

# Civil Engineering

## WHAT IS CIVIL ENGINEERING?

From the roads and bridges on which we travel to the clean water and soil on which we depend, civil engineering is a vital component of our everyday lives. As part of the oldest and broadest of all engineering disciplines, civil engineers design and construct infrastructure such as airports, buildings, bridges, dams, roads and sanitation systems. These professionals can be found in rural and urban areas working for large and small companies, as well as local, state and federal governments.

Auburn's civil engineering program is known for its comprehensive and challenging curriculum, strong and dedicated faculty, outstanding teaching and for the achievements of its graduates.

## NOTABLE

- 536 undergraduate and 132 graduate students enrolled in fall 2016
- 24 full-time faculty members

## CURRICULUM

### Bachelor of Civil Engineering

The Department of Civil Engineering offers required and elective courses in the following specialty areas of civil engineering:

#### Construction Engineering and Management

Construction consumes more basic finished materials than any other industry. The construction of a highway, power plant, office building or concrete dam requires an in-depth understanding of economic principles, design fundamentals, material properties and management techniques.

#### Environmental Engineering

From properly disposing of waste to minimizing the damaging effects of human activities, environmental engineers help protect people and the environment. They are involved with issues such as air and water quality, excessive noise and vibration, harmful radiation, hazardous waste and solid waste management.

#### Geotechnical Engineering

Working with the earth to satisfy the needs of society, geotechnical engineers build from the ground down, creating foundations for structures such as bridges, buildings, roads and dams – working closely with environmental and hydraulic engineers to protect groundwater from pollution.

#### Hydraulic/Hydrologic Engineering

Hydraulic engineering is the application of principles of fluid mechanics to urban drainage design, flood control and mitigation, water resources planning, sediment transport and the protection and restoration of surface and groundwater resources. Engineering hydrology quantifies the distribution and movement of water in the environment.

#### Pavements and Materials Engineering

Engineers in the pavements and materials area are responsible for roadway design, construction, maintenance and rehabilitation. Pavements – an integral component of any transportation infrastructure – combine essential elements of materials, geotechnical and structural engineering to produce facilities that connect our country from coast to coast.

#### Structural Engineering

All structures – including buildings, bridges, stadiums and industrial facilities – must be designed to efficiently resist the forces exerted by humans and nature. Structural engineers create new designs and evaluate and improve the load-resisting capabilities of existing structures, such as buildings subjected to hurricane and earthquake damage. They must be knowledgeable about the behavior of various structural systems, the sources, magnitudes and frequencies of applied loads and material properties, design methods and governing design codes.

#### Transportation Engineering

Through the movement of people and goods, our transportation system greatly influences our quality of life. Transportation engineers plan, design, construct and operate systems for all modes of transit. Students address the topics of traffic safety, parking, highway capacity, traffic signalization, geometric design surveying and mapping and transportation models.

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, including a minimum of six semester hours of Thesis (CIVL 7990) and 24 semester hours of graduate course work other than CIVL 7990. Candidates must pass an on-campus comprehensive oral examination covering course work and the thesis.

**Master of Civil Engineering (M.C.E.)** — requires a minimum of 30 semester hours of graduate-level courses other than CIVL 7990 (Research and Thesis), which may include three-semester hours of CIVL 7980 (Engineering Project). A plan of study must be approved by the student's advisory committee.

**Doctor of Philosophy (Ph.D.)** — doctoral candidates complete and defend a research dissertation that includes a minimum of ten hours of research and dissertation (CIVL 8990). A written and oral general doctoral examination is required prior to becoming a candidate for the degree. The degree requires a minimum of 60 semester hours of graduate credit beyond the bachelor degree.

For more information, visit  
[www.eng.auburn.edu/civil/programs/grad](http://www.eng.auburn.edu/civil/programs/grad)

## RESEARCH, LABORATORIES AND CENTERS

The Department of Civil Engineering provides opportunities to perform research in areas such as:

- National Center for Asphalt Technology (NCAT)
- Highway Research Center
- Alabama Technology Transfer Center
- Structural Engineering Laboratories
- Geotechnical Engineering Laboratories
- Environmental Engineering Laboratories
- Hydraulic Engineering Laboratories
- Concrete Materials Laboratory
- Asphalt and Materials Laboratories

## TEAMS AND ORGANIZATIONS

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

- American Society of Civil Engineers
- Institute of Transportation Engineers
- American Concrete Institute
- Engineers without Borders
- Chi Epsilon, national civil engineering honor society
- Cupola Engineering Ambassadors
- Engineering Student Council
- National Society of Black Engineers
- Society of Hispanic Engineers
- Society of Women Engineers

For more information, visit  
[www.eng.auburn.edu/organizations](http://www.eng.auburn.edu/organizations)

## LIFE AFTER GRADUATION

Civil engineers conceive, plan, design, construct, operate, and maintain facilities and systems that serve the basic needs of society. These include buildings, bridges, water tanks, transmission lines, pipelines, highways, railways, airports, harbors, water and wastewater systems, dams and power plants. They also help protect the environment by working to prevent air, land and water pollution. Because civil engineers are involved in every aspect of creating and maintaining our society's infrastructure, the job market for them is strong and stable. Civil engineers work for industrial and manufacturing firms; structural, environmental, geotechnical and transportation consulting firms; architectural and engineering firms; construction companies; local governments; state and federal agencies; departments of transportation; and industries such as oil, aircraft, shipbuilding, electric utility, communication, chemical and paper.

## SCHOLARSHIPS

The College of Engineering and the Department of Civil 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](http://www.eng.auburn.edu/scholarships)

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