



Legend:

Course Prefix & Number | Credits | Course Name

General Education Elective | Credits

Program or Concentration Elective | Credits

Mechanical Engineering CORE Elective (3)

C grade or better pre-req. or passing grade required

→ Critical Course Pathway

BS in Mechanical Engineering

Program/Concentration Electives, General Education, and Other Electives

2024-2025 Catalog

Program/Concentration Electives

Advanced Topics

- Students may select a combination of 12 hours of credit (4 - 3-credits courses) from any, Mechanical Engineering concentration courses, ME CORE electives (in addition to required 1 ME Core elective) or Advanced Topics electives.

Aerospace

Select 12 credits (4 courses) from the following electives:

- EAS 4010 - Flight Performance Mechanics Credits: 3
- EAS 3101 - Fundamentals of Aerodynamics Credits: 3
- EAS 4200 - Introduction to Aero Structures Credits: 3
- EAS 4505 - Orbital Mechanics Credits: 3
- EGN 4715 - Propulsion and Combustion Systems Credits: 3
- EML 3221 - Acoustics Credits: 3

Automotive

Select 12 credits (4 courses) from the following electives:

- EML 3262 - Kinematics and Dynamics of Machinery Credits: 3
- EML 4421 - Combustion-Engines and Fuel Cells Credits: 3
- EMI 4264 - Vehicle Dynamics Credits: 3
- EEL 4312 - Electric and Hybrid Vehicles Credits: 3
- EEL 4332 - Intro to Autonomous Vehicles Credits: 3

Materials and Advanced Manufacturing

Select 12 credits (4 courses) from the following electives:

- EIN 3390 - Manufacturing Processes Credits: 3
- EML 4541 - Fatigue and Fracture Mechanics Credits: 3
- EML 4234 - Engineering Failure Analysis Credits: 3
- EML 4542 - Materials Selection in Design and Manufacturing Credits: 3
- EGN 4334 - Mechanics of Composite Materials Credits: 3
- EML 3221 - Acoustics Credits: 3

Energy

Select 12 credits (4 courses) from the following electives:

- EEL 4283 - Renewable Energy Systems Credits: 3
- EEL 4276 - Smart-Grid and Cyber Physical Security Credits: 3
- EEL 3287 - Renewable Energy and Sustainability Credits: 3
- ENV 3049 - Life Cycle Assessment and Modeling Credits: 3
- EML 4600 - Heating, Ventilating, and Air Conditioning (HVAC) Credits: 3
- EML 3401 - Principles of Turbomachinery Credits: 3

Operations Research

Select 12 credits (4 courses) from the following electives:

Required:

- EGN 3448 - Operations Research Credits: 3

Select three (3) courses:

- MAN 3504 - Introduction to Operations and Supply Chain Management Credits: 3
- EGS 3625 - Engineering & Technology Project Management Credits: 3
- EGN 3466 - Discrete Event Simulation Credits: 3
- MAN 3610 - Global Logistics Management Credits: 3
- MAN 4594 - Reverse Logistics Credits: 3
- MAN 4522 - Planning and Control Systems for Supply Chain Management Credits: 3
- MAN 3520 - Lean Six Sigma Credits: 3

Robotics

Select 12 credits (4 courses) from the following electives:

- EML 3535 - Computer Manufacturing and Control Credits: 3
- EML 4833 - Human Robotics Credits: 3
- EEL 4664 - Kinematics and Control of Robotic Systems Credits: 3
- EEL 4660 - Autonomous Robotic Systems Credits: 3
- EEL 4612 - Control System Design Credits: 3
- EEL 4652 - Control Theory Credits: 3
- EEL 4220 - Electronic Motor Control Credits: 3
- EEL 4665 - Autonomous Perception Systems Credits: 3

Simulation

Select 12 credits (4 courses) from the following electives:

Required (3 ME and 1 Mathematics):

- EGN 4350C - Finite Element Analysis in Mechanical Engineering Credits: 3
- EML 4701 - Applications in Computational Fluid Dynamics Credits: 3
- ENV 3049 - Life Cycle Assessment and Modeling Credits: 3

Select one (1) of the following:

- MAA 4402 - Complex Variables Credits: 3
- MAP 4341 - Applied Partial Differential Equations Credits: 3

Mechanical Engineering CORE Electives

Select one (1) course. Additional Courses in the list count in Advanced Topics.

- EGN 4350C - Finite Element Analysis in Mechanical Engineering Credits: 3
- EML 4225 - Introduction to Vibrations and Controls Credits: 3

General Education

Arts and Humanities

A total of 12 credit hours must be completed in the arts, humanities, and social sciences.

At least one course (3 credits) from the following state required list:

- ARH 2000 - Art Appreciation Credits: 3
- HUM 2020 - Introduction to the Humanities Credits: 3
- LIT 2000 - Introduction to Literature Credits: 3
- PHI 2010 - Introduction to Philosophy Credits: 3
- MUL 2010 - Music Appreciation Credits: 3

Optional additional course elective:

- IDS 2144 - Legal, Ethical, and Management Issues in Technology Credits: 3
- HUM 2022 - Explorations in the Humanities Credits: 3

Social Sciences

A total of 12 credit hours must be completed in the arts, humanities, and social sciences.

At least one course (3 credits) from the following state required list:

- AMH 2010 - American History to 1877 Credits: 3
- AMH 2020 - American History Since 1877 Credits: 3
- POS 2041 - American Government Credits: 3
- ECO 2013 - Principles of Macroeconomics Credits: 3
- PSY 2012 - General Psychology Credits: 3

Optional additional course elective:

- ECO 2023 - Principles of Microeconomics Credits: 3

