



orientation

MONTANA
STATE UNIVERSITY

— BOZEMAN · MONTANA —

Department of Mechanical & Industrial Engineering

Professor Dilpreet Bajwa
Department Head, M&IE



Norm Asbjornson College of Engineering

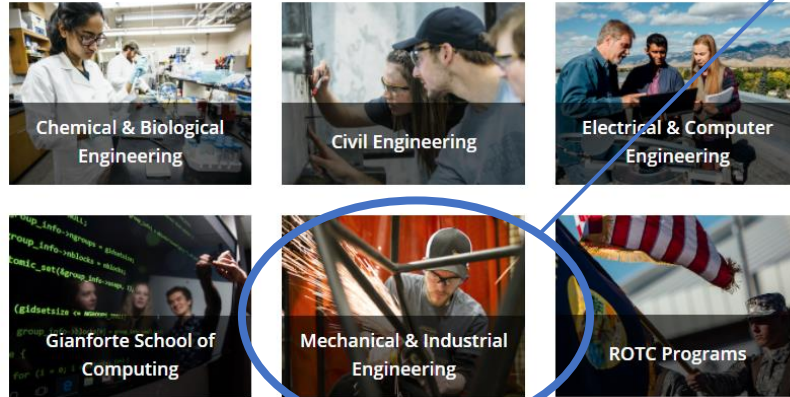
- About
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- Current Students
- Prospective Students
- Research
- Outreach
- Faculty & Staff
- Alumni & Friends
- Empower Program
- Women in Engineering
- ROTC Programs

Norm Asbjornson College of Engineering
 Montana State University
 P.O. Box 173820
 Bozeman, MT 59717-3820

Norm Asbjornson College of Engineering / Departments and Degrees

Departments and Degrees

Departments



Undergraduate Majors & Minors

▼ Majors

- [Biological Engineering](#)
- [Biomedical Engineering](#)
- [Chemical Engineering](#)
- [Civil Engineering](#)
- [Computer Engineering](#)
- [Computer Science](#)
 - [Bachelor's of Science](#)
 - [Interdisciplinary option](#)
 - [Professional option](#)
 - [Bachelor of Arts](#) (Arts, Humanities or Business Interest)
- [Construction Engineering Technology](#)
- [Electrical Engineering](#)
- [Environmental Engineering](#)
- [Financial Engineering](#)
- [Industrial and Management Systems Engineering](#)
- [Mechanical Engineering](#)
- [Mechanical Engineering Technology](#)

▼ Minors

- [Aerospace](#)
- [Biomedical Engineering](#)
- [Building Energy Systems](#)
- [Computer Engineering](#)
- [Computer Science](#)
 - STEM Interest
 - Arts, Humanities or Business Interest
- [Electrical Engineering](#)
- [Financial Engineering](#)
- [Engineering Management](#)
- [Industrial and Management Systems Engineering](#)
- [Land Surveying](#)
- [Materials](#)
- [Mechatronics](#)
- [Military Studies](#)

Undergraduate Degrees



Mechanical Engineering

The most popular major in the engineering college, mechanical engineering is a general degree that provides a strong foundation for a variety of careers. Graduates go on to work in aerospace, manufacturing of a variety of goods, HVAC, alternative energy and more. [Learn more >>](#)

Program coordinator: [Ruhui Amin](#)



Mechanical Engineering Technology

With a focus on practical application of mechanical engineering concepts in manufacturing and other hands-on fields, MET is versatile degree. Graduates work in machine and product design, manufacturing, HVAC and other areas of industry. [Learn more >>](#)

Program coordinator: [Kevin Cook](#)



Industrial and Management Systems Engineering

IMSE is focused on optimizing the delivery of goods and services through problem-solving involving mathematical models, managerial concepts and more. IMSE graduates are people-oriented problem-solvers who work in manufacturing, finance, transportation and other fields. [Learn more >>](#)

Program coordinator: [William Schell](#)



Financial Engineering

Financial Engineering is an emerging interdisciplinary field that emphasizes the design and analysis of financial instruments to manage risk and create strategic business opportunities. FE students combine courses in engineering, business and computing. [Learn more >>](#)

Program coordinator: [Greg Gilpin](#)

Minors

Adding one or more minors onto a bachelor's degree allows a student to diversify their education and experience and develop expertise that can contribute to their career goals.

