

# Department of Industrial and Manufacturing Engineering

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[www.ndsu.edu/ime](http://www.ndsu.edu/ime)

Two majors are offered within the Industrial and Manufacturing Engineering Department (IME): Industrial Engineering and Management (IE&M) and Manufacturing Engineering (MfgE). Both programs are professionally accredited by the Engineering Accreditation Commission of the ABET ([www.abet.org](http://www.abet.org) (<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 encompasses manufacturing as well as service industries. Industrial engineers have the technical training to make improvements in a manufacturing setting as well as to evaluate and improve productivity and quality in service industries. Industrial and Manufacturing engineers apply scientific principles to the production of goods. They are key team members in 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 processes to make products with the required functionality, to high quality standards, and available 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 operations and management, healthcare management engineering, and reliability and quality management. MfgE students can elect additional specialization in additive manufacturing 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 done with industrial 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 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 that 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. 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.

Post-graduate studies also are available in the IME department, leading to the Master of Science and Doctor of Philosophy degrees. For more complete details, see the Graduate Bulletin (<http://bulletin.ndsu.edu/past-bulletin-archive/2014-15/graduate>) online.

Industrial Engineering and Management (<http://bulletin.ndsu.edu/past-bulletin-archive/2014-15/undergraduate/colleges/engineering/industrial-manufacturing-engineering/industrial-engineering-management>)

Manufacturing Engineering (<http://bulletin.ndsu.edu/past-bulletin-archive/2014-15/undergraduate/colleges/engineering/industrial-manufacturing-engineering/manufacturing-engineering>)