College of Engineering

Administration
Robert W. Schwartz, Interim Dean
W1025 Lafferre Hall
(573) 882 4375
schwartzo@missouri.edu

When engineering classes at the University of Missouri began in 1849, a strong tradition was born that continues to grow. Today, the College of Engineering includes the first electrical engineering department established west of the Mississippi River and the only industrial engineering program in Missouri. The college offers fully accredited degree programs in biological, chemical, civil, computer, electrical, industrial and mechanical engineering, along with computer science and information technology. All programs offer both undergraduate and graduate degrees. Naval Science is under the academic administration of the college as well. The hallmark of the College of Engineering is excellence in teaching and scholarly pursuits.

Mission
The College of Engineering will continuously improve the quality of its primary areas of responsibility—teaching, research and service. In so doing, the College:

• Provides engineering students and practicing professionals with the expertise and new knowledge required to solve society’s complex technological problems
• Develops and utilizes enabling technologies for teaching, research, service and outreach
• Prepares students and practicing professionals to compete in a global economy
• Instills students with a commitment to life-long learning

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Admissions
Direct Freshman Admission to Engineering
Entering freshmen are expected to have completed 17 units of approved high school course work (in grades 9-12), including 4 units in English, 4 in mathematics and 3 in science with laboratory. Mathematics should include 2 units of algebra, 1 unit of plane and solid geometry (combination course), and 1/2 unit of trigonometry. Additional senior mathematics is recommended.

For direct admission to the College of Engineering, the applicant must meet the qualifications listed below (these numbers are subject to change).

• ACT-Math of at least 24 AND
• ACT-Composite of at least 24 OR high school class rank in the upper 25 percent

The average ACT scores for first-time freshmen admitted to the College of Engineering for fall 2011 were ACT-Composite 28.1, ACT-Math 28.5 and ACT-English 27.4.

Pre-Engineering Program (PEP)
Freshmen who do not meet the criteria for direct admission to the College of Engineering are admitted initially into the Pre-Engineering Program. Although admitted to the College of Arts and Science, each PEP student receives advising by an engineering advisor.

PEP reduces freshman pressures while preserving alternatives. Because PEP students are enrolled in the College of Arts and Science, degree options in the College of Arts and Science are available to those who may decide to change their focus from engineering.

Most first-semester PEP students enroll in one preparatory math course and three courses in the College of Arts and Science, which count in both the engineering and arts and science degree programs. The prime objective is to strengthen math preparation sufficiently for success in engineering.

PEP students are eligible to transfer to the College of Engineering when they meet the following requirements:
• Satisfactory completion of 24 credits
• GPA of 2.0 or higher both Cumulative and last graded term
• A grade of C- or better in MATH 1500 Analytic Geometry and Calculus I or, for Information Technology students, MATH 1400 Calculus for Social and Life Sciences I
• Academic good standing

Declared and Undeclared Status
Freshmen engineering students will start in an undeclared status unless they meet criteria for direct departmental admission (see criteria below). Students admitted to the College of Engineering in undeclared status will work to complete a foundational curriculum consisting of math, science, and engineering courses. Upon completion of the foundational curriculum students will apply for entrance to available degree programs. The specific standards and capacity vary among the degree programs as necessary to align enrollments with educational resources.

Freshman and Transfer Admission Requirement

Bioengineering Department
Courses required before consideration for admission into Bioengineering
- MATH 1500 Analytic Geometry and Calculus I
- MATH 1700 Calculus II
- CHEM 1320 College Chemistry I
- PHYSCS 2750 University Physics I
- BIO_SC 1500 Introduction to Biological Systems with Laboratory (recommended)

Entrance requirements after completing courses for Bioengineering
- Minimum Cumulative GPA of 3.0 in core courses (BIO_SC 1500 not required)
- Minimum Cumulative GPA of 2.70
- C- or higher in core courses (BIO_SC 1500 required with C- or above)

