

Manufacturing Engineering

Department Information

- **Department Web Site:**
www.ndsu.edu/ime/ (<http://www.ndsu.edu/ime/>)
- **Credential Offered:**
B.S.Mfg.E.; Minor
- **Official Program Curriculum:**
catalog.ndsu.edu/undergraduate/program-curriculum/manufacturing-engineering/ (<http://catalog.ndsu.edu/undergraduate/program-curriculum/manufacturing-engineering/>)

Manufacturing engineers play a vital role in shaping the world around us, as their work is intrinsically linked to the production of goods. In the routines of daily life, whether at home, work, or during moments of recreation, nearly every item encountered is a result of manufacturing. Defined professionally, manufacturing occurs when the shape, form, or properties of a material are altered in a way that adds value. Manufactured goods are everywhere: aircraft structures, machinery, electronics, medical devices, automobile parts, household products, toys, textiles and clothing, cans and bottles, among others. In essence, manufactured goods permeate every facet of daily existence.

The Profession

In the modern landscape, where everything relied upon is manufactured, businesses turn to manufacturing engineers for the design, direction, and coordination of processes that bring products to fruition. As industries try to improve products and lower costs, manufacturing engineers are at the forefront, applying scientific principles to enhance the productions of goods. They are key team members across diverse sectors, from automobiles and electronics to food products and recreational equipment, and more. In all cases, manufacturing engineers design the processes and systems to make products with the required functionality, to high quality standards, available when and where customers prefer, at the best possible price and in ways that are environmentally friendly.

The Program

Manufacturing engineering is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Manufacturing and Similarly Named Engineering Programs. As graduates of the Manufacturing Engineering Program, individuals acquire the skills to design systems and processes that improve the quality and productivity of an organization's operations. Armed with a solid foundation in fundamental engineering and management principles, they effectively integrate people, technology, machines, and financial resources to create positive change, ensuring the optimal production of goods.

Motivated undergraduate students within the program have the opportunity to explore an accelerated degree path. The IME department offers an accelerated Master of Engineering program. The advantage to this non-thesis, project-based degree option lies in the application of pre-established coursework at the 600 level to be applied to both degrees, offering a graduate degree in only one additional year beyond the undergraduate degree. The program includes 30 credits of graduate classes in addition to a written examination. To be eligible for admission to the graduate school and pursue the Master of Engineering accelerated program, students must have completed a minimum of 60 credits and maintained a cumulative GPA of 3.0 or higher.

Faculty and Facilities

Currently housed in the Engineering Building, part of an eight-building engineering complex, the department is equipped with seven laboratories designed for both teaching and research, catering to the diverse educational and research requirements of students. These specialized laboratories cover a range of areas including computer simulation, human factors, automation and robotics, additive manufacturing and biomanufacturing, computational modeling, bioinformatics and operations research, PLC's, manufacturing/fabrication processes, rapid prototyping, CNC machining, and microfabrication, as well as welding and precision manufacturing. In the fall of 2026, NDSU's College of Engineering is set to open the new Richard Offerdahl '65 Engineering Complex. This cutting-edge facility will feature state-of-the-art research and learning spaces, equipping future engineers to meet the ever-changing demands of both the University and industry for generations to come.

The IME faculty and staff members in the department have extensive experience in industrial and manufacturing specialties. The IME faculty and staff are dedicated to personally knowing each student, recognizing their strengths, understanding potential challenges, and providing support whenever necessary. Upon graduation from NDSU, students will have developed excellent capabilities for career success, the confident ability for lifelong personal growth, and a network of friends and professional colleagues.

Career Opportunities

The IME programs at NDSU open doors to diverse career opportunities or to seek advanced degrees at NDSU or another institution. The IME programs help students develop a strong base in general education and engineering fundamentals, providing the foundation for a wide range of career options and facilitate lifelong growth. These programs also equip students with industry-standard skills, opening doors to many career opportunities with financial rewards and professional success. Manufacturing engineering graduates have become a source of talent working in industries that produce such products as biomedical devices, transportation and construction equipment, and aircraft and spacecraft. Recent IME graduates earn starting

salaries in the top rank of engineering disciplines. According to Payscale.com, the current national average starting salary for manufacturing engineers is \$76,452. (https://www.payscale.com/research/US/Job=Manufacturing_Engineer/Salary (https://www.payscale.com/research/US/Job=Manufacturing_Engineer/Salary/)).

Transfer Admission

Students who transfer with an AA or AS degree have lower-division general education credits satisfied.

Scholarship and Financial Aid

The Department of Industrial and Manufacturing Engineering offers several scholarships annually. Scholarships are available for incoming freshman, transfer students, and currently enrolled students. Other forms of financial aid are available through the Office of Financial Aid and Scholarships.

Selective Admission

Transfer students are required to have a minimum grade point average of 2.3.

MANUFACTURING Engineering Minor

Students majoring in any engineering discipline may elect a minor in Manufacturing Engineering. These optional studies offer engineering students the opportunity to add important career-enhancing skills to their technological competencies. The total requirement for the minor is 18 credits (12 credits are required courses and 6 credits are approved electives).

Sample Program Guide

IMPORTANT DISCLAIMER: This guide is not an official curriculum. This guide is a sample four-year degree plan of how students might plan this major with other degree requirements to complete their education in four years. Student plans will vary from this sample due to a variety of factors, such as, but not limited to, start year, education goals, transfer credit, and course availability. To ensure proper degree completion, enrolled students should utilize Degree Map (<https://www.ndsu.edu/registrar/degreemap/>) and Schedule Planner (<https://www.ndsu.edu/onestop/degree-map-and-planning/>) in Campus Connection and consult regularly with academic advisors to ensure graduation requirements are being met.

Freshman			
Fall	Credits	Spring	Credits
CHEM 121 & 121L		4 IME 111	3
ENGL 110		3 MATH 166	4
ENGL 120		3 ME 212	3
MATH 165		4 ME 221	3
Computer Sci Elective (Select from official curriculum guide)		3 CHEM 122	3
		17	16
Sophomore			
Fall	Credits	Spring	Credits
COMM 110		3 IME 311	3
IME 330		3 MATH 266	3
MATH 128		1 PHYS 252 & 252L	5
MATH 259		3 ME 331	4
ME 222		3 CE 309	3
ME 223		3	
		16	18
Junior			
Fall	Credits	Spring	Credits
IME 380		3 IME 431	3
IME 430		3 IME 440	3
IME 460		3 IME 461	3
ENGL 321		3 ME 350	3

IME 456	3	Gen Ed Hum & Fine Arts/Glob Persp	3
Gen Ed Wellness	2		
		17	15

Senior			
Fall	Credits	Spring	Credits
IME 480	3	IME 489	3
IME 482	3	Engr Sci Elective (Select from official curriculum)	3
Gen Ed Social & Behavioral Sciences	3	Gen Ed Soc & Beh Sci/Cult Div	3
Tech Elective (Select from official curriculum guide)	3	Tech Elective (Select from official curriculum guide)	3
ENGR 327	3	Tech Elective (Select from official curriculum guide)	3
		15	15

Total Credits: 129

DEGREE NOTES:

- Grades less than 'C' will not be accepted for required courses in CHEM, MATH, and PHYS.
- Students may request approval for other 300-400 level engineering or related courses to be approved as technical electives. To request approval, a student should submit a request to the IME Department indicating the course of interest and why the course should be approved as a technical elective. This request will be reviewed by the IME Department Chair for approval.
- 300-400 level BUSN courses require at least junior standing and a minimum 2.50 cumulative GPA.