

Department of Industrial and Manufacturing Engineering

Department Information

- www.ndsu.edu/ime

Undergraduate Programs of Study

- Industrial Engineering and Management (major, minor)
- Reliability Engineering (minor)
- Manufacturing Engineering (major, minor)

Graduate Programs of Study

- Industrial Engineering and Management (MS)
- Manufacturing Engineering (MS)
- Industrial and Manufacturing Engineering (Ph.D.)

Degrees Offered

- Bachelor of Science in Industrial Engineering and Management (B.S.E.E.Mgt.)
- Bachelor of Science in Manufacturing Engineering (B.S. Mfg.E.)
- Master of Science (M.S.)
- Doctor of Philosophy (Ph.D.)

Department Description

The Bachelor of Science degrees in Industrial Engineering and Management and in Manufacturing Engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Career positions for graduates of the two programs often have some similarity; so, many of the courses required for the two majors are the same. Industrial Engineering and Management program covers skill sets and tools that can be used in manufacturing as well as all other industries. Industrial engineers have the strong technical skill sets to make improvements in all types of industries including manufacturing setting as well as to evaluate and improve productivity and quality of every aspect of business. Industrial and Manufacturing engineers apply scientific principles to the system design and production of goods and services. They are key team members in design and production of a wide range of products, including automobiles, airplanes, tractors, electronics, toys, building products, foodstuff, and sports and recreational equipment. Both industrial and manufacturing engineers design the products and processes to make products with the required reliability and functionality, to high quality standards, and ensure availability when and where customers prefer, at the best possible price.

In addition, both majors offer the student opportunities for specialization in the junior and senior years. IE&M students can apply their elective courses to extra study in production and operations management, supply-chain and logistics management, reliability and quality engineering, and healthcare engineering and management engineering. MfgE students can elect additional specialization in additive manufacturing, automation, and electronics manufacturing.

Both IE&M and MfgE students learn in an environment of professional realism. Many of the major courses fulfill their learning objectives through projects that are undertaken in collaboration with local companies. Students interact with practicing professionals to learn the real-world applications of the theories they master in the classrooms. There also are many laboratories where students gain hands-on experience and understanding of machinery and engineering systems. Students in both IME majors are urged to take advantage of Cooperative Education and internship positions wherever possible. The knowledge gained through these experiences enhances career preparation and provides for expanded placement opportunity upon graduation. As part of improving the quality of the programs offered, grades less than 'C' will not be accepted for chemistry, physics, and mathematics courses in the degree curricula.

Learning in the IME Department is a partnership of student and faculty. The student's responsibility is to learn—to master the concepts, theories and practices that lead to career success. The faculty responsibility is four-fold: to provide an atmosphere that is conducive to learning; to assure availability of the tools necessary for effective and efficient learning; to offer guidance on educational and professional matters; and to evaluate student achievement. The usual faculty role is one of mentor, encouraging students to grow in stature as soon-to-be engineers and as practicing professionals.

IME graduates are prepared for careers in design, develop and implement devices, processes and systems that manufacture, construct, operate and service products, equipment and facilities that are often conceived in other engineering disciplines. Career positions in IE&M and MfgE form the vital linkages between abstract concepts and the reality of products and facilities of real use to customers. The IME graduates are in demand for

employment in a very wide range of industries from production of all types of goods to transportation and distribution to information management, to healthcare to consulting.

In all cases, career positions for IME graduates involve design of processes and procedures in advanced technology environments. These professions routinely apply sophisticated modern tools in information handling, distributed communications, computer-driven controls, and a wide variety of technologically advanced equipment and apparatus. In addition, IME career professionals are skilled in the integration of people and technology within the business context of world-class enterprises. They make satisfying careers in organizations of all sizes and types, located in all parts of the world. Graduates generally have a wide choice in where they work and live, as well as the size and kind of company for which to work.