Chemical Engineering Department
Courses required before consideration for admission into Chemical Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>MATH 1500</td>
<td>Analytic Geometry and Calculus I</td>
</tr>
<tr>
<td>MATH 1700</td>
<td>Calculus II</td>
</tr>
<tr>
<td>CHEM 1320</td>
<td>College Chemistry I</td>
</tr>
<tr>
<td>CHEM 1330</td>
<td>College Chemistry II</td>
</tr>
<tr>
<td>PHYSCS 2750</td>
<td>University Physics I</td>
</tr>
<tr>
<td>CH_ENG 1000</td>
<td>Introduction to Chemical Engineering</td>
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Entrance requirements after completing courses for Chemical Engineering

Minimum core GPA of 3.0

Civil and Environmental Engineering Department

Courses required before consideration for admission into Civil and Environmental Engineering

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<tr>
<td>CHEM 1320</td>
<td>College Chemistry I</td>
</tr>
<tr>
<td>PHYS 2750</td>
<td>University Physics I</td>
</tr>
<tr>
<td>ENGL 1000</td>
<td>Exposition and Argumentation</td>
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Entrance requirements after completing courses for Civil and Environmental Engineering

Minimum core GPA of 2.50

Computer Science Department

Courses required before consideration for admission into Computer Science

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<td>MATH 1700</td>
<td>Calculus II</td>
</tr>
<tr>
<td>CMP_SC 1050</td>
<td>Algorithm Design and Programming I</td>
</tr>
<tr>
<td>CMP_SC 2050</td>
<td>Algorithm Design and Programming II</td>
</tr>
<tr>
<td>General Science Elective</td>
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</tbody>
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Entrance requirements after completing courses for Computer Science

Minimum cumulative GPA of 2.50

Information Technology Department

Admittance to Information Technology follows the standard MU admissions requirements

Electrical and Computer Engineering Department

Courses required before consideration for admission into Electrical and Computer Engineering

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<tr>
<td>CHEM 1320</td>
<td>College Chemistry I</td>
</tr>
<tr>
<td>CMP_SC 1500</td>
<td>Algorithm Design and Programming I</td>
</tr>
<tr>
<td>ECE 1210</td>
<td>Introduction to Logic Systems</td>
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Entrance requirements after completing courses for Electrical and Computer Science

Minimum cumulative GPA of 2.75

Industrial and Manufacturing Systems Engineering Department

Courses required before consideration for admission into Industrial and Manufacturing Systems Engineering

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<tr>
<td>ENGL 1000</td>
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Entrance requirements after completing courses for Industrial and Manufacturing Systems Engineering

Minimum cumulative GPA of 2.75

Mechanical and Aerospace Engineering Department

Courses required before consideration for admission into Mechanical and Aerospace Engineering

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<tr>
<td>ENGL 1000</td>
<td>Exposition and Argumentation</td>
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Entrance requirements after completing courses for Mechanical and Aerospace Engineering

Minimum cumulative GPA of 2.75

Additional students may be admitted to the departments based on core GPA and department capacity.

Students who were probationary direct admits will return to "undeclared engineering" if they receive a B or lower in any of the listed core courses.

Undeclared students should discuss course selection with the academic advisor each semester to keep options open among departmental curricula.

To transfer from one department to another, students must submit an application to the new department. Admittance to the new department will be based upon the student’s academic performance and departmental capacity. Students who transfer must satisfy the specific degree requirements of the new department.

Engineering Dean’s Scholars Program

The purpose of the Engineering Dean’s Scholars Program is to recognize, mentor and train the highest-achieving students in scholarship and leadership. Engineering Dean’s Scholars participate in the Engineering Scholars Freshman Interest Group (FIG) which will be housed in Hudson or Gillett Residence Hall. Faculty-scholar lunches are held several times during the semester to allow the scholars to meet with engineering faculty and to learn about the engineering profession and undergraduate research opportunities.

Scholars participate in leadership or mentoring activities during their sophomore, junior and senior years. Examples of such activities include serving as engineering ambassadors or peer advisors for an engineering FIG. Students chosen for peer advisor positions have their room and board covered in exchange for their services.

Engineering Dean’s Scholars are awarded a $1000 scholarship in addition to the $2000 Engineering Achievement Award and any other scholarships awarded. The Dean’s Scholarship is renewable for up to eight semesters with 3.5 cumulative GPA at the end of each spring semester.

