

DEPARTMENT OF MECHANICAL ENGINEERING

MECHANICAL.MINES.EDU



PROGRAM SCOPE

We pride ourselves in having a strong hands-on curriculum that emphasizes the connections between fundamental engineering analysis and practical engineering design. Our graduates find employment opportunities in aerospace, fossil and renewable energy, manufacturing, biomedical and automotive industries, or continue their education in graduate school at top institutions.

\$61,738 Average starting salary for B.S. graduates*

5 Nation-wide student competition teams: Mini Baja, Shell Eco-marathon, NASA Robotics Mining, SpaceX Hyperloop II, AIAA Design/Build/Fly

OUT OF CLASS EXPERIENCES

STUDENT ORGANIZATIONS

Provide great opportunities for networking with peers and industry leaders, leadership positions on campus, and mentoring from faculty club advisors.



- Society of Automotive Engineers
- American Society of Mechanical Engineers
- Robotics Club
- American Society of Heating, Refrigerating and Air Conditioning Engineers
- Adaptive Equipment and Assistive Technology

HUMAN CENTERED DESIGN STUDIO

Seniors can choose a capstone experience to design and build assistive devices for individuals who are disabled. Projects produce a diverse range of adaptive technologies, ranging from upper extremity prosthesis for kids, to seating systems for white water rafts.



ENERGY & ENERGY STORAGE

Many of our faculty, graduate students, and undergraduate students work in research labs looking at alternative fuels, fuel cells, structural energy efficiency, smart grids, and clean energy processes. Our faculty work closely with researchers at the National Renewable Energy Laboratory (NREL) and at the Mines-based Colorado Fuel Cell Center.



ADAPT CENTER

The Alliance for the Development of Additive Processing Technologies (ADAPT) is a membership-based organization that solves challenges in metal additive manufacturing using data informatics driven approaches. The center focuses on how to design parts for additive manufacturing, and how to control, certify, and optimize additive manufacturing processes and parts.



AREAS OF STUDY

DEGREES

- ✓ **Mechanical Engineering**
Bachelor's, Master's & PhD offered

MINORS

- + Biomechanics
- + Mechanical Engineering
- + Additive Manufacturing
- + Robotics & Intelligent Systems

SENIOR DESIGN

- ✦ ME senior design features over 40 multidisciplinary industry driven year-long capstone projects

HANDS-ON COURSES

- Introduction to Design
- Programming & Hardware Interface
- Field Session
- Instrumentation & Automation
- Mechanical Integration & Design
- Manufacturing Processes

SCOPE OF OPPORTUNITIES IN MECHANICAL ENGINEERING

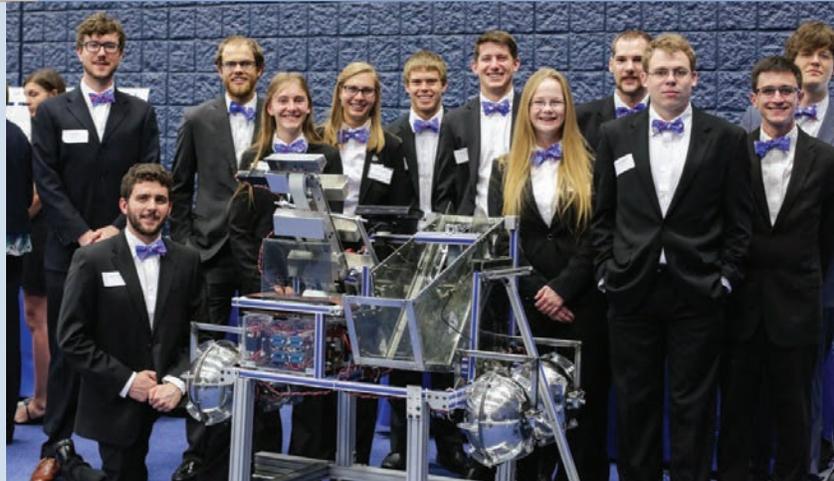


BIOMECHANICS

Biomechanics is commonly described as the application of traditional mechanical engineering concepts to human motion. This is noticeable in orthopedic implants, intelligent prosthetics, and exoskeletons. Our faculty conduct research and teach classes in areas such as computational biomechanics, musculoskeletal biomechanics, and modeling and simulation of human movement, and our students are actively developing solutions for impaired athletes in need of assistive devices in the Human Centered Design Studio. The Biomechanics minor is a great companion to the bachelor's degree for any student interested in this focus area.

ROBOTICS

From assistance with surgeries and human movement, to manufacturing and defense industries, robots are a diverse and pervasive presence in our lives. We witness their evolving application as Engineers push the advancement of drones, autonomous cars, and robots for home use. Mechanical Engineers are responsible for the physical design and feedback controls of the robots, and routinely collaborate with Electrical Engineers and Computer Scientists. A minor in Robotics & Intelligent Systems combines hardware and software classes to prepare graduates for industry or graduate school.



SOLID MECHANICS & MATERIALS

Solid mechanics and materials is an important area of Mechanical Engineering, with faculty leading advancements in shape memory alloys used in aircraft structures, biological implants, nuclear energy containment, and battery technology. Our faculty partner with Engineers from industry, including National Institute of Standards and Technology (NIST), Lockheed Martin, and Ball Aerospace. If you are interested in material properties and its application from nanoscale to energy storage, check out Mines' ADAPT Center and consider advanced elective courses in this area.

THERMAL-FLUID SYSTEMS

Mechanical Engineers are essential contributors to industries related to energy technologies. Our faculty teach fundamental engineering courses in thermodynamics (I,II), fluid mechanics (I,II), internal combustion engines, and heat transfer, which lay a firm foundation for students to conduct research or pursue future careers in alternative fuels, fuel cells, structural energy efficiency, smart grids, and clean energy processes. Many of our faculty work closely with researchers at National Renewable Energy Laboratory (NREL). Check out some of the neat research underway at the Colorado Fuel Cell Center on campus.

