Civil Engineers are Active in a Variety of Specialties and Sub-Fields, Including:

**Construction**
Involves the planning and execution of projects to construct highways, bridges, buildings, and public works facilities. Focuses on effective management of all necessary resources to safely complete a construction project in a quality manner, on time and within budget.

**Environmental**
Emphasizes providing safe and ample public water supplies; proper disposal or recycling of wastewater and solid wastes; hazardous waste management; and mitigating groundwater and atmospheric pollution. Projects include sanitation of combined and sanitary sewers, design of large-scale water treatment plants, and policing of environmental regulations.

**Geotechnical**
Applies theory of soil and rock mechanics to infrastructure projects including the design of building and structural foundations, retaining walls, dams, waste containment facilities, slope stabilizations, soft ground improvement techniques, and environmental soil remediation methods. Projects include the design of stadium and skyscraper foundations, subway tunnels, designs using geosynthetics, soil improvement, and deep excavations.

**Hydraulic/Water Resources**
Involves the collection, measurement, regulation, storage, transport, and utilization of water for erosion protection, flood control, irrigation, navigation, power, recreation, and water supply. Projects include local storm drainage design, restoration of rivers, reservoir design, and large-scale water supply networks.

**Structural**
Implements knowledge of structural behavior and material properties to design facilities that meet utility and financial requirements without sacrificing user safety. Projects include the design of bridges, skyscrapers, sports arenas, dams, and airports.

**Transportation**
Includes the planning, design, construction and operation of infrastructure facilities and systems necessary for the safe and efficient movement of people and freight via highway, rail, water and air. Projects range from intelligent transportation systems that regulate vehicle movement to pavement design.

“I learned a lot at Lawrence Tech and was able to participate in a number of substantial research projects. I have benefited from the University's excellent reputation. My education has provided me the opportunity to work for an international company, with a presence in 50 countries.”

---

Emad Nasr Ibrahim,
Vice President,
Onyx Alexandria
Bridge With a Brain

Design and construction of North America’s first carbon-fiber reinforced polymer (CFRP), three-span bridge is based on development, analysis, and testing conducted by Lawrence Tech faculty and students at the University’s Structural Testing Center.

The first of its kind in the world, one lane of the concrete highway bridge is reinforced with CFRP’s and the other with traditional steel. In federally funded research to monitor the bridge’s performance, students can access embedded sensors installed in the carbon-fiber reinforced section of the bridge by dialing into the bridge’s computer, helping to determine long-term benefits of CFRP over conventional steel reinforcement.

This research has attracted worldwide attention from bridge fabricators and such media as CNN.

The development of the first ductile braided fabric was conducted and patented by the CE Department with funding from the National Science Foundation. The Ohio Department of Transportation in conjunction with four state DOTs contracted the department to examine and research use of CFRP in bridges.

Recognition and Awards

Lawrence Tech’s distinguished civil engineering faculty have won many regional, state, and national awards for their professional, research, and teaching activities. Award sponsors include:

- American Society of Civil Engineers (ASCE)
- American Society of Engineering Education (ASEE)
- American Public Works Association (APWA)
- Michigan Society of Professional Engineers (MSPF)
- Prestressed Concrete Institute (PCI)
- Digital Detroit
- DaimlerChrysler

Outstanding Teaching and Research Facilities

Civil engineering facilities feature state-of-the-art equipment for both teaching and research, including:

- Structural Testing Center
- Geotechnical Laboratory
- Environmental Laboratory
- Hydraulics Laboratory
- Computer Laboratory and Student Project Work Area
- Environmental Simulation Laboratory

“The I have confidence in the quality of a Lawrence Tech graduate. I’ve found they have a command of the basics, a practical application of knowledge, and a superior work ethic. They understand the importance of community, teamwork, and communications.”

David I. Ruby, S.E., P.E.,
President,
Ruby & Associates, P.C.
Programs

Bachelor of Science in Civil Engineering (BSCE)
The BSCE includes coursework in each specialization of civil engineering: construction, environmental, geotechnical, hydraulics, structures, and transportation. You can then further specialize in a particular discipline or generalize within your degree program by selecting technical electives. Lawrence Tech emphasizes design, communications, and computer applications throughout the curriculum to prepare students to practice in industry. The program culminates in a two-semester team project the senior year. Seniors have designed airports, marinas, steel bridges, subdivisions, NASCAR speedways – even concrete canoes!

