

# MECHANICAL ENGINEERING



**MECHANICAL ENGINEERS APPLY SCIENTIFIC AND MATHEMATICAL PRINCIPLES TO DESIGN AND MANUFACTURE NEW MATERIALS, DEVICES AND SYSTEMS.**

## QUICK FACTS

More than 90% of our students participate in undergraduate research.

Since 2009, teams including ME students have won 30 prizes in the Dempsey Startup Competition, including 4 grand prizes.

Each student in the department completes a senior capstone project with a faculty or industry mentor project that showcases the undergraduate experience at the UW.

ME has focused research programs in health and medicine, novel and automated manufacturing, clean and alternative energy, design for the environment, micro and nanotechnology, biomechanics, and advanced manufacturing and materials.

## WHAT DO MECHANICAL ENGINEERS DO?

Mechanical engineers are at the center of technological and environmental advancements and work broadly in mechanical, environmental and material-based problems. Mechanical engineers design and create everything from microsensors, medical devices, computers and car engines to robots, cookstoves, sports equipment and airplanes.

## WHAT PROBLEMS ARE MECHANICAL ENGINEERS TRYING TO SOLVE?

Mechanical engineers seek new knowledge through research, creative design and development, and with the construction, control, management and sales of the devices and systems needed by society. Mechanical engineers ask:

- How can we identify and develop efficient, renewable sources of energy and scale to meet the world's energy needs amid a rapidly warming planet?
- How can we optimize prosthetics and assistive devices to reduce mobility limitations among people with disabilities?
- How can we develop diagnostic tools to aid in the earlier detection of cancer?
- How can we combine start-to-finish design thinking and engineering principles to turn an idea into a solution?



## WHERE DO ME ALUMNI WORK?

### Air and space

*Aircraft composites, strength testing, additive manufacturing, 3D printing and rapid prototyping | Blue Origin, Boeing, Electroimpact, Safran, SpaceX*

### Computing, data and digital technologies

*Machine learning and big data, fault detection in manufacturing, disease detection, printed and flexible electronics | Amazon, Honeywell, Intel, UW Medicine*

### Environment, sustainability and energy

*Batteries and energy storage, hybrid and electric vehicles, low-emission combustion, wind, solar and marine energy | GM, PNNL, Sedron Technologies, Tesla*

### Health and medicine

*Prosthetics and orthotics, cryopreservation, biomechanics, photonics | Nike, Origincell, Seattle Veteran's Affairs Medical Center, VICIS*

### Infrastructure, transportation and society

*Point-of-care diagnostics, autonomous systems and self-driving vehicles | Paccar, Puget Sound Naval Shipyard, WSDOT*

### Robotics and manufacturing

*Mechatronics, autonomous systems, sensors and actuators, controls and system dynamics, prosthetics, virtual reality, bio-robotics | Genie, Janicki Industries*

## RECENT SPECIAL DESIGN PROJECTS

- > SmarTrach is developing a device that detects blockage in a tracheostomy tube to help children in need of breathing assistance.
- > Students partnered with Hyster Yale to develop an adjustable platform for testing lift trucks.
- > A team created a seaweed processing mechanical press in collaboration with a local nonprofit.

## WHAT MAKES MECHANICAL ENGINEERING SPECIAL?

Mechanical engineering is one of the largest engineering departments. We draw talented and creative students and offer a world-class education with an incredible breadth of skill and technological training. Our graduates are making a difference in diverse sectors such as biotechnology and health, environmental engineering and energy, transportation, manufacturing and information systems.

Students have the option to choose a direct pathway, including mechatronics and biomechanics. Students may also pursue a three-quarter long capstone project that focuses on solving medical challenges through Engineering Innovation in Health (EIH). Many utilize the flexibility of the degree to participate in internships, study abroad and pursue research.

## HOW CAN I LEARN MORE?

If you think the ME might be for you, there are many opportunities to explore more:

- Take an engineering introductory course like ENGR 105 or ENGR 115.
- Join one of ME student clubs like Formula Motorsports, UW Human Powered Submarine or HuskyADAPT.
- Explore undergraduate research topics by joining faculty-sponsored projects.

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