College Of Engineering

General Information

College of Engineering Administrative Staff

<table>
<thead>
<tr>
<th>Position</th>
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<tr>
<td>Dean</td>
<td>John Usher</td>
</tr>
<tr>
<td>Associate Dean, Undergraduate Affairs</td>
<td>Eric Steward</td>
</tr>
<tr>
<td>Associate Dean, Research and Graduate Affairs</td>
<td>Clive Woods</td>
</tr>
<tr>
<td>Director of Graduate Studies</td>
<td>Robert Cloutier</td>
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College of Engineering website
https://www.southalabama.edu/colleges/engineering/

Degree Programs Offered  The College of Engineering offers programs of study leading to the following degrees:

- Bachelor of Science in Chemical Engineering
- Bachelor of Science in Civil Engineering
- Bachelor of Science in Computer Engineering
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Mechanical Engineering
- Master of Science in Chemical Engineering
- Master of Science in Civil Engineering
- Master of Science in Electrical Engineering
- Master of Science in Mechanical Engineering
- Master of Science in Systems Engineering
- Doctor of Philosophy (Ph.D.) in Systems Engineering

Mission Statement

The mission of the College of Engineering is to provide students with quality accessible undergraduate and graduate engineering education, to prepare graduates for professional careers and lifelong learning, to promote the creation and dissemination of knowledge, to serve society through professional practice and community outreach and to act as a catalyst for economic and technological development of the Gulf Coast region, the State of Alabama and the Nation.

Honors Program In Engineering

To receive a designation of "Departmental Honors" students must have at least a 3.5 GPA at the time of graduation and complete an Honors Senior Project in their major. The Honors Senior Project requirement may be satisfied in either of two ways.

1. By completing an Honors Senior Project course that requires completion of a research project under the guidance of a faculty mentor.
2. By completing a special honors design project as part of the capstone engineering design requirement under the guidance of a faculty mentor.

It is required that there be both a written report and an oral presentation of the results of the Honors Senior Project.

Students participating in "Departmental Honors" may also elect to take the University Honors Seminar and participate in other University Honors Activities upon recommendation of their major advisor.

Undergraduate Admission

All students, whether domestic or international, are strongly encouraged to submit standardized test scores, either ACT or SAT.
Computer Ownership Policy

All College of Engineering undergraduate students are required to own a personal laptop computer that conforms to the current college minimum standards at the time they enter engineering level courses. For more information, consult the Laptop Policy at www.southalabama.edu/colleges/engineering/currentstudents/academicpolicies.html.

Requirements For Minors In Disciplines Other Than Engineering

Engineering students may complete a minor in disciplines other than engineering. Students desiring to do so must complete the published requirements for that discipline.

Choice Of Bulletin For Undergraduate Degree Requirements

After an absence of one calendar year or when transferring into an engineering program, students must use the Bulletin in effect at the time of readmission or transfer, or a later version. No student may use a Bulletin older than six years from the date of graduation.

Cooperative Education Program

The College of Engineering also offers an attractive five year cooperative Education Program. This program allows students to gain valuable engineering experience as they pursue their degree. The freshman year is spent as a full-time student at the university. During the sophomore and junior years the students alternate working full time with an excellent salary for one semester and taking full-time course work the next semester. Students return to study full time for the senior year.

This program offers many advantages for students. Interested students should consult with either the Career Services Center or the College of Engineering Deans Office.

Master's Program

The College of Engineering offers programs leading to degrees of Master of Science in Chemical, Civil, Electrical, Mechanical, and Systems Engineering.

The programs of study are designed to provide knowledge of modern engineering concepts and practices; to prepare the graduate for the practice of engineering at a higher level of proficiency than attainable with the bachelor's degree; and to prepare the graduate for further study toward the doctoral degree should the graduate so desire. The programs comprise course work and directed theoretical and experimental inquiry in thesis or project research.

