

### WHAT IS MECHANICAL ENGINEERING?

Mechanical engineers are involved in the conceptualizing, design, manufacturing, testing, marketing and maintenance of everything from jet aircraft to automobiles, power plants to hydroelectric dams, and computers to robots. Job opportunities exist in areas including business, public utilities, teaching, the armed services, the space program, and industries such as power, chemical, petroleum, automotive, biomedical, pharmaceutical, food, textile, computer, metal casting, electronics, paper, wood, rubber and glass.

Auburn University's Department of Mechanical Engineering was established in 1885. The department consists of two undergraduate programs: mechanical engineering and materials engineering. The mechanical engineering program includes four general areas of interest:

- Dynamics and systems – interaction, motion, vibration and design of multi-component systems of solid structures
- Mechanics – deformations of solid and liquid substances under static and dynamic loads so their behavior, including failure, can be modeled for the design of components and systems
- Design and manufacturing – selection, analysis, implementation, design and production of mechanical components and systems found in vehicles, machinery, consumer products and the manufacturing environment
- Thermal science – conversion of heat and mechanical power, conversion machines, power systems, combustion and air-conditioning systems

### NOTABLE

- The College of Engineering's largest department
- 1,375 undergraduate and 205 graduate students enrolled in fall 2018
- 32 full-time faculty members
- In 2018, the department collaborated with NASA to form the National Center for Additive Manufacturing Excellence, while also partnering with ASTM International's Additive Manufacturing Center of Excellence and the U.S. Department of Commerce's National Institute of Standards and Technology.

### UNDERGRADUATE CURRICULUM

#### **Bachelor of Mechanical Engineering**

(with specializations available in automotive engineering and pulp and paper engineering, and minors available in Automotive Design and Manufacturing, Tribology and Lubrication Science, and Nuclear Power Generation Systems)

#### **Bachelor of Materials Engineering**

(with options of many cross-disciplinary sequences)

The curriculum emphasizes fundamental engineering sciences with a strong foundation in mathematics. At the senior level, students can

specialize through a sequence of technical electives in areas such as vibration and control, heating, ventilation and air conditioning, mechatronics, vehicle dynamics, vehicle design, sensors and thermal management of electronics. The senior design project consists of student teams developing industry-sponsored design solutions to real-world engineering problems.

For information about academic programs and minors, visit [www.eng.auburn.edu/programs](http://www.eng.auburn.edu/programs)

### GRADUATE CURRICULUM

**Master of Science (M.S.)** — requires the completion and defense of a thesis. Candidates must pass an on-campus comprehensive oral examination covering course work and the thesis.

**Master of Mechanical Engineering (M.ME)** — non-thesis degree based on the successful completion of graduate courses.

**Doctor of Philosophy (Ph.D.)** — doctoral candidates complete and defend a research dissertation. Candidates must complete courses and pass written and oral qualifying exams.

### RESEARCH, LABORATORIES AND CENTERS

The department's teaching resources are complemented by nationally recognized research activities. Research sponsors include the National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA), the U.S. Army Research Office, the Air Force Office of Scientific (AFOSR), the Office of Naval Research (ONR), the U.S. Department of Defense and a variety of industrial sponsors such as the Semiconductor Research Corporation (SRC). Research is performed in areas such as dynamic systems, materials, mechanics, sound and vibration and thermal systems.

Our research facilities offer students an opportunity to develop special skills in emerging technologies:

- Additive Manufacturing
- CAD/CAM Laboratory
- Dynamics of Machines Laboratory
- Electronics Cooling Laboratory
- Experimental and Computational Mechanics Laboratory
- Failure Mechanics and Optical Techniques Laboratory
- Fluid Mechanics Laboratory
- GPS and Vehicle Dynamics Laboratory
- Machine Simulation and Analysis Laboratory
- Measurements Laboratory
- Mechanics of Materials Laboratory
- Rotor Dynamics Research Laboratory
- Sound and Vibration Laboratory
- Vibration and Environmental Testing Laboratory

A fully equipped machine shop can be accessed for student projects.

## TEAMS AND ORGANIZATIONS

Among the student projects available to mechanical engineering students are cross-disciplinary undergraduate teams that design and build vehicles to compete in endurance and speed races on the regional, national and international level:

- Baja SAE, all-terrain vehicles
- Formula SAE, formula race cars (combustion and electric)
- Lunar Exploration Rover

Mechanical engineering students are encouraged to participate in various campus and departmental organizations, including:

- American Society of Mechanical Engineers
- Auburn Materials Society
- Pi Tau Sigma, honorary mechanical engineering fraternity
- Society of Automotive Engineers

For more information, visit

[www.eng.auburn.edu/organizations](http://www.eng.auburn.edu/organizations)

## LIFE AFTER GRADUATION

Job opportunities exist in areas including business, public utilities, teaching, the armed services, the space program, and industries such as power, chemical, petroleum, automotive, biomedical, pharmaceutical, food, textile, computer, metal casting, electronics, paper, wood, rubber and glass. Many students also pursue graduate school or professional programs.

## SCHOLARSHIPS

The College of Engineering and the Department of Mechanical Engineering provide scholarship opportunities to students at every stage of their academic career. To be eligible for scholarships at Auburn University, all students must apply through AUSOM.

For information about engineering scholarships, visit

[www.eng.auburn.edu/scholarships](http://www.eng.auburn.edu/scholarships)



## CONTACT US

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