaneously. ~~Particular attention must be paid to course selection for the social and behavioral sciences and visual and performing arts requirements of the core curriculum, such that the courses selected also fulfill the ABET general education requirements. Guidance for courses that fulfill the ABET requirements is given below.~~

### Social and Behavioral Sciences Requirement

As part of the University's core curriculum, each student must complete three semester hours of coursework in social and behavioral sciences. ~~Engineering students should work with an academic adviser to select a social and behavioral sciences course that will fulfill the core curriculum requirement and the ABET criteria given above.~~ Students preparing for the professional practice of engineering are encouraged to select coursework in economics to fulfill this requirement. ~~Engineering students should not choose courses in logic, cartography, or mapping, because these courses do not meet the ABET criteria given above.~~

### Visual and Performing Arts Requirement

As part of the University's core curriculum, each student must complete three semester hours of coursework in visual and performing arts. ~~Engineering students should work with an academic adviser to select a Visual and Performing Arts course that will fulfill the core curriculum requirement and the ABET criteria given above. Engineering students should not choose performance, studio, or ensemble courses to fulfill this requirement, because these courses do not meet the ABET criteria given above.~~ Architectural engineering majors must take an approved architectural history course as part of the Bachelor of Science in Architectural Engineering requirement. This course (or its prerequisite) will fulfill the visual and performing arts requirement of the core curriculum.

### Foreign Language Requirement

In accordance with the University's basic education requirements, all students must demonstrate proficiency in a foreign language equivalent to that shown by completion of two semesters of college coursework. Credit earned at the college level to achieve the proficiency may not be counted toward a degree. For a student admitted to the University as a freshman, this requirement is fulfilled by completion of the two high school units in a single foreign language that are required for admission; students admitted with a deficiency in foreign language must remove that deficiency as specified in General Information.

### Applicability of Certain Courses

#### Physical Activity Courses

Physical activity (PED) courses are offered by the Department of Kinesiology and Health Education. They may not be counted toward a degree in the Cockrell School. However, they are counted as courses for which the student is enrolled, and the grades are included in the University grade point average.

#### ROTC Courses

The dean, on the recommendation of the department chair, may substitute three semester hours of credit for air force science, military science, or naval science courses for three semester hours of elective coursework in an engineering degree program. The elective for which an ROTC course is substituted must be approved by the student's major department faculty adviser. All ROTC students should consult their undergraduate adviser. The total number of semester hours required for the degree remains unchanged. Substitution is

permitted only upon the student's completion of the last two years of ROTC coursework and receipt at the University of a commission in the service.

### Correspondence and Extension Courses

Credit that a University student in residence earns simultaneously by correspondence or extension from the University or elsewhere or in residence or through distance education at another school will not be counted toward a degree in the Cockrell School unless specifically approved in advance by the dean. Application for this approval should be made online or at the Engineering Student Services and Advising Office, located in the Engineering Student Services Building (ESS). No more than twenty semester hours required for any degree offered in the Cockrell School may be taken by correspondence and extension.

### Requirements Included in All Engineering Degree Plans

Each student must complete the University's core curriculum. In the process of fulfilling engineering degree requirements, students must also complete: one independent inquiry flag, one quantitative reasoning flag, one ethics and leadership flag, one global cultures flag, one cultural diversity in the United States flag, and two writing flags. The independent inquiry flag, the quantitative reasoning flag, the ethics and leadership flag and at least one writing flag are carried by courses specifically required for each engineering degree plan. As applicable, students are advised to fulfill the second writing flag and global culture and cultural diversity requirements with a course that meets another requirement of the core curriculum, such as the first-year signature course. Students are encouraged to discuss options with his or her departmental academic adviser. Courses that may be used to fulfill flag requirements are identified in the Course Schedule.

In addition, students in all engineering degree plans must complete the following requirements. In some cases, a course that fulfills one of the following requirements may also be counted toward core curriculum or flag requirements; these courses are identified below.

Courses	Sem Hrs
<b>Engineering Communication</b>	
<ul style="list-style-type: none"> <li>Aerospace Engineering 333T, Biomedical Engineering 333T, Chemical Engineering 333T, Civil Engineering 333T, Electrical Engineering 333T, Mechanical Engineering 333T, or Petroleum and Geosystems Engineering 333T (This course may also be counted toward the writing flag requirement. This course may also be counted toward the ethics and leadership flag requirement, with the exception of Civil Engineering 333T.)</li> </ul>	3
<b>Mathematics</b>	
<ul style="list-style-type: none"> <li>Mathematics 408C, <i>Differential and Integral Calculus</i> (This course may also be used to fulfill the mathematics requirement of the core curriculum and the quantitative reasoning flag requirement.)</li> </ul>	4
<ul style="list-style-type: none"> <li>Mathematics 408D, <i>Sequences, Series, and Multivariable Calculus</i></li> </ul>	4
<ul style="list-style-type: none"> <li>Mathematics 427KJ or 427K, <i>Advanced Calculus for Applications I Differential Equations with Linear Algebra</i> (This course may also be used to fulfill the quantitative reasoning flag requirement.)</li> </ul>	4
<b>Physics</b>	
<ul style="list-style-type: none"> <li>Physics 303K, <i>Engineering Physics I</i> (This course may also be counted toward the science and technology, part I, requirement of the core curriculum and the quantitative reasoning flag requirement.)</li> </ul>	3
<ul style="list-style-type: none"> <li>Physics 103M, <i>Laboratory for Physics 303K</i></li> </ul>	1

<ul style="list-style-type: none"> <li>Physics 303L, <i>Engineering Physics II</i> (This course may also be counted toward the science and technology, part I, requirement of the core curriculum and the quantitative reasoning flag requirement.)</li> </ul>	3
<ul style="list-style-type: none"> <li>Physics 103N, <i>Laboratory for Physics 303L</i></li> </ul>	1

### Length of Degree Program

An eight-semester arrangement of courses leading to the bachelor's degree is given for each of the engineering degree plans. The exact order in which the courses are taken is not critical, as long as the prerequisite for each course is fulfilled. A student who registers for fewer than the indicated number of hours each semester will need more than eight semesters to complete the degree. The student is responsible for including in each semester's work any courses that are prerequisite to those he or she will take the following semester.

