

The University of Toledo

Department of Civil and Environmental Engineering



Programs of Study

The Department of Civil and Environmental Engineering, at The University of Toledo offers the Master of Science in Civil Engineering (M.S.C.E.) and Doctor of Philosophy (Ph.D.) in engineering degrees. These programs are designed to provide students an advanced understanding of traditional civil engineering in environmental, geotechnical, transportation, or structural engineering, as well as application-oriented multidisciplinary education and research.

The M.S.C.E. program is designed to prepare students for research and advanced engineering careers. The program requires the completion of 30 semester hours, beyond the bachelor's degree for the thesis, project, or course work option.

The Ph.D. program is designed for those planning research-oriented, industrial, or academic careers, in order to pursue professional civil engineering practice for the advancement of science, engineering, and technology. The program requires a qualifying examination, a minimum of 90 semester credit hours (60 semester credit hours beyond the master's degree) of course work and dissertation, and a successful oral defense of dissertation research.

Research Facilities

Civil engineering research is supported by eight state-of-the-art research laboratories and fifteen engineering computing laboratories. Civil engineering laboratories and graduate student offices are all housed in Nitschke Hall, which was built in 1995. The Department of Civil and Environmental Engineering has overall research expenditures of nearly \$2 million per year.

In addition to teaching laboratories that support conventional testing, the following facilities are available to researchers in the Department of Civil and Environmental Engineering:

- Air Pollution Laboratory, where current research projects are in air quality modeling, geographical distribution of radon concentrations, pollution prevention, bio-diesel, and environmental information technology
- Bituminous Materials Laboratory, which is equipped with a freeze/thaw chamber, pulse velocity tester, gyratory compactor, and all conventional pavement-testing equipment
- Geotechnology Laboratory/Banyas Soil Mechanics Laboratory, which has facilities for the full range of geotechnical testing, plus unique equipment for unsaturated triaxial and permeability tests, extreme temperature shear behavior, geosynthetic pullout resistance, and in situ environmental monitoring.
- Drinking Water and Biofilm Research Laboratory, with research focused on sustainable water treatment, biofilms, and disinfection. Lab is equipped for various water quality analyses, liquid and gas chromatography, and advanced microscopy

- Sustainability engineering lab (SEL) with computers and software to do energy and life cycle assessment research.
- In addition, the excellent research facilities at The University include the following: Infrastructure Information Systems Research Laboratory, which has state-of-the-art data collection, analysis, mapping capabilities for pavement and asset management and an instrumented vehicle for mechanical and digital-visual monitoring of pavement condition, with outstanding computational capabilities for life-cycle predictions
- Laboratory for Composite Materials in Structures/Construction Materials Laboratory, with strong floor and 80 K, fatigue-rated reaction frame with multiaxial 30 gpm servohydraulic loading system and multichannel, high-speed data collectors, and current research projects include FRP repair of beam/column connections, column enhancements, and dynamic behavior of cable stays
- Stress Analysis Laboratory research projects include structural response to blasts and other intense loads, forensic analyses of overhead sign support structures, magnetic inspection of hidden damage in precast beams, corrosion on suspension bridge cables and additional capabilities in strain gauging and instrumentation for structural monitoring, with ongoing research of post-tensioned, segmental-concrete, and cable-stayed bridges; other test equipment, including torsion, tension, and compression machines and shake tables for academic instruction.
- Transportation Laboratory, which contains vehicle speed-, volume-, and characterization-monitoring equipment and computer-program-assisted simulation modeling of real-time traffic flow to aid in policy decisions, with current research projects including urban transportation studies, intermodal

system modeling, and the Upper Midwest Corridor Multi Modal Freight Study.

- Environmental Biotechnology Laboratory with research focused on environmental microbiology and their roles on water and wastewater treatment, energy recovery, and human health. The laboratory is equipped with the resources to be available for reactor operations, molecular techniques, multi-omic analyses, and bioinformatics.