Students who have ACT math and composite scores of 32 and a high school rank in the top 10 percent of their class will be sent applications upon admission. Students who are close to these criteria may request an application by contacting the engineering dean’s office at the address below. Consideration of students who do not meet the suggested minimum criteria will be contingent upon available space in the program. Applications are due February 1st.

Mizzou Engineering Dean’s Scholars Program

W1025 Lafferre Hall
University of Missouri
Columbia, MO 65211

Minimum core GPA of 3.0

Minimum core GPA of 2.50

Minimum core GPA of 2.50

Minimum core GPA of 2.75

Minimum core GPA of 2.75

Minimum core GPA of 3.0
60 Credit Hour Rule
To remain in the College of Engineering, students must be admitted to an Engineering degree program by the end of the semester when their total credit hours earned are equal to or greater than 60. Students not admitted by 60 credit hours will become ineligible to remain in the College of Engineering and must transfer to another MU school or college in order to remain a student at the University of Missouri. Transfer students who enter the College of Engineering with 60 or greater credit hours will be given one semester to gain admittance to a degree program. If not admitted to a degree program after one semester, they will become ineligible to remain in the College of Engineering. If more than one semester is needed to complete the courses required to enter a degree program, a waiver may be granted at the discretion of the college. If students are pre-enrolled for the following term at the time they become ineligible to remain in the College of Engineering, all Engineering courses will be administratively dropped.

Graduation Requirements
The curriculum provides a solid foundation of mathematics and physical sciences followed by the application of these sciences in engineering specialties. The balance of the curriculum encompasses communication skills, English, social sciences and humanities courses.

Many freshmen are eligible to start with calculus. However, some can profit from additional pre-calculus preparation, which is an addition to the undergraduate curricula.

Students should access the engineering web site (http://engineering.missouri.edu) for details regarding social and behavioral sciences and humanities and fine arts requirements.

In addition to the University’s general education and graduation requirements, the departments in the College of Engineering may require further specific courses to better equip students to perform in their chosen fields of study.

While many students complete the BS degree program in four years, some may find it advisable to extend the curriculum in order to carry lighter semester loads, add preparatory courses or compensate for part-time work.

GPA Requirements for Graduation from the College of Engineering

- GPA of record of at least 2.0
- GPA of at least 2.0 in all engineering courses offered by one of the four campuses of the UM System. “Engineering courses” include all courses that are offered through the College of Engineering or its equivalent on the four campuses, or that have “Engineering” in the curricular designator. Only the last grade in a repeated course will be used in the calculation.

Academic Regulations

Degree with Honors Requirements
Latin Honors are granted to students who meet the following cumulative GPA requirements:

<table>
<thead>
<tr>
<th>Latin Honor</th>
<th>GPA</th>
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<tbody>
<tr>
<td>summa cum laude</td>
<td>3.9</td>
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</table>
Departmental Honors

The college maintains an undergraduate honors program to further challenge those who have established a minimum GPA of 3.0 at the beginning of the junior year. A comparable grade point average is required of transfer students. The program leads to an undergraduate honors thesis on a research or advanced design project, provides for additional curricula flexibility and contains features that ease the transition to graduate school.

Opportunities available to honors students include:

- More personal attention from an honors advisor
- Independent study or undergraduate research with a senior faculty member whose specialty interests the honors candidate

A student who successfully completes the engineering honors program, including the independent project, will be designated an “Honors Scholar in Engineering.” Interested students should contact their departmental office.

Qualified engineering students are also welcome to join the programs of the Honors College and may enroll in various honors courses and honors sections of regular courses.

Courses in Basic Skills

No basic skills courses may be taken to fulfill graduation requirements.

Curriculum of Record

The curriculum of record is the curriculum a student must satisfy to meet graduation requirements. For students who maintain continuous, full-time enrollment, the curriculum of record is the one approved by the College of Engineering at the time the student achieves upper-division status in the discipline of choice. For others, the curriculum of record is decided by the department faculty.

