

Mechanical Engineering

Bachelor of Science Degree

Contact

Mohsen Shahinpoor, Chair
Department of Mechanical
Engineering
5711 Boardman Hall, Room 219
Orono, ME 04469-5711
207-581-2120
fax: 207-581-2379
mohsen.shahinpoor@umit.maine.edu
umaine.edu/mecheng

Admission Requirements

(In years as established by the college)

A high school diploma with the following specific courses:

- 4 English
- 1 Biology (recommended)
- 2 Algebra I & II
- 1 Geometry
- 1 Pre-Calculus
- 2 Lab Science (chemistry and physics)
- 2 History/Social Studies
Academic electives (to equal at least 17 total credits)

To ensure current mathematical skills, students should take a mathematics course during their senior year of high school.

College of Engineering

Program Description

The Department of Mechanical Engineering is committed to preparing students to begin a professional career or to continue studies in graduate school. The program develops the student's creative potential to meet the increasingly complex needs of industry, government and education. The curriculum provides a foundation of knowledge in mathematics, thermal sciences, dynamic systems, material science, fluid and solid mechanics, and design of structures. Developing abilities in mathematical analysis, experimental techniques, computer methods and design is emphasized throughout the program, and technical electives give the student the opportunity to gain additional competence in specific areas. A major strength of the department is the capstone senior design sequence, where design experiences are frequently drawn from government and industrial sources. Professional engineers must address problems that raise issues requiring awareness of economic, political, social and legal issues as well as the technical issues of the profession. Preparation for a career in mechanical engineering includes an introduction to the humanities and social sciences as well as mathematics, science and engineering fundamentals.

Specialized Information

The Department of Mechanical Engineering provides students with the opportunity to participate in cooperative education, and also to pursue a double major or a double degree as well as a five-year bachelor's to Master of Business Administration Program. There are several departmental scholarships available on a competitive basis starting in the second year of study. UMaine mechanical engineering emphasizes undergraduate research, with pay, on topics such as robotics, biomedical engineering, robotic surgery, neuromuscular and biorobotics, cell mechanics and bio tissue manufacturing, remote monitoring of deployable/inflatable space structures, manufacturing and operations of smart materials and artificial muscles, robotic Venus flytrap design and development, rapid prototyping and advanced manufacturing, human-powered submarines, clean snowmobiles, residential heat pumps, formula SAE racing cars, coaster car design and development, wind energy, aerospace concentration, tidal energy and smart structures. The program also offers minors in robotics and biomedical engineering, as well as unique instructional and undergraduate research labs such as Biomedical Engineering, Advanced Robotics, Robotic Surgery, Cell Mechanics and Biotissue Manufacturing, Remote Monitoring of Deployable/Inflatable Space Structures, Neuromuscular and Biorobotics, Smart Materials and Artificial Muscles, Advanced Manufacturing, Human-Powered Submarine, Formula SAE Racing Car, Aerospace Concentration and Hosmer Design Engineering.

Representative Courses

MEE 101 Introduction to Mechanical Engineering
MEE 150 Statics
MEE 230 Thermodynamics I
MEE 251 Strength of Materials
MEE 231 Thermodynamics II
MEE 270 Dynamics
MEE 360 Fluid Mechanics
MEE 370 Controls
MEE 380 Design I
MEE 320 Materials

MEE 341 Mechanical Laboratory I
MEE 381 Design II
MEE 456 Introduction to Finite Elements
MEE 471 Mechanical Vibrations
MEE 432 Heat Transfer
MEE 442 Mechanical Laboratory II
MEE 487 Design III
MEE 443 Mechanical Laboratory III
MEE 488 Design IV

Associated Honor Societies and Student Organizations

Students are encouraged to join the UMaine chapters of the American Society of Mechanical Engineers and the Society of Women Engineers. Majors frequently qualify for membership in Pi Tau Sigma and Tau Beta Pi, the national engineering honor societies. Student groups include: Robotics Club, Biomedical Engineering/Advanced Robotics, Society of Automotive Engineers Formula Racing Cars, Human-Powered Submarine, Clean Snowmobile, Coaster Car, Residential Heat Pump, Tidal Energy, Wind Energy, Robotic Innovation Center Competition and Oil from Algae.

Career and Graduate Opportunities

Since mechanical engineers are concerned with the principles of motion, energy, matter and force, they are the people who design the machines, products and systems so essential to everyday life. Mechanical engineers' design skills range from simple devices, such as doorknobs and fishing reels, to complex systems, such as airplanes, ships, submarines, hovercrafts, space shuttles, robots, automobiles, satellites and power plants. Mechanical engineering encompasses many specialties, and mechanical engineers design advanced materials and structures to meet the demands of supersonic and hypersonic space travel. They work in the nuclear field on the design of electrical power plants equipped with reactors, pressure piping, heat exchangers and other specialized components. In the automobile industry, mechanical engineers design the various parts of a car, and in manufacturing companies they develop computer systems that improve and speed up the production process. In fact, mechanical engineers play a role in most of the things that people drive, play with or live in. It is the responsibility of engineers to design machines whose parts and assemblies function in a safe, reliable, efficient and predictable fashion. Mechanical engineers also get involved in health and biomedical engineering education and research.

UMaine Graduate Programs

Master of Science in Mechanical Engineering (Thesis)
Master of Science in Mechanical Engineering (Non-Thesis)
Doctor of Philosophy in Mechanical Engineering

About UMaine

The University of Maine, founded in Orono in 1865, is the state's premier public university. It is among the most comprehensive higher education institutions in the Northeast and attracts students from across the U.S. and more than 60 countries. It currently enrolls 12,000 total undergraduate and graduate students who can directly participate in groundbreaking research working with world-class scholars. Students are offered 88 bachelor's degree programs, 64 master's degree programs, 25 doctoral programs and one of the oldest and most prestigious honors programs in the U.S. The university promotes environmental stewardship on its campus, with substantial efforts aimed at conserving energy, recycling and adhering to green building standards in new construction. For more information about UMaine, go online (umaine.edu). Equal opportunity information also is available online (umaine.edu/eo).

How do I apply?

Visit go.umaine.edu for an application as well as information about academics and life at UMaine.



Academic Programs 2011–12

The latest versions of the UMaine fact sheets are online (factsheets.umaine.edu). This fact sheet is intended for informational purposes only and is subject to change.