For questions, contact the certifying officer.

- [Aerospace](#)
 - Certifying Officer - [Doug Cairns](#)
- [Building Energy Systems](#)
 - Certifying Officer - [Kevin Amende](#)
- [Engineering Management](#)
 - Certifying Officer - [Bill Schell](#)
- [Financial Engineering](#)
 - Certifying Officer - [Gregory Gilpin](#)
- [Materials](#)
 - Certifying Officer - [Stephen Sofie](#)
- [Mechatronics](#)
 - Certifying Officer - [Mike Edens](#)

NACOE and MIE Undergraduate Students

Mech. Eng.	880
Mech. Eng. Technology	228
Ind. & Mgmt. Systems Eng.	60
Financial Eng.	47
M&IE Total	1255
NACOE Total	3144





Roberts Hall



Barnard Hall



Norm Asbjornson Hall

Department Overview

- Mechanical & Industrial Engineering Department
 - Main Office 220 Roberts Hall, 406-994-2203
 - Available for help 8 am – 5 pm M-F
- BS Financial Engineering
- BS Industrial & Management Systems Engineering (ABET)
- BS Mechanical Engineering (ABET)
- BS Mechanical Engineering Technology (ABET)
- **Several minors available** (Aerospace, Building Energy Systems, Engineering Management, Materials, Mechatronics, are most popular)

ABET - The Accreditation Board for Engineering and Technology, Inc.

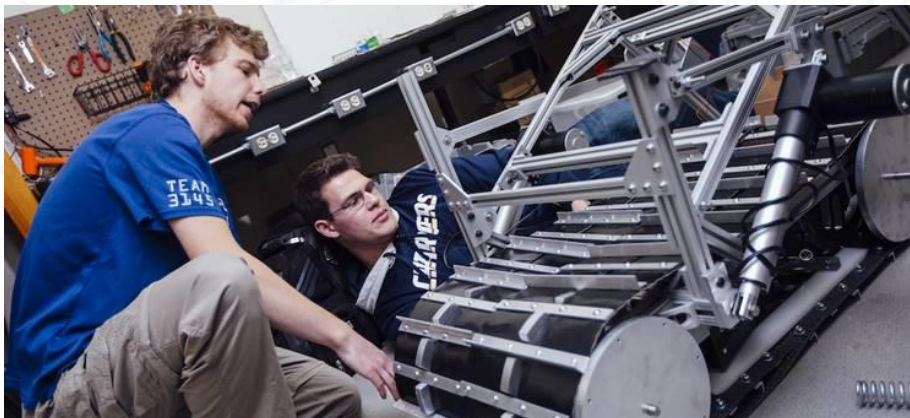


Mechanical Engineering

Versatile engineering discipline: solving problems through design/development/testing of mechanical and thermal systems.

ME graduates work in a variety of industries, including aerospace, automotive, energy systems, biomechanical, manufacturing, research and development, robotics, transportation, construction and environmental.

ME roles include product development, design, manufacturing, research, systems development and control, testing, maintenance, and many more.



Mechanical Engineering Coursework

MSU Core:

- University Seminar (US)
- College Writing (W)
- Quantitative Reasoning (Q)
- Diversity (D)
- Contemporary Issues in Science (CS)
- Arts Inquiry (IA) or Arts Research (RA)
- Humanities Inquiry (IH) or Humanities Research (RH)
- Natural Science Inquiry (IN) or Natural Science Research (RN)
- Social Science Inquiry (IS) or Social Science Research (RS)
- Additional Research & Creative Experience Courses (R)

Foundational Coursework

- Math
- Physics
- Chemistry
- Statics
- Dynamics
- Mechanics of Materials
- Materials Science / Lab
- Manufacturing Processes / Lab
- Circuits, Devices & Motors
- Applied Data Analysis