Academic Probation and Dismissal

1. A student whose term and cumulative UM GPA are 2.0 or higher is in good academic standing. A “term” is defined as a semester or summer session.
2. A student will be placed on academic probation if while in good academic standing the student has a term GPA less than 2.0 but equal to or greater than 1.0.
   - While on academic probation, a student must enroll in and complete each semester at MU at least 12 credits of course work necessary for the degree. Courses taken through MU’s Mizzou Online (self-paced) count as part of these 12 credits. Part-time students must enroll in at least as many credits each semester as the college rules governing part time enrollment.
   - A student will be removed from probation at the end of the term when the term and cumulative GPA are 2.0 or higher, provided the student completed 12 or more hours applicable toward the degree.
   - A student will be continued on probation if while on probation the student has a term GPA greater than or equal to 2.0, but whose cumulative GPA is below 2.0.
3. A student will be dismissed from the College of Engineering if the student:
   - Receives a term GPA of less than 1.0
   - Receives a term GPA of less than 2.0 while on probation.
   - Fails to complete at least 12 credit hours toward their Engineering degree program while on academic probation.

4. Readmission:
   - If the appeals committee allows a student to re-enroll, it may set conditions such as courses to be taken, minimum grades, total hours, etc to which the student must adhere.
   - A student who has been dismissed for academic reasons may be readmitted upon a successful appeal to the academic appeals committee of the college. Students who are subject to dismissal (IE) and who wish to appeal their case for continuation must write an appeal letter and submit it to the academic appeals committee.
   - Similarly, students who wish to re-enroll in the college of Engineering after having been out of school as a result of a dismissal must write a letter of appeal to the College of Engineering academic appeals committee requesting readmission.
   - Letter of appeal may be addressed to: Engineering Academic Appeals Committee, W1025 Lafferre Hall, University of Missouri, Columbia, MO 65211. A personal visit with the director of undergraduate studies of the students department and advisor before appealing by letter is often helpful, both to the student and to the committee.
   - The primary concern of the appeals committee is the likelihood of future success. Accordingly, any appeal should include an explanation for past poor performance and reason for expecting better in the future.

5. A student who has been twice dismissed will normally be ineligible for readmission.

Satisfactory/Unsatisfactory Grading Option

Under Satisfactory/Unsatisfactory (S/U) grading, an S is assigned for a grade in the A, B or C range, and a U is assigned for a grade in the D range or for an F. Neither an S nor a U will be calculated into a student’s grade point average. A student enrolled in the College of Engineering may not take any math, science or engineering course that counts toward degree requirements under the S/U grading option, unless the course is only offered S/U. In addition, any course specifically required (by course number) in the curriculum may not be taken S/U. This includes ENGLSH 1000 or ENGLSH 1000H. The 18 credits taken to fulfill the University general education distribution requirement may be taken S/U.

Restrictions

- First-semester freshmen are ineligible to take any course S/U unless it is only offered S/U.
- Only one course per semester may be taken S/U.
- Students on academic probation are not allowed to take any course S/U.
- To be eligible for the Dean’s List each term, a student must complete 12 graded credits (S/U courses are not considered “graded”).

Student Services

Advising

Each student in the College of Engineering is assigned an advisor who assists the student in reaching academic and professional goals.
Students are encouraged to meet with their advisors as often as needed. Engineering students have advising holds placed on their accounts each semester and must meet with their advisor to have the hold lifted in order to enroll each semester.

Diversity in Engineering Program

The Diversity in Engineering Program (DEP) supports increased enrollment and graduation rates among students from underrepresented minority groups in the College of Engineering. The DEP office provides student programming designed to create a user-friendly environment for students pursuing a degree in engineering from the University of Missouri. This effort includes models for successful outreach, recruitment, early research experience, counseling, undergraduate retention, academic enrichment, mentoring and information about graduate study.

DEP provides a support network between students, faculty, and staff to ensure academic success through programming ranging from free tutoring to time management and study skills sessions. Career information sessions, résumé review, and mock interviews are also provided to ensure professional preparedness. DEP also offers outreach opportunities for students to interact with the local community that include tutoring, mentoring, and giving presentations to local elementary, junior high and high school students.

Learning Communities

The college cosponsors several living/learning options for engineering students. The college believes that an environment conducive to the formation of networks, with aspects of social and academic interaction, enhances the retention and ultimate success of students in the engineering curriculum. Students selecting these options generally earn higher grades and are more likely to graduate than the average engineering student.

The Engineering Learning Community (ELC) is a special co-ed environment that offers engineering majors a full range of academic support and activities. ELC allows engineering students to live together, study together and have fun together. Freshman Interest Groups (FIGs) support incoming freshmen. Members of a FIG are co-enrolled in three courses during the first semester of the freshman year with a group of up to 20 students. Each community has its own computer lab, peer tutors, study groups and quiet hours.

Professional Engineering Registration

The revised statutes of Missouri (Section 327.221) require that each applicant for registration as a professional engineer in Missouri must be a graduate of and hold a degree in engineering in a curriculum accredited by the Accreditation Board for Engineering and Technology. The MU undergraduate programs in biological, chemical, civil, computer, electrical, industrial and mechanical engineering, and computer science at MU are so accredited.

Senior students are strongly encouraged to take the Fundamentals of Engineering Exam leading to the Fundamentals in Engineering (FE) status as a first step toward registration.

The MU undergraduate programs in biological, chemical, civil, computer, electrical, industrial and mechanical engineering, and computer science are accredited by the Engineering Commission of ABET, www.abet.org (http://www.abet.org).

Naval Reserve Officers Training Corps (NROTC)

NROTC was established in 1926 to offer college students the necessary naval science courses to qualify for commissions in the Navy or Marine Corps Reserve. Today, NROTC is one of the primary accession sources of officers for the Navy and Marine Corps.

Scholarship NROTC midshipmen incur no military obligation during their freshman year. This allows students to get a better understanding and appreciation of the life of a Navy or Marine Corps officer. Navy NROTC graduates incur a minimum five years military obligation. Marine NROTC graduates incur a minimum four year military obligation. The two-year NROTC program is designed for transfer students and for MU students who did not participate in NROTC during the first two years. MU also offers a Minor in Naval Science (http://catalog.missouri.edu/undergraduategraduate/collegeofengineering/additionalminorsandcertificates/minor-naval-science).

Navy students should major in a technical course of study while marine students may major in any course of study leading to a baccalaureate degree. Academic credit for naval science courses is accepted toward a baccalaureate degree by most MU schools and colleges. Midshipmen take one naval science course for credit each semester, which provides education and training in various aspects of the Navy or Marine Corps. Associated with each course is a leadership laboratory. NROTC activities include water survival, self-defense, physical fitness, orienteering, aviation, nuclear power indoctrination, pistol/rifle marksmanship and a variety of field trips. Upon graduation, midshipmen are commissioned as Ensigns in the Navy or Second Lieutenants in the Marine Corps.

For additional information, contact:
Department of Naval Science
105 Crowder Hall
573-882-6693 or 888-686-7682
NROTC@missouri.edu
http://nrotc.missouri.edu/

Graduate

The University of Missouri began offering engineering classes in 1849. By 1877, a College of Engineering was established and by the 1890’s, students could pursue master’s and doctoral degrees. Today, the College offers graduate degrees in nine disciplines to 500+ domestic and international students.

Graduate engineering programs include

- Biological Engineering
- Chemical Engineering
- Civil & Environmental Engineering
- Computer Science
- Electrical & Computer Engineering
- Industrial Manufacturing & Systems Engineering
- Information Technology
- Mechanical & Aerospace Engineering
- MU Informatics Institute
- Nuclear Engineering

Mizzou engineering sustains a variety of research centers, programs, groups and facilities along with other departmental groups that are designated as areas of exemplary expertise and success. The college
contributes significantly to MU’s overall annual research and development spending. The College also offers exceptional business opportunities to corporations, small businesses and start-ups.

**Note:** Prospective graduate students must apply to both the degree program of interest and to the MU Graduate School. In most cases, the entire application process may be completed online. Find admission and application details by selecting the degree program of interest in the left navigation column.