

Mechanical Engineering

Department Information

- **Department Location:**
Dolve Hall
- **Department Phone:**
701-231-8671
- **Department Web Site:**
www.ndsu.edu/me/
- **Credential Offered:**
B.S.M.E.
- **Plan Of Study Sample:**
bulletin.ndsu.edu/programs-study/undergraduate/mechanical-engineering/#planofstudytext

Major Requirements

Major: Mechanical Engineering

Degree Type: B.S.M.E.

Minimum Degree Credits to Graduate: 129

University Degree Requirements

1. Satisfactory completion of all requirements of the curriculum in which one is enrolled.
2. Earn a minimum total of 120 credits in approved coursework. Some academic programs exceed this minimum.
3. Satisfactory completion of the general education requirements as specified by the university.
4. A minimum institutional GPA of 2.00 based on work taken at NDSU.
5. At least 36 credits presented for graduation must be in courses numbered 300 or higher.
6. Transfer Students: Must earn a minimum of 60 credits from a baccalaureate-degree granting or professional institution.
 - a. Of these 60, at least 36 must be NDSU resident credits as defined in #7.
 - b. Within the 36 resident credits, a minimum of 15 must be in courses numbered 300 or higher and 15 credits in the major field of study.
7. At least 36 credits must be NDSU resident credits. Resident credits include credits registered and paid for at NDSU.

For complete information, please refer to the Degree and Graduation Requirements (<http://bulletin.ndsu.edu/past-bulletin-archive/2020-21/academic-policies/undergraduate-policies/degree-and-graduation>) section of this Bulletin.

University General Education Requirements

| Code | Title | Credits |
|--|---------------------------------|-----------|
| Communication (C) | | 12 |
| ENGL 110 | College Composition I | |
| ENGL 120 | College Composition II | |
| COMM 110 | Fundamentals of Public Speaking | |
| Upper Division Writing [†] | | |
| Quantitative Reasoning (R) [†] | | 3 |
| Science and Technology (S) [†] | | 10 |
| Humanities and Fine Arts (A) [†] | | 6 |
| Social and Behavioral Sciences (B) [†] | | 6 |
| Wellness (W) [†] | | 2 |
| Cultural Diversity (D) ^{*†} | | |
| Global Perspectives (G) ^{*†} | | |
| Total Credits | | 39 |

* May be satisfied by completing courses in another General Education category.

† General education courses may be used to satisfy requirements for both general education and the major, minor, and program emphases, where applicable. Students should carefully review major requirements to determine if specific courses can also satisfy these general education categories.

- A list of university approved general education courses and administrative policies are available here (<http://bulletin.ndsu.edu/past-bulletin-archive/2020-21/academic-policies/undergraduate-policies/general-education/#genedcoursestext>).

