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
- 1,348 undergraduate and 210 graduate students enrolled in fall 2019
- 32 full-time faculty members
- 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)

The mechanical engineering 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 additive manufacturing, vibration and control, heating, ventilation and air conditioning, robotics and mechatronics, vehicle dynamics, sensors, engines and electronic packaging. 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

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 Science-Non Thesis (M.S.NT)** – 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 Research (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, manufacturing materials, mechanics, sound and vibration, and thermal systems.
Our research laboratories offer students an opportunity to develop special skills in several emerging technologies:

- Additive Manufacturing Laboratory
- Biomechanics Laboratory
- Computer-Aided Engineering Laboratory
- Design and Manufacturing Laboratory
- Electronics Cooling Laboratory
- Environmental Testing Laboratory
- Experimental and Computational Mechanics Laboratory
- Failure Mechanics and Optical Techniques Laboratory
- GPS and Vehicle Dynamics Laboratory
- HVAC Laboratory
- Measurements Laboratory
- Mechanics of Materials Laboratory
- Robotics and Haptics Laboratory
- Sound and Vibration 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
- Pi Tau Sigma, honorary mechanical engineering fraternity
- Society of Automotive Engineers

For more information, visit 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