Directed Coursework

- Computer Applications and Programming
- Advanced Mechanics
- Machine Design
- Thermodynamics
- Fluid Dynamics
- Computer-Aided Engineering (Analysis Focus)
- Measurements & Instrumentation / Lab
- Heat Transfer
- Vibrations
- Business Fundamentals for Engineers
- Capstone (Design and Build)

Professional Elective Coursework

- Biomedical
- Computational Mechanics
- Fluid and Thermal Systems
- Manufacturing
- Materials Engineering
- Structural Systems
- General

Total –
128 Credits

Approx.
Math & Sci. – 33
Core – 19
Eng. Topics - 74

Mechanical Engineering Technology

Versatile engineering discipline: using applied engineering methods and tools to solve a broad range of problems related to mechanical and thermal systems.

MET graduates work in a variety of industry, commonly in manufacturing, building energy systems, aerospace, automotive, alternative energy systems, transportation, construction, mining, and many more.

MET roles include product development, design, process development, manufacturing, quality management, project management, field engineering, HVAC and Building Systems, maintenance, and many others.



Mechanical Engineering Technology Coursework

MSU Core:

- University Seminar (US)
- College Writing (W)
- Quantitative Reasoning (Q)
- Diversity (D)
- Contemporary Issues in Science (CS)
- Arts Inquiry (IA) or Arts Research (RA)
- Humanities Inquiry (IH) or Humanities Research (RH)
- Natural Science Inquiry (IN) or Natural Science Research (RN)
- Social Science Inquiry (IS) or Social Science Research (RS)
- Additional Research & Creative Experience Courses (R)

Foundational Coursework

- Math
- Physics
- Chemistry
- Applied Statics
- Applied Mechanics of Materials
- Materials Science / Lab
- Manufacturing Processes / Lab
- Circuits, Devices and Motors
- Applied Data Analysis

Directed Coursework

- Computer Applications and Programming
- Mechanisms
- Machine Design
- Applied Thermodynamics
- Applied Fluid Dynamics
- Computer-Aided Engineering (Design Focus)
- Machining and Safety
- Joining Processes
- Measurements & Instrumentation / Lab
- Applied Electronics & Power for Mechanical Systems
- Applied Heat Transfer
- Multi-Disciplinary Design
- Business Fundamentals for Engineers
- Capstone (Design and Build)

Professional Elective Coursework

- Manufacturing and Manufacturing Systems
- Management
- Industrial Systems
- Materials
- Building Energy Systems
- Alternative Energy
- General

Total –
125 Credits

Approx.
Math & Sci. – 30
Core – 19
Eng. Topics - 74

Industrial & Management Systems Engineering

Broad engineering discipline: solving complex problems using engineering tools to improve system design with a focus on the human side of processes

IMSE graduates work in virtually every industry, commonly in manufacturing, transportation/ logistics, healthcare, and financial services

IMSE roles include project management, technology management, human factors, quality management, and many others.



Service Sector Engineering



Industrial & Management Systems Coursework

MSU Core

- University Seminar (US)
- College Writing (W)
- Quantitative Reasoning (Q)
- Diversity (D)
- Contemporary Issues in Science (CS)
- Arts Inquiry (IA) or Arts Research (RA)
- Humanities Inquiry (IH) or Humanities Research (RH)
- Natural Science Inquiry (IN) or Natural Science Research (RN)
- Social Science Inquiry (IS) or Social Science Research (RS)

Foundational Coursework

- Calculus
- Physics
- Chemistry
- Linear Algebra
- Statistics
- Materials Science
- Manufacturing Processes / Lab
- Statics and Mechanics of Materials
- Computer Science

Directed Coursework

- Systems Engineering
- Work Design
- Ergonomics and Interface Design
- Engineering Ethics
- Engineering Management
- Facility and Material Handling Design
- Operations Research
- Engineering Economics
- Project Management
- Design of Experiments / Regression
- Production Design and Management
- Quality Management Systems
- Project Management
- Capstone Project with Industry

Cognate Elective Coursework

A unique elective system where students can design their own "mini-minor" drawing from courses across campus (and even beyond) to dive more deeply into an area of their interest. Popular options include business management, supply chain management, foreign languages, and many, many, others.