Lear Entrepreneurial Center (LEC)
Students in any of Lawrence Tech’s undergraduate engineering disciplines have the unique option to bring real products and services to market, while solving real-world engineering problems. LEC graduates prepare to run their own companies, be an integral part of a small company, or lead successful projects in a larger company. Beginning as a sophomore, you participate in an internship to prepare for the capstone project. As juniors, participants form their own company and run it as if it were a real private sector business. You develop a business plan, and then design, produce and market a technical product. LEC students gain knowledge and understanding of the business world from a combination of academic and practical experiences that supplement core engineering, math, and science courses.

“An LTU engineering degree is an accomplishment. The program creates quality engineers sought by industry. Lawrence Tech’s civil engineering program not only provides a solid foundation on which young engineers can build successful careers, but it also gives them practical skills they can use their first day on the job. The senior design project exposes students to the demands of a real engineering project.”

Andrew T. Rener, Project Manager, Special Projects Group, Barton Malow Company

Master of Civil Engineering/ Master of Science in Civil Engineering (MCE or MSCE)
Specializations are available in environmental, geotechnical, structural, and water resources engineering. You may apply up to six credits from outside the department towards the degree. The MCE degree totals 30 credits including a three-credit graduate project or a six-credit thesis (usually reserved for funded research projects). The thesis option qualifies students for an MSCE. Students may alternately complete 33 credits of coursework without completing a project or thesis.

“Lawrence Tech taught me the things I needed to know in the field, not only academics, but also teamwork and communication skills. That combination has allowed me to be effective in the workplace.”

Michelle L. Sterbenz, Project Engineer, AR Decker & Associates, Inc.

Master of Construction Engineering Management (MCEM)
Lawrence Tech’s MCEM degree offers a unique combination of civil engineering and MBA coursework. You’re exposed to project management, financial, personnel, legal, environmental, and other issues that distinguish success in modern construction practice. The MCEM requires 30 credits including 18 credits of required core courses, six to nine credits of management electives, and three to six credits of technical electives. Graduate courses from civil engineering or other related fields may be applied toward the tech elective requirement. In cooperation with Lawrence Tech’s College of Management, up to 12 credits of the MCEM degree can apply toward the University’s MBA program.
Civil engineers are key to the design, construction, and maintenance of all forms of infrastructure as well as solving the tough environmental problems of the 21st century. A civil engineering degree prepares you for a wide range of career opportunities. Lawrence Tech graduates have careers as design engineers, project managers, and presidents for engineering companies. They work on large infrastructure projects such as roadways, tunnels, bridges, water treatment plants, stadiums and buildings, as well as specialized environmental projects such as contaminant remediation, river restoration, and waste containment facilities.

In recent years, Lawrence Tech’s civil engineering graduates have enjoyed a 100 percent placement rate. The U.S. Bureau of Labor Statistics predicts that job opportunities in civil engineering will increase by as much as 20 percent by 2010. Recent National Society of Professional Engineers income and salary surveys peg the median annual salary for civil engineers at approximately $77,000.
ABOUT LAWRENCE TECH’S COLLEGE OF ENGINEERING

Lawrence Tech’s College of Engineering has historically provided some 40 percent of the baccalaureate engineers each year in the Detroit metropolitan area. Academic programs are designed to meet the needs of students who hold jobs while attending college. The College’s population of part-time working students places it among the largest evening undergraduate engineering programs in the nation. The College is comprised of four departments – civil, electrical and computer, mechanical, and engineering technology.

Rated among America’s best college values and founded in 1932, Lawrence Tech, with some 5,000 students, is among Michigan’s largest independent universities. Nearly 50 degree programs are offered at the associate, baccalaureate, master’s, and doctoral levels through Colleges of Architecture and Design, Arts and Sciences, Engineering, and Management. The University’s full-service 120-acre campus in Southfield offers a complete range of modern academic, residential, and recreational facilities along with plenty of free parking.

GETTING STARTED

To tour Lawrence Tech’s civil engineering facilities, meet the faculty, talk to current students, or get additional information, contact the Office of Admissions at 800.CALL.LTU, ext. 1 or admissions@ltu.edu/. For more information on civil engineering programs, visit civilengineering.ltu.edu/.

NOTICE OF NON-DISCRIMINATORY POLICY

Lawrence Technological University adheres and conforms to all federal, state, and local civil rights regulations, statutes and ordinances. No person, student, faculty, or staff member will knowingly be discriminated against relative to the above statutes. LAWRENCE TECHNOLOGICAL UNIVERSITY IS AN EQUAL OPPORTUNITY EMPLOYER.