Financial Aid

Most full-time civil & environmental engineering graduate students receive some financial support. Fellowships, teaching, and research assistantships, which include a stipend and a tuition waiver, are available for qualified students on a competitive basis. The out-of-state tuition surcharge, normally charged to out-of-state and international students, is waived for students whose permanent addresses are within one of the Michigan counties: Hillsdale, Lenawee, Macomb, Oakland, Washtenaw, and Wayne. In addition, The University of Toledo offers an out-of-state tuition surcharge waiver to cities and regions that are a part of the Sister Cities Agreement. These regions include Toledo, Spain; Londrina, Brazil; Qinhuangdao, China; Csongrad County, Hungary; Delmenhorst, Germany; Toyohashi, Japan; Tanga, Tanzania; Bekaa Valley, Lebanon; and Poznan, Poland. The University of Toledo Graduate College offers a variety of memorial and minority scholarship awards, including the Ronald E. McNair Post-baccalaureate Achievement Scholarship, the Graduate Minority Assistantship Award, and two full University fellowships.

Cost of Study

The graduate tuition rate for the 2018-19 Academic Year is \$ 799.00 per semester credit hour for in-state students. For nonresidents, the tuition is \$1256.00 per semester credit hour. Additional fees are required and include the orientation fee, technology fee, mandatory insurance, and other fees.

Living and Housing Costs

The University of Toledo has a diverse offering of student housing options, including suite-style and traditional residential halls. Housing is offered to graduate students through Residence Life or contracted individually by the student. There is affordable, high-quality off-campus apartment-style housing, within walking distance of the campus.

Student Groups

There are approximately 20,000 students at The University of Toledo. About 4,000 are graduate and professional students. Of these, approximately 300 are graduate students in the College of Engineering. The University has a rich diversity of student organizations. Students join groups that are organized around common cultural, religious, athletic, and educational interests.

Location

The University of Toledo has several campus sites in the city of Toledo. Most engineering graduate students take classes on the main campus, which is located in the suburbs of west Toledo. With a population of more than 330,000, Toledo is the fiftieth-largest city in the United States. It is located on the western shores of Lake Erie, within a two-hour drive to Cleveland and less than an hour's drive to Detroit.

The University and The College

The University of Toledo was founded by Jessup W. Scott in 1872 as a municipal institution, and became part of the state of Ohio's system of higher education in 1967. On July 1, 2006, The University of Toledo merged with the Medical University of Ohio --becoming one of only seventeen American universities to offer professional and graduate academic programs in medicine, law, pharmacy, nursing, health sciences, engineering, and business. The College of Engineering was founded in 1931 and began offering graduate degrees in 1947. The College of Engineering is housed in a modern five-building complex, which is composed of Nitschke Hall, Palmer Hall, Westwood Annex, the Lois and Norman Nitschke Auditorium, and North Engineering. Recently opened facilities include a new multimedia auditorium and a state-of-the-art studio/classroom complex for computer-aided instruction and distance learning initiatives.

Applying

Students with a Bachelor of Science in engineering, or one of the physical, mathematical, or biological sciences are encouraged to apply. Applicants should have a minimum of a 3.0 grade point average (on a 4.0 scale), but exceptions are made for those who demonstrate ability for graduate study. Applications should be completed by March 1 for full consideration for the fall semester. Students can obtain admission materials from the graduate school office or from the University Web site.

Correspondence and Information

COLUMN 1

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COLUMN 2

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The Faculty and Their Research

Dae-Wook Kang, Assistant Professor, Ph.D., Wisconsin. Environmental biotechnology, biological wastewater treatment, environmental microbiology, human microbiome, multi-omics, and bioinformatics.

Douglas Nims, Professor; Ph.D., Berkeley: PE. Bridge instrumentation, segmental concrete structures, elastomeric bridge bearings, and passive seismic control of buildings.

Defne Apul, Professor; Ph.D., New Hampshire. Life Cycle Assessment, Carbon Footprint Analysis, Water Infrastructure Sustainability, energy sustainability.

Eddie Chou, Professor; Ph.D., Texas A&M: PE. Transportation facilities design, systems analysis, engineering material properties, pavement performance evaluation, and infrastructure management.

Cyndee Gruden, Professor, Ph.D., