Mechanical Engineering, B.S.E.

The educational objectives of the Bachelor of Science in Engineering (B.S.E.) program in mechanical engineering are to produce graduates who, within a few years of graduation:

- will have successful careers in engineering and beyond and will have assumed professional roles of increasing responsibility and impact;
- will have acquired new knowledge and expertise through professional development opportunities or advanced education; and
- will be engaged in workplace, professional, or civic communities.

Visit Mechanical Engineering Program Educational Objectives on the Department of Mechanical and Industrial Engineering website to learn more.

Requirements

The Bachelor of Science in Engineering requires a minimum of 128 s.h. The major in mechanical engineering lays a foundation in the basic disciplines of mathematics, physics, and chemistry and in the engineering sciences of statics, dynamics, thermodynamics, mechanics of deformable bodies, mechanics of fluids and transfer processes, materials science, and electrical sciences. An understanding of these sciences enables mechanical engineers to design parts of systems and understand whole systems, plan the production and use of energy, plan and operate industrial manufacturing facilities, and design automatic control systems for machines and other mechanical systems.

Mechanical engineering students develop an awareness of social and humanistic issues relating to business, environment, government, history, language, religion, and international relations. They also acquire an appreciation of professional and ethical responsibilities.

All engineering students complete the B.S.E. core requirements, which include RHET:1030 Rhetoric, ENGR:1100 Introduction to Engineering Problem Solving, ENGR:1300 Introduction to Engineering Computing, and courses in chemistry, engineering mathematics and fundamentals, and physics. They must earn a grade of C-minus or higher in the core requirements MATH:1550 Engineering Mathematics I: Single Variable Calculus and MATH:1560 Engineering Mathematics II: Multivariable Calculus.

They also complete the curriculum designed for their major program, which covers four major stems: mathematics and basic sciences, engineering topics, an elective focus area, and the general education component (15 s.h. of humanities and social science courses). For information about the curriculum stems, see Bachelor of Science in Engineering in the Catalog.

Upper-level students work on team projects in a senior capstone design course, ME:4086 Mechanical Engineering Design Project. Some students may arrange to participate in established research projects.

Students must select elective focus area courses according to guidelines established by the Department of Mechanical and Industrial Engineering. See "Elective Focus Area" below.

Elective Focus Area

The mechanical engineering program offers a variety of elective focus area options, including standard focus areas developed and maintained by the program and flexible focus areas tailored to individual student interests. For more detailed information about elective focus areas, see Bachelor of Science in Engineering in the Catalog. For a list of standard mechanical engineering elective focus area options and guidelines for tailored elective focus areas, see the undergraduate Mechanical Engineering Program page on the Department of Mechanical and Industrial Engineering website.

Combined Programs

B.S.E./M.S.

The College of Engineering offers a combined Bachelor of Science in Engineering/Master of Science for mechanical engineering undergraduate students who intend to earn a M.S. in mechanical engineering. B.S.E./M.S. students may take up to 12 s.h. of graduate-level course work, attend the program’s graduate seminar, and participate in master's research while they are still undergraduates. They may count 6 s.h. of graduate course work toward both degrees. Once students complete the requirements for the bachelor's degree, they are granted the B.S.E., and they normally complete the M.S. one year later.

To be admitted to the combined degree program, students must have completed at least 80 s.h., have a cumulative g.p.a. of at least 3.25, and they must submit a letter of application to the chair of the Department of Mechanical and Industrial Engineering.

B.S.E./M.S. in Civil and Environmental Engineering

Bachelor of Science in Engineering students majoring in mechanical engineering who are interested in earning a Master of Science in civil and environmental engineering may apply to the combined B.S.E./M.S. program offered by the College of Engineering. The combined program enables undergraduate students to begin work on the M.S. degree while completing their B.S.E. degree. Students admitted to the program may count 9 s.h. of course work toward both the B.S.E. and the M.S. degree requirements. They also may count an additional 3 s.h. toward the M.S. degree requirements before they have been awarded the B.S.E. degree. For more information, see M.S. in Civil and Environmental Engineering in the Catalog.

Career Advancement

The engineering profession is a foundation for a variety of careers in industry, medicine, law, government, and consulting. Engineering majors hold eight of the top ten spots on the list of top-paid majors for bachelor's degree graduates, according to the National Association of Colleges and Employers (NACE). On average, 93-98 percent of graduates are employed in their field of study or pursuing advanced education within seven months of graduation.

Engineering Professional Development (EPD) develops and promotes experiential education and professional opportunities for students in the College of Engineering. Professional staff coordinate the college's co-op and
internship program, engage in employer outreach, and provide opportunities for students to network with employers, including an engineering career fair each semester and other programming related to career development.

EPD also offers individual advising and class presentations on résumé and cover letter preparation, job and internship search strategies, interviewing skills, and job offer evaluation.