

Mechanical Engineering

WHAT IS MECHANICAL ENGINEERING?

Mechanical engineers are involved in the conceptualizing, design, manufacture, 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
- 1,353 undergraduate and 194 graduate students enrolled in fall 2016
- 33 full-time faculty members
- Tribology and Lubrication Science minor prepares students for careers that require specialized knowledge of friction, wear and lubrication

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

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:

- Dynamics of Machines Laboratory
- Vibration and Environmental Testing Laboratory
- CAD/CAM Laboratory
- Measurements Laboratory
- Mechanics of Materials Laboratory
- Experimental and Computational Mechanics Laboratory

- Failure Mechanics and Optical Techniques Laboratory
- Fluid Mechanics Laboratory
- Sound and Vibration Laboratory
- Rotor Dynamics Research Laboratory
- Electronics Cooling Laboratory
- Machine Simulation and Analysis Laboratory
- GPS and Vehicle Dynamics 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
- Cupola Engineering Ambassadors
- Engineering Student Council
- National Society of Black Engineers
- Society of Hispanic Engineers
- Society of Women Engineers
- Engineers Without Borders

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 the AUSOM system.

For information about engineering scholarships, visit

www.eng.auburn.edu/scholarships

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