Mechanical Engineering

Hongbin (Bill) Ma, Professor and Chair
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The Department of Mechanical and Aerospace Engineering is an academic department within the College of Engineering at the University of Missouri.
Established in 1891, this ABET accredited program is home to many undergraduate and graduate students and faculty.

Faculty

See web site for faculty listing: https://engineering.missouri.edu/academics/mae/mae-faculty/

* Graduate Faculty Member - membership is required to teach graduate-level courses, chair master's thesis committees, and serve on doctoral examination and dissertation committees.

** Doctoral Faculty Member - membership is required to chair doctoral examination or dissertation committees. Graduate faculty membership is a prerequisite for Doctoral faculty membership.

Undergraduate

- BSME in Mechanical Engineering (http://catalog.missouri.edu/collegeofengineering/mechanicalengineering/bsme-mechanical-engineering/)

Additional minors and certificates (http://catalog.missouri.edu/collegeofengineering/additionalcertificatesminors/) are offered through the College of Engineering, including the Aerospace Engineering Minor and the Energy Engineering Minor.

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The Department of Mechanical and Aerospace Engineering prepares students for productive careers in mechanical engineering related disciplines. The program focuses on instruction in the thermal and mechanical systems areas as defined by the Accreditation Board for Engineering and Technology (ABET). To support that mission, the Department has been divided into the focus areas of Design and Manufacturing, Dynamics and Control, Materials, and Thermal-Fluid Sciences. (NOTE: Focus areas are not listed on transcripts or diplomas.)

The department endeavors to present an experimental program through laboratory experiences. Students take three lab courses that focus on instrumentation and measurements, materials and manufacturing, and thermal-fluid systems.

The MU Mechanical Engineering program offers a Bachelor of Science in Mechanical Engineering (BSME) and prepares students for practice of the profession in industry or government or for further study toward other degrees such as the JD, MD, MS, and PhD.

Mission Statement

The mission of the Mechanical and Aerospace Engineering Department is to:

Prepare our students for successful careers in the mechanical engineering profession, conduct high-quality and innovative research, and serve the community and industry providing educational and research resources.

Program Educational Objectives

The educational objectives of the undergraduate program in Mechanical Engineering are to produce graduates who (within a few years of graduation):

1. successfully practice the mechanical engineering disciplines;
2. contribute to society and the engineering profession;
3. engage in life-long learning to advance professionally through continuing education and training;
4. succeed in graduate studies in mechanical engineering or a related field if pursed.

ABET Definition for Program Educational Objectives: Program Education Objectives are broad statements that describe what graduates are expected to attain within a few years of graduation. Program Educational Objectives are based on the needs of the program's constituencies.

Program Outcomes

Students from the Mechanical Engineering program will attain (by the time of graduation):

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to 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
3. an ability to communicate effectively with a range of audiences
4. an ability to 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
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Double Majors and Dual Degrees

Dual majors and dual degrees are possible at the undergraduate level. These could lead to degrees in the College of Engineering and the College of Arts and Sciences or the College of Agriculture. Dual enrollments could also lead to two engineering majors within the College of Engineering. Any of these dual enrollments would add to the

traditional 126-credit undergraduate degree program. Consult with the directors of undergraduate studies of the departments involved for further information.

MAE Honors Program

The MAE Honors Program follows the general rules, regulations and philosophy of the College of Engineering Honors Program, and as such is intended to encourage, facilitate and reward independent study by high-ability undergraduate students.

The heart of the program is an undergraduate honors project, undertaken and completed by the time of graduation while enrolling in 1 to 6 credits of MAE 4995 Undergraduate Honors Research Mechanical & Aerospace Engineering. The academic credit for the honors project (1-6 credits in MAE 4995 replaces an equivalent number of credits of technical or MAE elective. The project is conducted under the direction of an MAE professor (honors advisor) who is selected by the student, with agreement by the professor. The project culminates in an honors thesis, which is read and approved by the honors advisor and then approved by the chair of the MAE honors committee. A finished copy of the honors thesis, signed by the honors advisor and second reader, is required for satisfactory completion of the project.

Academic Qualifications for the Honors Program
Honors students must maintain and graduate with an overall GPA of 3.0 or higher. In the case of a transfer student, the overall GPA computed from the transferred credit plus MU credit must be 3.0 or higher. A student is typically eligible for the honors program at the junior year of their undergraduate program.

The successful honors scholar is given a degree of flexibility in the program of study. Additionally, honors scholars may reduce the credits required for degree completion to the University minimum (i.e., 120 credits) by substituting graduate course credits through dual enrollment (undergraduate/graduate at MU) during the last two semesters of the undergraduate program.

Graduate

A graduate degree in Mechanical Engineering is not currently offered. Please see Mechanical and Aerospace Engineering (http://catalog.missouri.edu/collegeofengineering/mechanicalaerospaceengineering/) for similar graduate degree programs.