

Department of Mechanical and Industrial Engineering

Contact Information:

Campus Location: 2039 Engineering Research Facility (ERF), Student Services: Undergraduate Engineering Office, 123 Science and Engineering Offices (SEO)
(312) 996-5317, Student Services (312) 996-3463

Administration:

Department Head, Farzad Mashayek, mashayek@uic.edu, (312) 996-1154
Director of Undergraduate Studies, Houshang Darabi, hdarabi@uic.edu, (312) 996-6593
Undergraduate Coordinator: Stacie Scott, stacies@uic.edu, (312) 996-5317

The Department of Mechanical and Industrial Engineering offers both fundamental and advanced courses that prepare students for careers in the engineering profession or for advanced study at the graduate level. The department offers Bachelor of Science degrees in Mechanical Engineering, Industrial Engineering, and Engineering Management. All programs are offered in an economically thriving, industrialized, and world-class city. The campus is located in the heart of Chicago, and has a diverse student body in a leading-edge research environment.

Accreditation

The Department of Mechanical and Industrial Engineering offers two programs accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. These degrees are the Bachelor of Science in Mechanical Engineering and Bachelor of Science in Industrial Engineering.

Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology
415 North Charles Street
Baltimore, Maryland 21201
(410) 347-7700

BS in Mechanical Engineering

Mechanical engineering is essential to a wide range of activities that include the design, development, manufacture, management, and control of engineering systems, subsystems, and their components. Typically mechanical engineers are employed in a wide range of industries, such as manufacturing, power, aerospace, automotive, materials, and processing industries. As a result of the recent rapid expansion of technology, mechanical engineers also have become increasingly involved in computer-aided design and visualization; robotics; bioengineering; environmental engineering; solar, wind, and ocean energy sources; and space exploration. The breadth of the field provides the graduate with many possibilities for a satisfying career.

The program has been developed to provide students with a broad base on which to build a successful mechanical engineering career. Courses are offered in the mechanical design and thermal fluid science fields. Topics covered in mechanical design include kinematics, mechanisms, stress analysis, dynamic systems, material properties, CAD/CAM, dynamics, vibrations, mechatronics, microelectrical mechanical systems

(MEMS), and control theory. Courses offered in the thermal fluid sciences include thermodynamics, heat transfer, and combustion. These courses provide a basis for all types of power applications, including internal combustion engines, nuclear reactors, heating systems, refrigeration systems, and solar power. The program also emphasizes computer applications, professional ethics, communication skills, ability to work in a multidisciplinary team, awareness of broad education, lifelong learning, and contemporary issues.

The objectives of the Bachelor of Science in Mechanical Engineering can be found online

<https://mie.uic.edu/educationalobjectivesandoutcomes>

BS in Industrial Engineering

Industrial engineering is concerned with the design, improvement, and installation of integrated systems of people, material, and equipment. The Industrial Engineering program gives knowledge of principles and methods in engineering design, physical sciences, and social sciences. This knowledge then is used to specify, predict, and evaluate systems. By collecting, analyzing, and arranging such knowledge, industrial engineers enable management to utilize resources effectively and efficiently.

In order to design and operate complex systems, the industrial engineer must acquire comprehensive knowledge in the following areas: manufacturing engineering; production engineering; systems engineering; and human factors, maintenance, and safety engineering.

Manufacturing engineering is involved with planning and selecting manufacturing methods, with designing and developing manufacturing equipment, and with increasing the efficiency and productivity of current manufacturing technologies as well as creating new ones. Manufacturing engineers use materials science, metal cutting and forming theories, stochastic-dynamic models, principles of numerical and adaptive control, engineering statistics, and other physical sciences to solve manufacturing problems. A new area in manufacturing is virtual manufacturing, which combines virtual reality techniques, factory design, equipment design, training, and contamination control in industrial applications.

Production engineering deals with the analysis, design, installation, and maintenance of operational and management systems involved in the production and distribution of goods and services. Such topics as quality control, production scheduling, production planning, inventory control, and maintenance policy are included in this area.

Systems engineering involves the theory and practice of modeling a general system design. The systems engineer develops mathematical, statistical, and computer models of complex systems to predict how a design or policy change will affect the real world. Human factors, maintenance, and safety engineering deal with the problems caused by the interaction of complex man-machine systems. The engineers in this area apply knowledge about sensory, perceptual, and mental characteristics in the engineering design of equipment and facilities to ensure worker comfort and safety.

Because the training of industrial engineers is so broad, they are in demand not only in all types of industry but also in service organizations, such as hospitals, banks, insurance companies, and research laboratories.

The program also emphasizes computer applications, professional ethics, communication skills, ability to work in a multidisciplinary team

and awareness of broad education, lifelong learning, and contemporary issues.

The objectives of the Bachelor of Science in Industrial Engineering can be found online

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BS in Engineering Management

The College of Engineering and the College of Business Administration offer a joint program in engineering management that allows students latitude to study in both the business administration and engineering disciplines. This program prepares students to begin careers that may lead to administrative, staff, or management positions in small technological engineering or manufacturing operations or positions as production supervisors, administration staff, or managers of departments in large technological organizations. The program also prepares students for careers in large nontechnological organizations such as banks, which may require a combination of engineering and management experiences.

The Bachelor of Science in Engineering Management is awarded by the College of Engineering. Entrance requirements are the same as for the College of Engineering.

To complete the required 128 semester hours of university credit, students take required courses in engineering as well as courses in business administration, including accounting, finance, marketing, economics, and management. Additionally, there are required courses in English composition, mathematics, chemistry, and physics. Engineering courses are chosen from courses acceptable for other students in the College of Engineering. No more than 32 hours may be taken in courses offered by the College of Business Administration.

Degree Programs

- BS in Mechanical Engineering (<http://catalog.uic.edu/ucap/colleges-depts/engineering/mie/bs-me>)
- BS in Industrial Engineering (<http://catalog.uic.edu/ucap/colleges-depts/engineering/mie/bs-ie>)
- BS in Engineering Management (<http://catalog.uic.edu/ucap/colleges-depts/engineering/mie/bs-ie-mgmt>)

Minors

- Minor in Mechanical Engineering (<http://catalog.uic.edu/ucap/colleges-depts/engineering/mie/minor-me>)
- Minor in Industrial Engineering (<http://catalog.uic.edu/ucap/colleges-depts/engineering/mie/minor-ie>)