Mechanical Engineering BSME

Admission

Students are admitted to the upper-division program after they have completed an acceptable pre-engineering program. The pre-engineering program can be taken at University of Missouri-St. Louis or at community colleges in the area. Normally, admission is granted to persons who have completed the pre-engineering program with a minimum grade point average of 2.5 over all their mathematics, chemistry, physics, and introductory (statics and dynamics) engineering courses. Students with less than a 2.5 grade point average, but at least a C, in all their science, engineering and mathematics courses may be admitted on a conditional basis.

For more information, please contact the program advisor at (314) 516-7018.

Degree Requirements

A program of 132 semester hours is required for the Bachelor of Science in Mechanical Engineering.

- Majors must complete the University General Education and Graduation requirements, the Pre-Engineering Requirements, the Core Engineering Requirements, and Major Requirements.
- Majors must first complete J E MATH 3170, Engineering Mathematics, with a minimum grade of C-.
- Majors must also complete J E ENGR 2300, Introduction to Electrical Networks, with a minimum grade of C-.
- A minimum grade of C- is necessary to meet the prerequisite requirement for any course.

General Education and Graduation Requirements

The following courses fulfill general education and graduation requirements and are required of Mechanical Engineering majors:

- PHIL 2259: Engineering Ethics
- PHIL 3380: Philosophy of Science
- HIST 1001: American Civilization to 1865 (MOTR HIST 101)
  or HIST 1002: American Civilization 1865 to Present (MOTR HIST 102)

Three additional Social Science courses

Total Hours: 18

1 One Social Science course must meet the Cultural Diversity requirement.

Engineering Core Requirements

- CMP SCI 1250: Introduction to Computing
- J E COMM 2000: Engineering Studio I
- J E MATH 3170: Engineering Mathematics
- ENGL 3130: Technical Writing

Total Hours: 11

Mechanical Engineering Major Requirements

- MATH 1320: Introduction to Probability and Statistics
- J C ENGR 4950: Fundamentals of Civil Engineering Review
- J CMP SC 1002: Introduction to Computing Tools: Matlab Skills
- J E ENGR 2300: Introduction to Electrical Networks
- J E ENGR 2340: Electrical Laboratory for Mechanical Engineers
- J M ENGR 1413: Introduction to Engineering Design: CAD
- J M ENGR 1414: Introduction to Engineering Design: Project
- J M ENGR 2110: Machine Shop, Fabrication, and Prototyping
- J M ENGR 2410: Mechanics of Deformable Bodies
- J M ENGR 3110: Mechanical Design and Machine Elements
- J M ENGR 3200: Thermodynamics
- J M ENGR 3250: Material Science for J M ENGR
- J M ENGR 3700: Fluid Mechanics
- J M ENGR 3710: Principles of Heat Transfer
- J M ENGR 3721: Fluid Mechanics Laboratory
- J M ENGR 3722: Heat Transfer Laboratory
- J M ENGR 4120: Design of Thermal Systems

Completion of Math 1800 with a grade of C or better, students will be allowed to declare pre-engineering as their major. Math 1800 must be completed successfully within two attempts.

- MATH 1800: Analytic Geometry and Calculus I
- MATH 1900: Analytic Geometry and Calculus II
- MATH 2000: Analytic Geometry and Calculus III
- MATH 2020: Introduction to Differential Equations
- CHEM 1111: Introductory Chemistry I (MOTR CHEM 150L)
- PHYSICS 2111: Physics: Mechanics and Heat
- PHYSICS 2111L: Mechanics and Heat Laboratory
- PHYSICS 2112: Physics: Electricity, Magnetism, and Optics
- PHYSICS 2112L: Electricity, Magnetism, and Optics Laboratory
- ENGR 2310: Statics
- ENGR 2320: Dynamics
- ENGL 1100: First-Year Writing (MOTR ENGL 200)

Total Hours: 42
Graduation Requirements

In addition to the requirements of the University of Missouri-St. Louis that apply to all candidates for undergraduate degrees, the student must earn a minimum campus grade point average of 2.0 and a minimum grade point average of 2.0 for all engineering courses attempted at the University of Missouri-St. Louis.

Upon completion of the program, graduates will have an ability to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- Communicate effectively with a range of audiences
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- Acquire and apply new knowledge as needed, using appropriate learning strategies

Sample Graduation Plan

First Year

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<th>Course</th>
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<th>Spring</th>
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Second Year

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Third Year

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Fourth Year

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Total Hours: 133

1. Course does not count toward 132 credit hours for the degree.
2. Course should also satisfy the Cultural Diversity Requirement.
3. Course is an example J M ENGR elective. Four are required for a total of 12 hours.

PLEASE NOTE: This plan is an example of what a four year plan could look like for a typical student. Placement exam scores in math as well as the completion of coursework may change the plan. It should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor each semester. All requirements are subject to change.