Three plans of study are offered: thesis option, project option, and coursework only option. The difference between the thesis option and the project option is that a thesis is usually oriented toward engineering applications. The coursework only option, while available to all graduate students, is particularly attractive to full-time employed engineers who are interested in augmenting and enhancing their engineering skills as part-time students. Courses are available in the evening to accommodate employed students.

Admission To Graduate Programs

The following criteria supplement the Graduate School criteria (see Categories of Admission) and are required for admission to all College of Engineering Master Programs:

I. Regular Admission
   A. A Bachelor's degree in engineering in a relevant field from an ABET accredited program.
   B. A grade-point average of 3.0 or greater (A=4.0) on all undergraduate work.
   C. A minimum GRE Quantitative score of 151 and a minimum GRE Verbal score of 141.
   D. For applicants whose native language is not English, a minimum score of 550 on the written Test of English as a Foreign Language (TOEFL) or a minimum score of 79 on the Internet-based TOEFL exam, or a minimum score of Band 6.5 on the International English Language Testing System (IELTS) test is required.
II. Provisional Admission
   A. A Bachelor's degree in engineering or in a field acceptable to the departmental Graduate Admissions Committee is required. Depending on the student's background additional undergraduate preparatory courses may be required. These courses will not count toward the Master's degree.
   B. A minimum grade-point average of 2.5 (A=4.0) on all undergraduate work including a minimum grade-point average of 2.5 over the last 64 course hours of undergraduate work is required. Alternatively, a minimum grade-point average of 2.75 (A=4.0) over the last 64 course hours of undergraduate work is required.
   C. For applicants whose native language is not English, a minimum score of 525 on the written Test of English as a Foreign Language (TOEFL) or a minimum score of 71 on the Internet-based TOEFL exam, or a minimum score of Band 6.0 on the International English Language Testing System (IELTS) test is required.

III. Non-degree Admission
   A. Non-degree admissions are accepted in accordance with Graduate School requirements.
      Each applicant will be reviewed by the Admissions Committee of the appropriate department which may reserve the right to evaluate additional credentials, such as, but not limited to, course work taken, and letters of recommendation.

The above are minimum requirements for admission. Specific requirements for admission differ for each department. For details, see the Master of Science in Chemical Engineering, Master of Science in Civil Engineering, Master of Science in Electrical Engineering, Master of Science in Mechanical Engineering, and Master of Science in Systems Engineering program requirements.

Change Of Status From Provisional To Regular Standing Within The Masters' Programs

Students required to complete additional undergraduate course work in partial fulfillment of the requirements to advance from Provisional Admission to Regular Admission must obtain a minimum grade-point average of at least 3.00 on the total of all such required courses with a grade of at least "C" in each course.

Doctor Of Philosophy (Ph.D.) In Systems Engineering

The Doctor of Philosophy (Ph.D.) in Systems Engineering offers students a holistic approach to the design and understanding of complex systems. NASA defines systems engineering as "a holistic, integrative discipline, wherein the contributions of structural engineers, electrical engineers, mechanism designers, power engineers, human factors engineers, and many more disciplines are evaluated and balanced, one against another, to produce a coherent whole that is not dominated by the perspective of a single discipline." At USA, we emphasize a model-based systems engineering approach (MBSE) in many of our courses. The main objectives of the Ph.D. program are to (1) provide our graduates with the ability to approach all systems (engineered, environmental, coastal, biological, social/organizational, etc.) with the ability to understand the entire system lifecycle in a manner that meets the needs of industry, and (2) prepare our graduates for leadership positions requiring applied research along with critical and creative thinking. This program is appropriate for students who want to pursue research-based careers in industry, government, or academia. The program requires coursework across multiple engineering disciplines, and specific, validated systems research resulting in a publicly defended doctoral thesis.