Total –
128 Credits

Approx.
Math & Sci. – 33
Core – 19
Eng. Topics - 74

Financial Engineering

A new multi-disciplinary field that applies economics and engineering to solve problems, manage business risk and capture new opportunities.

EFIN graduates are engaged in financial services, agriculture, retail, logistics, and big data applications

EFIN roles include financial and risk analysts, quantitative modelers, marketing analytics, and many others.



Financial Engineering Coursework

MSU Core:

- University Seminar (US)
- College Writing (W)
- Quantitative Reasoning (Q)
- Diversity (D)
- Contemporary Issues in Science (CS)
- Arts Inquiry (IA) or Arts Research (RA)
- Humanities Inquiry (IH) or Humanities Research (RH)
- Natural Science Inquiry (IN) or Natural Science Research (RN)
- Social Science Inquiry (IS) or Social Science Research (RS)

Foundational Coursework

- Calculus
- Physics
- Chemistry
- Linear Algebra
- Statistics
- Micro Economics
- Macro Economics
- Computer Programming and Data Structures
- Differential Equations

Directed Coursework

- Engineering and Economic Financial Management
- Micro Economic Analysis with Calculus
- Managerial Economics
- Engineering Ethics and Engineering Management
- Financial and Managerial Accounting
- Money and Banking
- Operations Research
- Engineering Economics
- Econometrics
- Managerial Forecasting and Big Data
- Regression
- Quantitative Methods in Economics
- Capstone Project with Industry

Professional Elective Coursework

- Business Finance
- Investments
- Artificial Intelligence
- Business Management
- Project Management
- Industrial Engineering
- Advanced Math Topics

Total –
120 Credits

For More Information

- Mechanical & Industrial Engineering Department
 - Main Office 220 Roberts Hall, 406-994-2203
 - Available for help 8 am – 5 pm M-F
- <https://www.montana.edu/mie/index.html>

Mechanical & Industrial Engineering Department

Welcome from the Department Head

- Academic Programs
- Prospective Students
- Research
- Labs & Facilities
- Department News
- Awards & Accolades
- Industrial Advisory Board
- Open Faculty/Staff Positions
- Program Assessment

Student resources

- M&IE Advising
- Course Catalog
- Course Syllabi:
- Appointment Scheduler
- MSUbot
- NACOE Student Resources
- Student Organizations
- Capstone
 - : ME/MET
 - Capstone
 - : IMSE

Directory

Faculty & Staff

Mechanical and Industrial Engineering Department

P.O. Box 173800
Bozeman, MT 59717-3800

Tel: (406) 994-2203
Fax: (406) 994-6292
Location: 220 Roberts
mieinfo@montana.edu

Department Head:

Daniel A. Miller, Ph.D.

Academic Programs



Undergraduate Degrees

- [B.S. Financial Engineering](#)
- [B.S. Industrial & Management Systems Engineering](#)
- [B.S. Mechanical Engineering](#)
- [B.S. Mechanical Engineering Technology](#)

Graduate Programs

We offer a variety of master's and Ph.D. degrees with exciting opportunities for research. [Learn more about our graduate programs.](#)

To request more information regarding these and other graduate programs at MSU-Bozeman, please fill out and submit the online Graduate School [Information Request Form](#).

Minors

- [Aerospace](#)
 - Certifying Officer - [Doug Cairns](#)
- [Building Energy Systems](#)
 - Certifying Officer - [Kevin Amende](#)
- [Engineering Management](#)
 - Certifying Officer - [Bill Schell](#)
- [Financial Engineering](#)
 - Certifying Officer - [Durward Sobek](#)
- [Materials](#)
 - Certifying Officer - [Stephen Sofie](#)
- [Mechatronics](#)
 - Certifying Officer - [Mike Edens](#)

