

Industrial Engineering and Management

Department Information

- **Department Location:**
Civil & Industrial Engineering 202
- **Department Phone:**
701-231-9818
- **Department Web Site:**
www.ndsu.edu/ime/
- **Degrees Offered:**
B.S.I.E.Mgt.
- **Official Program Curriculum:**
bulletin.ndsu.edu/undergraduate/program-curriculum/industrial-engineering-management/

Industrial Engineering & Management Major

Industrial Engineering and Management (IE&M) provides good employment and growth opportunities for people with the aptitude and interest for careers that blend technology and human resource. First, being an engineering program, it provides a blend with the traditional content of mathematics, sciences, engineering analysis, product/process design, and effective operation/system management. Beyond the basics, this program also challenges students to integrate resources with technology and provide seamless integration and flow of information, money, and knowledge. In addition to scientific principles and technological systems, IE&M students study social systems, cost analysis, facilities and other elements of the business enterprise to understand the impact of these elements on business organization. The "engineering" and "management" pieces are blended and integrated to provide better understanding of managing technical and societal system.

IE&M graduates are in high demand across a wide spectrum of industries and therefore, provide more flexibility and options to choose industry type of their choice to start new career. In recent years, the most active employers have represented manufacturing, healthcare, airline, entertainment industry, transportation, postal, warehousing and distribution, information systems, software, facilities development and consulting industries, as well as many of the production sectors that have been the traditional concentration for industrial engineers. IE&M graduates are sought after for positions in design of products, processes, procedures, facilities, and systems; material handling, distribution, warehousing, and logistics; project and organizational management; financial modeling; and technological training.

Just as the profession requires a blend of scientific, technological and humanistic skills, student learning in IE&M is an integrated process. The discipline-specific courses place the student in position to experience many elements of real situations in industry and commerce. Moreover, the program has been nationally cited for integrating design across all levels, with freshmen and juniors or sophomores and seniors often working together.

The Bachelor of Science degree in Industrial Engineering and Management is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. The curriculum is designed to produce baccalaureate-level graduates who are well prepared to accept engineering positions in industry and government or to pursue advanced degree studies. Graduates of the IE&M program will be able to:

1. Have established successful career in industrial and manufacturing engineering and beyond by demonstrating professionalism and ownership of their work with increasing responsibility and positive impact.
2. Have acquired new knowledge and expertise through professional development opportunities and/or higher education as a part of their life-long learning mission and professional growth.
3. Have demonstrated commitment to uphold higher ethical and professional standards at workplace and appreciate the impact of diverse opinions and solutions in a global/societal context.
4. Be productive citizen by committing to serve their profession and communities at appropriate levels.

Industrial Engineering & Management Areas of Emphasis

Students majoring in Industrial Engineering and Management may prepare for specific career choices by careful use of the technical electives included in the IE&M major. All Industrial Engineering and Management majors choose a minimum of three technical elective courses. It is suggested that students confer with their academic adviser for assistance in choosing the most appropriate technical elective courses. Particular areas of emphasis may be selected in the following special interests: production and operations management, reliability engineering, quality engineering and management, healthcare engineering and management, advanced manufacturing, supply-chain and logistics management, and lean manufacturing.

These topical areas are also available for post-graduate study, leading to the Master of Science in Industrial Engineering and Management, Master of Science in Manufacturing Engineering, and the Doctor of Philosophy in Industrial and Manufacturing Engineering degrees. For complete details, see the Graduate Bulletin (<http://bulletin.ndsu.edu/past-bulletin-archive/2018-19/graduate>) online.

Selective Admission

The Department of Industrial and Manufacturing Engineering has a selective admission policy. To be admitted to the program, freshman applicants must have a minimum high school GPA of 2.5 and a composite ACT score of 21 or higher. Transfer students, whether from another university or from another department at NDSU, must have an institutional grade point average of at least 2.30.

Industrial Engineering and Management Minor

Students majoring in any engineering discipline may elect a minor in Industrial Engineering and Management. These optional studies offer engineering students the opportunity to add important career-enhancing skills to their technological competencies. The elected courses in an IE&M minor add skills for integrating technology and resources within the complex of people, technology, machinery and information that make up the successful modern business enterprise. Students completing this minor will achieve better understanding of organizational and management processes and will be better prepared to work in the multifunctional teams crucial to success in industry.

Minor in IE&M require a minimum of 18 credits. The foundation requirements for the IE&M minor are:

- IME 111 Introduction to Industrial and Manufacturing Engineering
- IME 311 Work/Station Design and Measurement

The remaining 12 credits must be selected from a list of approved IME 300- and 400-level courses for which prerequisites are in place.

Interested students are encouraged to visit the IME Department for advice on course selection to best suit their career interests. Students must complete the graduation requirements for another engineering major before the designation of the IE&M minor will be placed on their transcripts.

Industrial Engineering & Management Sequence for Non-Majors

The practices and procedures learned in the Industrial Engineering & Management major are universally applied in public and private organizations of all kinds. IE&M courses are available as electives for students majoring in other programs including engineering, computer science, mathematics, sciences, business administration, cereal science, and agricultural economics. Courses recommended for non-majors are:

Code	Title	Credits
IME 311	Work/Station Design and Measurement	3
IME 440	Engineering Economy	2-3
IME 450	Systems Engineering and Management	3
IME 451	Logistics Engineering and Management	3
IME 452	Integrated Industrial Information Systems	3
IME 453	Hospital Management Engineering	3
IME 455	Management of People Systems	2
IME 456	Program and Project Management	3
IME 460	Evaluation of Engineering Data	3
IME 461	Quality Assurance and Control	3
IME 462	Total Quality In Industrial Management	3
IME 463	Reliability Engineering	3
IME 470	Operations Research I	3
IME 480	Production and Inventory Control	3
IME 482	Automated Manufacturing Systems	3
IME 485	Industrial and Manufacturing Facility Design	3

Please note this is a sample plan of study and not an official curriculum. Actual student schedules for each semester will vary depending on start year, education goals, applicable transfer credit, and course availability. Students are encouraged to work with their academic advisor on a regular basis to review degree progress and customize an individual plan of study.

Freshman		
Fall	Credits Spring	Credits
CHEM 121 & 121L	4 ENGL 120	3
ENGL 110	4 IME 111	3
MATH 165	4 MATH 166	4

COMP SCI ELECTIVE (Select from approved list of computer science electives)	3	ME 212	3
GEN ED Wellness	2	ME 221	3
		CHEM 122	3
	17		19

Sophomore

Fall	Credits	Spring	Credits
COMM 110	3	IME 311	3
IME 330	3	IME 440	2-4
MATH 129	3	MATH 266	3
MATH 259	3	PHYS 252 & 252L	5
ME 222	3	ENGR SCI ELECTIVE (Select from approved list of electives)	3
GEN ED Humanities/Fine Arts and Global Perspectives	3		
	18		16-18

Junior

Fall	Credits	Spring	Credits
IME 456	3	IME 461	3-4
IME 460	3	IME 470	3
ENGL 321	3	IME 472	3
ENGR SCI ELECTIVE (Select from approved list of electives)	3	ENGR SCI ELECTIVE (Select from approved list of electives)	3
GEN ED Humanities/Fine Arts	3	GEN ED Social & Behavioral Sci and Cultural Diversity	3
	15		15-16

Senior

Fall	Credits	Spring	Credits
ENGR 402	1	IME 450	3
IME 480	3	IME 485	3
IME 482	3	IME 489	3
ENGR SCI ELECTIVE (Select from approved list of electives)	3	TECHNICAL ELECTIVE (Select from approved list of electives)	3
GEN ED Social & Behavioral Science	3	TECHNICAL ELECTIVE (Select from approved list of electives)	3
TECHNICAL ELECTIVE (Select from approved list of tech electives)	3		
	16		15

Total Credits: 131-134