Mechanical Engineering

Department Information

- **Department Web Site:**
  www.ndsu.edu/me/ (http://www.ndsu.edu/me/)
- **Credential Offered:**
  B.S.M.E.
- **Sample Program Guide:**
  catalog.ndsu.edu/programs-study/undergraduate/mechanical-engineering/#planofstudytext (http://catalog.ndsu.edu/programs-study/undergraduate/mechanical-engineering/#planofstudytext)

Major Requirements

Major: Mechanical Engineering

Degree Type: B.S.M.E.
Minimum Degree Credits to Graduate: 130

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 30 credits must be NDSU resident credits. Resident credits include credits registered and paid for at NDSU.
6. At least 36 credits presented for graduation must be in courses numbered 300 or higher.
7. Students presenting transfer credit must meet the NDSU residence credits and the minimum upper level credit. Of the 30 credits earned in residence, a minimum of 15 semester credits must be in courses numbered 300 or above, and 15 semester credits must be in the student's curricula for their declared major.

For complete information, please refer to the Degree and Graduation Requirements (http://catalog.ndsu.edu/academic-policies/undergraduate-policies/degree-and-graduation/) section of this Bulletin.

University General Education Requirements

A list of university approved general education courses and administrative policies are available here (http://catalog.ndsu.edu/academic-policies/undergraduate-policies/general-education/#genedcoursestext).

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

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Courses for category D & G are satisfied by completing D & G designated 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.

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	Product Design and Development	3
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 327	Ethics, Engineering, and Technology	3
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	Plastics and Polymer Processing in Manufacturing	
or IME 635	Plastics and Injection Molding Manufacturing	
ME 436	Biopolymers and Biocomposites	
ME 437	Engineering Ceramics	
ME 468	Introduction to Biomechanics	
ME 469	Energy Storage Technology	
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
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 463	Modern Control
ECE 461	Control Systems I
ECE 485	Biomedical Engineering
ECE 487	Cardiovascular Engineering
ECE 488	Cardiovascular Engineering II
ENGR 310	
ENGR 321	Introduction to Robotics
ENGR 379	Global Seminar
IME 380	CAD/CAM for Manufacturing
IME 430	Process Engineering
IME 431	Production Engineering
IME 432	Composite Materials Manufacturing
IME 433	Additive Manufacturing
IME 440	Engineering Economy
IME 450	Systems Engineering and Management
IME 460	Evaluation of Engineering Data
IME 465	Introduction to Machine Learning
IME 485	Industrial and Manufacturing Facility Design
PHYS 350	Modern Physics
PHYS 355	Classical Mechanics
PHYS 361	Electromagnetic Theory
PHYS 485	Quantum Mechanics I
Total Credits	**110**

*
Students who transfer any 30 or more credits into the program are not required to take ME 111.

*
Students who have completed ABEN 110 or ENGR 111 are not required to take ME 111.

Degree Requirements and Notes

- 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.