

Mechanical Engineering

Department Information

- **Department Web Site:**
www.ndsu.edu/me/ (<http://www.ndsu.edu/me/>)
- **Credential Offered:**
 B.S.M.E.
- **Official Program Curriculum:**
catalog.ndsu.edu/undergraduate/program-curriculum/mechanical-engineering/ (<http://catalog.ndsu.edu/undergraduate/program-curriculum/mechanical-engineering/>)

The mechanical engineer deals with the broad areas of heat, energy, force and motion, and their effects on a multitude of products. Mechanical engineers may be involved in the design of large industrial machinery, power plants, automobiles and aircraft, robots, biomedical devices and equipment, precision measurement and data acquisition equipment, nanotechnology and new materials, among others. Within these areas, the mechanical engineer enjoys considerable professional flexibility.

The Program

The demand for mechanical engineers with a good technical education has been high for many years. The Department of Mechanical Engineering at North Dakota State University offers an education that enables its graduates to take their places in all facets of the profession. Since inception, the department has graduated thousands of mechanical engineers who have worked throughout the United States and many other parts of the world. The Bachelor of Science in Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET, (<https://www.abet.org>) (<https://www.abet.org>), under the General Criteria and the Mechanical and Similarly Named Engineering Programs Program Criteria.

Curriculum

The standard curriculum allows students flexibility in choosing courses that reflect their interests within the broad areas of mechanical engineering. These include mechanics, materials and nanotechnology, biomedical engineering, alternative energy, fluid dynamics, robotics and more. ME students also have the opportunity to pursue minors in coatings and polymeric materials, biomedical engineering, and robotics, among others, which can enhance their educational experience.

The coatings and polymeric materials minor prepares students for careers that require specialized polymers training, such as the manufacturing of coatings to enhance and preserve vehicles, structures and machines. NDSU's Department of Coatings and Polymeric Materials is internationally renowned. Only five other universities in the U.S. offer programs in coatings and employment opportunities far exceed the number of graduates.

The biomedical engineering minor provides an opportunity for specialized training in one of the highest demand fields today. It prepares graduates to be able to contribute to the global demand for medical technologies and innovations.

The robotics minor is designed to give students the skills needed to design and develop robotic devices, and use those devices to solve real-life problems. The minor provides depth of content in subjects including microprocessor programming, sensors and instrumentation, actuation systems, control principles, and robot manipulation. Graduates from this program may work in a wide range of industries including automotive, aerospace, drone manufacturers, packaging systems, precision agriculture, energy and mining, among others.

Undergraduate students who excel in our program may consider advancing towards a master's degree by applying for our Accelerated Master's Program. This option gives the student a jump-start on the Master of Science curriculum requirements while they finish their Bachelor of Science degree by allowing 6 credits of coursework to be applied to both degrees.

The Faculty and Facilities

The Department of Mechanical Engineering is housed in Dolve Hall, which is part of an eight-building engineering complex. Laboratories and classrooms are well-suited and equipped for teaching and research. Students have access to PC computer clusters and facilities located in Dolve Hall to assist them in their laboratory and class work. The faculty offers a variety of expertise and extensive experience in teaching and research.

High School Preparation

To enroll in the mechanical engineering curriculum for the freshman year, students should have two years of high school algebra and one year of trigonometry, as well as a year in chemistry and physics. Students without these courses may take them at NDSU to better prepare academically for a specific engineering curriculum.

Selective Admission

The Department of Mechanical Engineering has minimum admission requirements for new freshmen and transfer students.

New freshmen must have a minimum high school grade point average (GPA) of 3.0 or have a minimum math ACT of 26 or SAT math sub score of 590.

Transfer students must have a minimum cumulative grade point average (GPA) of 2.7.

All new students who meet mechanical engineering admission requirements are initially admitted to the basic program in mechanical engineering. After completing the first two years of the curriculum with a minimum GPA of 2.5, minimum engineering GPA of 2.7 and no grade below a C, students are eligible for admission to the professional program. The engineering GPA is calculated based on specific core engineering courses.