The first three semesters of all curricula contain many of the same courses. This commonality gives students some freedom to change degree plans without undue loss of credit.

### Under GRADUATION

#### Special Requirements of the School

All University students must have a grade point average of at least 2.00 to graduate. Students in the Cockrell School must also have an in-residence grade point average of at least 2.00 in all courses applicable to the degree, the major area of study and required technical courses. "Major area of study" and "required technical courses" are defined in the section "Academic Standards." A candidate for a degree in engineering must be registered in the Cockrell School either in residence or in absentia the semester or summer session the degree is to be awarded. No later than the date given in the official academic calendar, the candidate must complete an online application form for graduation or graduation in absentia at <http://www.engr.utexas.edu/graduation/application/apply>.

All individual degree programs must include at least forty-eight semester hours of engineering coursework.

#### Residence Rules

All University students must complete in residence at least sixty semester hours of the coursework counted toward the degree. In the Cockrell School, thirty of these sixty hours must be in the major field or in a field closely related to the major as approved by the major department and the dean.

At least the last twenty-four hours of technical coursework counted toward an engineering degree must be taken while the student is registered as an undergraduate engineering major at the University. A student seeking an exception to this requirement must obtain written approval in advance from the dean. Information about the petition process is available in the Engineering Student Services and Advising Office, located in the Engineering Student Services Building (ESS).

#### Degree Audit

Each student should review his or her degree audit every semester through IDA, the University's Interactive Degree Audit system. The degree audit normally provides an accurate statement of requirements, but the student is responsible for knowing the requirements for the degree as stated in a catalog under which he or she is eligible to graduate and for registering so as to fulfill these requirements; see the rules on graduation under a particular catalog. Since the student is responsible for correct registration toward completion of the degree program, he or she should first check the requirements with their department Undergraduate Advising Office and then seek an official ruling in the Engineering Student Services and Advising Office before registering if

in doubt about any requirement. Avoidance of errors is the main purpose of the degree audit, but it remains the responsibility of the student to fulfill all catalog requirements.

### **Applying for Graduation**

Students must apply for graduation the first semester they are eligible to graduate. Failure to do so will jeopardize the student's future registration in the Cockrell School. Any subsequent registration must be recommended by the undergraduate adviser and approved by the dean.

A student is considered eligible to graduate if he or she can complete all remaining course requirements by registering for twelve semester hours or fewer.

Any student who does not graduate when eligible must contact the Engineering Student Services and Advising Office, located in the Engineering Student Services Building (ESS) or by phone at

(512) 471-4321. The degree auditor will advise the student what steps are needed for future registration and graduation.

### **Nonresidence Coursework**

A student in his or her final semester may not enroll concurrently at another institution in any course, including a distance education course, to be counted toward the degree. In the final semester, the student may also not enroll by extension or correspondence in coursework to be counted toward the degree. All transfer, extension, and correspondence coursework must be added to the student's official record before his or her last semester.

### **Final Degree Audit**

The student must complete all procedures associated with the final degree audit.

Any student who does not graduate when eligible must contact the Engineering Student Services and Advising Office in the Engineering Student Services Building (ESS). The degree auditor will advise the student what steps are needed for future registration and graduation.

### **Second Degrees**

A student who completes a bachelor's degree in engineering may receive a second bachelor's degree in a second engineering discipline if the student ~~(1) completes at least twenty-four hours~~

~~of approved coursework beyond the work counted toward the first bachelor's degree; and (2)~~ meets all the requirements of the second degree that he or she did not meet in completing the first degree. No student may receive two bachelor's degrees in the same discipline of engineering, even if the technical area options are different. For example, a student may receive the degree of Bachelor of Science in Chemical Engineering and that of Bachelor of Science in Mechanical Engineering but may not receive two Bachelor of Science in Chemical Engineering degrees. A student may not receive bachelor's degrees in both architectural engineering and civil engineering.

### **Commencement**

In addition to the University commencement ceremony held each spring, the Cockrell School holds graduation ceremonies in December and May. August degree candidates who have completed a degree audit and online graduation application may participate in the May graduation ceremony. Information about graduation is available at <http://www.engr.utexas.edu/graduation>.

### **Registration as a Professional Engineer**

The practice of engineering has a profound effect on public health, safety, and welfare. Therefore, the



commitment to the public good through the licensing or registration provisions available in all states and many foreign countries is an important step in the professional development of an engineer. Becoming licensed in Texas as a professional engineer requires graduation from an approved curriculum in engineering, passage of the examination requirements, and a specific record of an additional four years or more of active practice in engineering work indicating that the applicant is competent to be placed in responsible charge of such work. Additional requirements include good character and reputation.

Engineering students are encouraged to take the Fundamentals of Engineering examination during their last long-session semester and to seek certification as an "engineer in training." For additional information, contact the Texas Board of Professional Engineers or the equivalent agency in another state.