Requirements For Admission: (With Master's Degree)

In addition to meeting Graduate School requirements, the requirements for admission with a Master's degree to the Ph.D. Program are as follows:

1. A written Statement of Purpose outlining the applicant's professional goals and commitment to completing the degree requirements.
2. Three letters of recommendation from individuals familiar with the student's academic and technical abilities.
3. A M.S. degree in a discipline related to engineering (e.g. civil, computer, chemical, electrical, industrial, mechanical engineering, etc.).
4. A B.S. degree in a discipline related to engineering (e.g. civil, computer, chemical, electrical, industrial, mechanical engineering, etc.) (The Ph.D. Admission committee reserves the right to review the coursework at the B.S. level before making any admission decision.)
5. A grade point average of 3.0 or greater (on a scale of 4.0) on all graduate coursework.
6. Applicants whose highest degree is a graduate degree from an accredited institution of higher education will not be required to provide GRE scores.
7. For international students whose native language is not English, a minimum score of 79 on the Internet-based TOEFL, or a minimum score of 213 on the computer-based TOEFL, or a minimum score of band 6.5 on the IELTS test, or a minimum overall score of 58 on the Pearson PTE Academic Test.
8. Official transcripts from all colleges and universities attended by the applicant.

Final admission decisions are made based upon an evaluation of the applicant’s complete file which consists of all official academic transcripts, undergraduate grade-point average, GRE scores (when required), three letters of reference regarding the applicant’s ability to succeed in the Ph.D. in Systems Engineering, the applicant’s statement of purpose, TOEFL or IELTS or iTEP or Pearson PTE Academic score (for International applicants), applicant’s work history, program enrollment and funding availability if required by applicant.

Admission may be granted by the Systems Engineering Program Director, in special cases where a holistic evaluation of the credentials is appropriate.

Requirements For Regular Admission (With Bachelor’S Degree)

In addition to meeting Graduate School requirements, the requirements for acceptance without a Master’s degree are as follows:

1. A Bachelor’s degree in a discipline related to engineering (e.g. civil, computer, chemical, electrical, industrial, mechanical engineering, etc.). Other STEM Bachelor’s degrees MAY be considered if the degree led to working in an Engineering field and the applicant has gained experience. (Factors such as length of time and experience gained will be considered at the admission committee’s discretion. The Ph.D. admission committee reserves the right to review the coursework at the B.S. level before making any admission decision.)

2. A grade point average of 3.0 or greater (on a scale of 4.0) on all undergraduate coursework.

3. A grade of B or higher for all graduate courses to be considered as transfer credits from previous institutions attended. Only graduate credits that have not been applied to another degree can be considered for transfer.

4. Official transcripts from all colleges and universities attended.

5. A minimum score of 151 in the Verbal portion and a minimum score of 151 in the Quantitative portion of the Graduate Record Examination (GRE).

6. For international students whose native language is not English, a minimum score of 79 on the Internet-based TOEFL, or a minimum score of 213 on the computer-based TOEFL, or a minimum score of band 6.5 on the IELTS test, or a minimum overall score of 58 on the Pearson PTE Academic Test.

Final admission decisions are made based upon an evaluation of the applicant’s complete file which consists of all official academic transcripts, undergraduate grade-point average, GRE scores (when required), three letters of reference regarding the applicant’s ability to succeed in the Ph.D. degree in Systems Engineering, the applicant’s statement of purpose, TOEFL or IELTS or iTEP or Pearson PTE Academic score (for International applicants), applicant’s work history, program enrollment and funding availability if required by applicant.

Admission may be granted by the Systems Engineering Program Director, in special cases where a holistic evaluation of the credentials is appropriate.

Departments Of Instruction

Chemical and Biomolecular Engineering
Civil, Coastal, and Environmental Engineering
Electrical and Computer Engineering
Mechanical, Aerospace and Biomedical Engineering
Systems Engineering

College Requirements

Undergraduate

Admission to the University of South Alabama constitutes admission to the College of Engineering for those students wishing to major in engineering. Incoming students should specify a particular discipline in the College as a major as soon as practical in order to receive proper counseling and pursue their engineering course work. Transfer students must declare a major and have all transfer credit evaluated by the Admissions Office. The department chair will approve transfer credit for engineering degree
credit except where substitutions are involved; substitutions require the approval of the dean. Transfer students are encouraged to have departmental evaluations accomplished prior to their first registration for classes.