Students who do not meet the minimum admission criteria will be placed in mechanical engineering under the advisement of a general engineering advisor until minimum admission criteria have been met.

Career Opportunities

Recent graduates have found employment in companies throughout the United States. The average starting salary is approximately \$68,000. A sampling of companies hiring NDSU graduates includes: 3M, American Crystal Sugar, Angus Palm, Applied Engineering, Arctic Cat Inc., Black and Veatch, Bobcat, Boeing, Cargill, Caterpillar, CNH Industrial, Daktronics, Horsch Anderson, Integrity Windows, John Deere, Montana Dakota Utilities, Parker-Hannifin, Polaris, Puget Sound Naval Shipyard and Xcel Energy.

Cooperative Education Program

Students in mechanical engineering are encouraged to participate in the Cooperative Education Program at NDSU. It consists of one or more four-month sessions of work experience after completion of the sophomore year. This optional industry experience provides students with hands-on opportunities not available in the classroom and makes students more marketable to employers after graduation. Students who complete an internship or co-op may be eligible to apply those credits towards graduation as technical elective coursework.

Plan of Study

IMPORTANT DISCLAIMER: A Sample Program Guide provides an unofficial guide of program requirements and should be used by prospective students who are considering attending NDSU in the future. It is NOT an official curriculum and should NOT be used by current NDSU students for official degree planning purposes. Note that the official curriculum used by current NDSU students can vary from the Sample Program Guide due to a variety of factors such as, but not limited to, start year, education goals, transfer credit, and course availability.

To ensure proper program 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 their academic advisor to ensure requirements are being met.

| Freshman | | | |
|--|----------------|----------------------|----------------|
| Fall | Credits | Spring | Credits |
| MATH 165 | | 4 MATH 166 | 4 |
| ENGL 110 | | 3 ENGL 120 | 3 |
| CHEM 121 | | 3 CHEM 122 | 3 |
| ME 111 | | 2 ME 212 | 3 |
| Humanities & Fine Arts Gen Ed | | 3 ME 221 | 3 |
| | | Wellness Gen Ed | 2 |
| | | 15 | 18 |
| Sophomore | | | |
| Fall | Credits | Spring | Credits |
| MATH 129 | | 3 MATH 266 | 3 |
| MATH 259 | | 3 COMM 110 | 3 |
| IME 330 | | 3 PHYS 252 & 252L | 5 |
| ME 222 | | 3 ME 213 | 3 |
| ME 223 | | 3 ME 351 | 3 |
| Social & Behavioral Science Gen Ed/ Global Perspectives | | 3 | |
| | | 18 | 17 |
| Junior | | | |
| Fall | Credits | Spring | Credits |
| ECE 301 | | 3 ECE 306 | 1 |

| | | | |
|--------------------|---|--------------------|---|
| ENGL 321 | 3 | ME 361 | 3 |
| ME 331 | 4 | ME 442 | 3 |
| ME 352 | 3 | ME 454 | 3 |
| Technical Elective | 3 | Technical Elective | 3 |
| | | ENGR 327 | 3 |

16 **16**

| Senior | | | |
|--------------------|----------------|--------------------------------------|----------------|
| Fall | Credits | Spring | Credits |
| ME 421 | | 3 ME 412 | 3 |
| ME 443 | | 3 ME 462 | 3 |
| ME 457 | | 3 Technical Elective | 3 |
| ME 461 | | 3 Technical Elective | 3 |
| Technical Elective | | 3 Social & Behavioral Science Gen Ed | 3 |

15 **15**

Total Credits: 130

Degree Notes:

- Students who transfer any 30 or more credits into the program are not required to take ME 111.
- No grades less than 'C' will be accepted to fulfill a degree requirement.
- No more than nine credits of approved technical electives may be taken outside the ME department.
- Admission to the Mechanical Engineering Professional program requires a minimum 2.70 engineering GPA and a minimum 2.50 cumulative GPA.
- A 2.50 cumulative GPA is required for graduation requirements.