Major REquirements

| Code | Title | Credits |
|--|--|---------|
| Mechanical Engineering Requirements: | | |
| ME 111 | Introduction to Mechanical Engineering | 2 |
| ME 212 | Fundamentals of Visual Communication for Engineers | 3 |
| ME 213 | Modeling of Engineering Systems | 3 |
| ME 221 | Engineering Mechanics I | 3 |
| ME 222 | Engineering Mechanics II | 3 |
| ME 223 | Mechanics of Materials | 3 |
| ME 331 | Materials Science and Engineering | 4 |
| ME 351 | Thermodynamics I | 3 |
| ME 352 | Fluid Dynamics | 3 |
| ME 361 | Introduction to Mechanical Engineering Profession | 1 |
| ME 412 | Engineering Measurements | 3 |
| ME 421 | Theory of Vibrations | 3 |
| ME 442 | Machine Design I | 3 |
| ME 443 | Machine Design II | 3 |
| ME 454 | Heat and Mass Transfer | 3 |
| ME 457 | Thermal Systems Laboratory | 3 |
| ME 461 | Design Project I | 3 |
| ME 462 | Design Project II | 3 |
| MATH 129 | Basic Linear Algebra | 3 |
| MATH 165 | Calculus I (May satisfy general education category R) | 4 |
| MATH 166 | Calculus II | 4 |
| MATH 259 | Multivariate Calculus | 3 |
| MATH 266 | Introduction to Differential Equations | 3 |
| CHEM 121 | General Chemistry I (May satisfy general education category S) | 3 |
| CHEM 122 | General Chemistry II (May satisfy general education category S) | 3 |
| ECE 301 | Electrical Engineering I | 3 |
| ECE 306 | Electrical Engineering Lab I | 1 |
| ENGL 321 | Writing in the Technical Professions (May satisfy general education category C) | 3 |
| ENGR 402 | Engineering Ethics and Social Responsibility | 1 |
| IME 330 | Manufacturing Processes | 3 |
| PHYS 252 & 252L | University Physics II and University Physics II Laboratory (May satisfy general education category S) | 5 |
| Technical Electives: Select 15 credits from the following: | | 15 |
| ME 332 | Engineering Materials II | |
| ME 353 | Thermodynamics II | |
| ME 435 or IME 635 | Plastics and Injection Molding Manufacturing Plastics and Injection Molding Manufacturing | |
| ME 436 | Biopolymers and Biocomposites | |
| ME 437 | Engineering Ceramics | |
| ME 468 | Introduction to Biomechanics | |
| ME 470 | Renewable Energy Technology | |
| ME 471 | Experimental Stress Analysis | |
| ME 472 | Fatigue and Fracture of Metals | |
| ME 473 | Engineering with Polymeric Materials | |
| ME 474 | Mechanics of Composite Materials | |
| ME 475 | Automatic Controls | |
| ME 476 | Mechatronics | |

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| ME 477 | ME Finite Element Analysis |
| ME 478 | Advanced Flow Diagnostics |
| ME 479 | Fluid Power Systems Design |
| or ABEN 479 | Fluid Power Systems Design |
| ME 480 | Biofluid Mechanics |
| ME 481 | Fundamentals of Energy Conversion |
| ME 482 | Fuel Cell Science and Engineering |
| ME 483 | Introduction to Computational Fluid Dynamics |
| ME 484 | Gas Turbines |
| ME 485 | Heating, Ventilation and Air Conditioning |
| ME 486 | Nanotechnology and Nanomaterials |
| or CE 686 | Nanotechnology and Nanomaterials |
| ME 487 | Internal Combustion Engines |
| ME 488 | Introduction to Aerodynamics |
| ME 489 | Vehicle Dynamics |
| Approved technical electives from other departments - no more than 3 courses from the following: | |
| ABEN 456 | Biobased Energy |
| CPM 473 | Polymer Synthesis |
| CPM 474 | Applied Polymer Science |
| CPM 475 | Coatings' Materials Science |
| CPM 486 | Corrosion and Materials |
| CSCI 485 | Autonomous Command and Artificial Intelligence for Robots and Other Cyber-Physical Systems |
| ECE 485 | Biomedical Engineering |
| ECE 487 | Cardiovascular Engineering |
| ECE 488 | Cardiovascular Engineering II |
| ENGR 310 | Entrepreneurship for Engineers and Scientists |
| IME 430 | Process Engineering |
| IME 431 | Production Engineering |
| IME 432 | Composite Materials Manufacturing |
| IME 440 | Engineering Economy |
| IME 450 | Systems Engineering and Management |
| IME 460 | Evaluation of Engineering Data |
| IME 485 | Industrial and Manufacturing Facility Design |
| PHYS 350 | Modern Physics |
| PHYS 361 | Electromagnetic Theory |
| PHYS 485 | Quantum Mechanics I |

Total Credits

106

Degree Requirements and Notes

- A student must complete at least 60 semester credits of professional level course work in his/her program while in residence and enrolled in the college. Students transferring into the college from programs with professional accreditation are exempt from this residency requirement but are subject to the residency requirement of NDSU.
- 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.