Entering freshmen students not adequately prepared to enter the degree program may be required to take additional preparatory course work. Such preparatory work will not be counted toward the major degree program.

Students must have the prerequisites for the courses in which they enroll; students who enroll without prerequisites are subject to administrative withdrawal. Prerequisites are satisfied by courses taken either at the University of South Alabama or by acceptable transfer credit. Students not exempted from EH 101 will be required to take it as a prerequisite to EH 102.

Today's society is permeated by an extensive technology that affects the lives of everyone. The engineering function in this modern society — while basically unchanged from the goal of using natural resources for the betterment of mankind — has more far-reaching and immediate consequences than ever before through the social, economic, environmental, and political reactions that follow technological developments.

The engineering profession has recognized that to fulfill the social as well as technical responsibilities incumbent upon today's engineer, engineering graduates must not only be technically competent, but must also be as broadly educated as possible within the allotted educational time period. To this end, the College of Engineering strives to prepare its students ultimately to assume their responsibilities by providing technically sound programs of instruction that incorporate a strong component in the humanities and social sciences. Graduates are prepared to take industrial positions, to assume positions with government, or to pursue graduate studies.

Engineering students may also qualify as premedical students should they desire to apply for admission to medical school. Students interested in medical careers should consult the Dean of the College of Medicine.

**General Education Requirements**

Engineering students must comply with the University's general education requirements. In the area of Humanities and Fine Arts, engineering students are required to take a total of at least 9 semester hours with a minimum of 3 semester hours in literature and a minimum of 3 semester hours in the arts with the remaining hours from the Humanities and Fine Arts. In the area of History, Social, and Behavioral Sciences, engineering students are required to take at least 9 semester hours with a minimum of 3 semester hours in history and a minimum of 3 semester hours from among the other disciplines in the social and behavioral sciences.

**Professional Component Standing For Undergraduate Programs**

It is important that students make adequate progress in departmental majors within the College of Engineering, so each department establishes a list of courses that must be satisfactorily completed with a minimum grade before the student is allowed to proceed with more advanced courses. Professional Component Standing (PCS) within a department indicates that these courses have been satisfactorily completed. Six courses are required for PCS in every department, so they are collectively required for every student. The PCS requirements for all College of Engineering students are shown in the following table:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Minimum Grade</th>
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<tbody>
<tr>
<td>EH 101</td>
<td>English Composition I</td>
<td>3</td>
<td>C</td>
</tr>
<tr>
<td>EH 102</td>
<td>English Composition II</td>
<td>3</td>
<td>C</td>
</tr>
<tr>
<td>CH 131</td>
<td>General Chemistry I + Lab</td>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td>MA 125</td>
<td>Calculus I</td>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td>MA 126</td>
<td>Calculus II</td>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td>PH 201</td>
<td>Calculus-Based Physics I + Lab</td>
<td>4</td>
<td>C</td>
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In addition, all departments in the College of Engineering require Departmental Professional Component Standing for enrollment in most 300- and 400-level courses. PCS is awarded by the appropriate department chair when the student completes the College of Engineering PCS requirements and the departmental PCS requirements. See the departmental policy statements for additional details.
Requirements For A Bachelor's Degree

To become a candidate for a Bachelor of Science degree in one of the five major disciplines within the College of Engineering, the student must satisfy the general requirements of the University as set forth in "Academic Policies and Procedures," and must have satisfactorily completed the program of instruction specified by the major department. In addition to these requirements, the Engineering student must have at least a GPA of 2.00 or C-level competency in all subjects taken in the student's major department at the University of South Alabama.

Mechanical and Civil Engineering students are required to take and make a "good faith" effort to pass the Fundamentals of Engineering (FE) examination prior to their anticipated date of graduation. Students should be aware of the deadline established by the National Council of Examiners for Engineering and Surveying (NCEES) for submission of examination application materials. Failure to meet the deadline could result in delayed graduation.

