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# Mechanical Engineering, B.S.

Mechanical Engineering is an evolving discipline that adapts to the current needs of society. Mechanical Engineers improve the world they live in and contribute to mechanical and thermal solutions creating more efficient and autonomous systems. Students use scientific principles, computations, and mechanical and thermal components to design robotics, controls, and devices across a diverse array of applications.

Mechanical engineering is a versatile field. Engineers with a mechanical degree are involved with a wide range of important challenges. For example, the thermal control system for an electric vehicle battery, the rapidly spinning wheels in the drivetrain, the automated driving assistance system, and the tension in the cables holding up the suspension bridge it is driving across are all designed by a mechanical engineer.

## Experience Your Learning

Humboldt's Mechanical Engineering program is a hands-on experience. You'll get applied lab, field, and project experiences in every engineering course you take. You will experience learning that prepares you for your career in engineering.

First-year, first-time students who major in Environmental Resources Engineering, Mechanical Engineering, and Energy Systems Engineering will be automatically enrolled in Baduwa't to Bay. One of several place-based learning communities at Humboldt, this year-long program focuses on engineering design within the Baduwa't (Mad River) Watershed, and supports success in first year courses.

Students will design and build a wide range of unique and useful machines and robots, and every course has a strong lab experience.

The Humboldt makerspace (opening Fall 2023) will be the place where students prototype and fabricate their next creations for class and beyond.

The computational methods students learn over 4+ semesters at Humboldt—programming, data analysis, numerical modeling, and math—are sought after skills by employers.

### Did you know?

- Our faculty is made up of people from diverse backgrounds and interests, giving students a broad array of experience and knowledge.
- Mechanical engineering is a broadly useful skillset, in high demand across many economic sectors, including aerospace, automotive, chemical, computer technology, construction, electronics, robotics, energy, and more.
- Humboldt students have participated in the Solar Regatta for many years with their own solar powered boats that they design, build, and captain.
- Our students are primed for success in graduate school, having gained a broad understanding of engineering concepts and real world experience.



# Academics & Options

## Mechanical Engineering, B.S.

In the first two years, all students in the School of Engineering who are interested in Environmental Resources, Energy Systems, or Mechanical Engineering will take a core set of foundational courses together. These fundamentals provide a well-rounded basis in natural sciences, humanities, math, computational science, data analysis, and engineering design.

At the upper division, students will choose a major pathway and complete specialty engineering courses that go deep in that area of expertise. These courses take a project-based and interdisciplinary approach.

Mechanical Engineering is one of the most versatile engineering degrees and can encompass a focus across a wide range of topics, including environmental sensor design, air pollution control, sustainable power systems design, mechanical and electro-mechanical machine design, fluid handling systems, thermal systems, energy conversion, HVAC and building systems design, and food processing.

The balanced curriculum covers design of mechanical systems and thermofluids—the two historical core concentrations of mechanical engineering.

Due to the variety of fields relevant to this profession, the undergraduate program covers areas in dynamics, materials, thermal/fluids, vibrations, controls, computer aided engineering, design, and manufacturing.



## Careers

The employment of mechanical engineers is estimated to grow seven percent from 2020 to 2030. Additionally, there will be over 20,000 openings for mechanical engineers over the next decade.

- Mechanical engineer
- Automotive engineer
- Biomedical engineer
- Construction engineer
- Manufacturing Engineer
- Process engineer
- Product designer
- Research and Design Engineer
- Thermal engineer

