

MATERIALS ENGINEERING



AUBURN
GINN ENGINEERING

Because everything we use is made of materials, materials engineering serves as the foundation for many engineering advances. Using science and engineering principles to select, design and manufacture materials, **materials engineers design, develop, fabricate and evaluate materials for use in engineering applications.** They combine engineering problem solving with scientific curiosity to understand how and why materials behave the way they do.



NOTABLE

- » 58 undergraduate and 39 graduate students enrolled in fall 2024
- » Eight full-time faculty members
- » Small student-to-professor ratio with individual attention from faculty
- » Strong alumni connections for networking and career building
- » New courses focusing on sustainability in engineering
- » Materials Science minor provides basic knowledge of the structure, processing and properties of materials, with an emphasis on the solid state sciences that control materials properties
- » Materials Engineering minor provides basic knowledge of the structure, processing and properties of materials, with an emphasis on materials performance in engineering applications
- » A five-to-four-year bachelor's to master's degree option
- » Among the accomplished graduates in Materials Engineering is Todd May '90, director of the Marshall Flight center in Huntsville

Materials engineering offers graduate programs of instruction and research leading to the degrees of Master of Materials Engineering.

UNDERGRADUATE PROGRAMS

Bachelor of Materials Engineering

The undergraduate curriculum is designed to offer students a broad foundation in chemistry, physics and mathematics. Students gain comprehensive knowledge and understanding of the relationships between the structure and properties of materials. Included in the required 122 semester credit hours is a series of capstone project courses in which students apply materials science principles to open-ended engineering problems. The program also offers students the opportunity to engage in a cross-disciplinary sequence that allows students to specialize in an area outside of materials. Also available are courses focused on sustainability in engineering, such as Materials and the Environment.

For information about academic programs and minors, visit www.eng.auburn.edu/programs

RESEARCH, LABS AND CENTERS

With more than 12,000 square feet of laboratory space, Auburn's materials engineering facilities house the newest, cutting-edge equipment, enabling students to develop skills working with advanced engineering instrumentation. The department is affiliated with several laboratories and research centers, including:

- » Materials Research and Education Center (MREC)
- » Auburn University Detection and Food Safety Center (AUDFS)
- » National Center for Additive Manufacturing Excellence (NCAME)
- » Center for Polymer and Adv. Composites
- » Materials Processing Laboratories
- » Materials Characterization Facilities
- » Mechanical Testing Facilities

Materials engineering provides opportunities to perform research in areas such as:

- » Nano/microscale materials
- » Biomaterials and functional materials
- » Sensors, actuators and transducers
- » Food quality, security and safety and agriculture systems
- » Sustainability in materials, energy and processing
- » Additive manufacturing
- » Materials for extreme environments

TEAMS AND ORGANIZATIONS

Materials engineering students can join an undergraduate team to gain experience with collaboration and project management.

- » Auburn Materials Society

For more information, visit www.eng.auburn.edu/organizations

GRADUATE PROGRAMS

(MMtlE), Master of Science (MS) and Doctor of Philosophy (Ph.D.) Students completing all degree programs are expected to be knowledgeable in the following areas: mechanical properties; materials structure; materials thermodynamics; kinetics; and electrical, optical and magnetic properties of materials.

Degree options include:

Master of Materials Engineering (M.Mtl.E) (non-thesis) — The M.Mtl.E. is offered to those who expect to enter the engineering profession at an advanced level or are practicing engineers aiming to gain additional knowledge in the field of materials. The requirements for the degree are 33 credit hours including a final engineering project (three credit hours). The topic of the project and all courses (at least eight MATL courses including five core course) to be taken will be agreed upon by the student and the advisory committee.

Master of Science (M.S.) — The M.S. is offered to those who seek advanced knowledge in materials science or engineering for a career in research or other professional practice. The M.S. program consists of 30 credit hours selected from areas of study appropriate to the objectives of the applicant and a research-based thesis. Among 30 credit hours, the research is four to six hours, while the courses are 24 to 26 hours with at least eight MATL courses including five core courses. The topic of the thesis and all courses to be taken will be agreed upon by the student and the advisory committee. The student has to take the final general comprehensive examination required by the graduate school.

Doctor of Philosophy (Ph.D.) — Doctoral candidates are required to pass the qualifying examination prior to taking the comprehensive examinations. The program is arranged on an individual basis with the student's advisory committee and in accordance with graduate school guidelines. Students admitted to the doctoral program are required to take the general comprehensive examination based on a research proposal developed by the student within two years after entering the program.

SCHOLARSHIPS

The College of Engineering and the Materials Engineering Program 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

LIFE AFTER GRADUATION

Materials-related challenges exist in virtually every technological field, so materials engineers are in demand and well equipped to adapt to changes in the job market. This flexibility allows materials engineers to explore interests in a wide variety of related disciplines, which is the main reason for the cross-disciplinary sequence provided to our students. Materials Engineers median statistics:

Quick Facts: Materials Engineers	
2021 Median Pay ?	\$98,300 per year \$47.26 per hour
Typical Entry-Level Education ?	Bachelor's degree
Work Experience in a Related Occupation ?	None
On-the-job Training ?	None
Number of Jobs, 2021 ?	22,100
Job Outlook, 2021-31 ?	6% (As fast as average)
Employment Change, 2021-31 ?	1,300

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<https://www.bls.gov/ooh/architecture-and-engineering/materials-engineers.htm>

CONTACT US

Materials Engineering Program
Dept. of Materials Engineering
275 Wilmore Labs
Auburn, AL 36849
334.844.4822
materials@eng.auburn.edu
www.eng.auburn.edu/matl

Office of Engineering Student Services
1161 Brown-Kopel Student Achievement Center
Auburn, AL 36849
334.844.4310
engineering@auburn.edu
www.eng.auburn.edu/ess

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