A transfer student must complete at least 25 percent of the credit hours required for the degree from upper-division courses with at least 16 hours in the upper level of the student's major department at the University of South Alabama.

Engineering students with less than 15 credit hours are required to take EG 101. This requirement for EG 101 can be waived by the student's advisor once it is demonstrated that a particular student has been exposed to material covered in this course and most likely is not going to benefit from this course. An appropriate math, science or engineering course must be substituted if the student does not take EG 101.

Accelerated Bachelor's To Master's Program

The College of Engineering allows well-qualified undergraduates in the program to follow an “Accelerated Bachelor’s to Master’s” study plan. This plan permits up to six credit hours of graduate coursework to count towards both the Bachelor’s (as Technical Electives) and the Master’s degrees, so that the Master’s degree is earned faster than usual. (The coursework concerned must individually satisfy the requirements of both degrees.) See a departmental advisor for specific details.

ABM students must meet all requirements for admission to the Graduate School. However, each degree program has specific requirements that may exceed Graduate School minimums. An ABM student must meet all requirements of their specific degree program. A complete Graduate School application is required.

Eligibility Requirements

- 3.0 cumulative undergraduate GPA
- Have completed at least 90 credit hours
- Have completed at least 30 credit hours at USA

A student who withdraws or is dismissed from the ABM program may not count graduate coursework towards both degrees. Graduate courses for which an undergraduate student did not earn an “A” or “B” grade may not be counted towards the graduate degree.

An ABM student must be a full time student and must complete all degree requirements for the Master's degree within three semesters of the semester in which they were admitted to the Graduate School. An exception for a fourth semester may be granted where an additional semester is required for final revisions to and submission of a defended thesis. Exceptions to the ABM policy are at the discretion of the Dean of the Graduate School.

Graduate

Requirements For A Master's Degree

The thesis option includes 6 hours of credit for the thesis. The project option includes 3 hours of credit for the project. The coursework option requires credit only for graduate courses. Specific degree requirements differ for each department. For details, see the Master of Science in Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering and System Engineering program descriptions.

Required study includes coursework in a specific engineering discipline and coursework in supporting areas. Supporting areas include mathematics, natural sciences, basic medical sciences, computer sciences, statistics, and business, as well as engineering.

All students pursuing a thesis or project option are required to take the Online Citi Program course in research integrity as part of their engineering coursework requirements. A maximum of six hours of directed study may be counted toward the degree. A maximum of six hours of thesis may be counted toward the degree.
All students must satisfactorily complete a comprehensive examination. Students failing this examination may attempt it again no sooner than 12 weeks after the first attempt. Students failing the second time will be academically dismissed from the program. A thesis or project candidate must present a satisfactory oral defense of the written report. Should the student present an unsatisfactory defense, a second attempt will be allowed no sooner than 12 weeks after the first attempt. A second unsatisfactory defense will result in dismissal from the program.

An engineering senior at the University of South Alabama who has completed 96 semester hours with a GPA of 3.00 or better may, with approval of the Director of Graduate Studies, enroll in graduate engineering courses in accordance with Graduate School policies. See Graduate Study For Advanced Undergraduates.

**Systems Engineering (Ph.D.)**

**Degree Requirements**
The College of Engineering offers a Doctor of Philosophy degree in Systems Engineering. This program is an intensive 67 credit hour course designed for students who wish to earn a terminal degree in Systems Engineering. If you have an Engineering or STEM related M.S. degree, 24-30 hours may be applied toward the 67 credit hours with the approval of the program director. Only courses with a grade of A or B are eligible for transfer. A minimum of 23 graduate credit hours of the required 67 graduate credits must be awarded by the University of South Alabama. In addition to meeting graduate school requirements, the following requirements must be met:

1. Minimum grade of B required on all Core Course Requirements.
2. Required Examinations:
   - Qualifying Exam: Written and Oral
   - Proposal Defense: Written and Oral
   - Dissertation Defense: Written and public Oral Defense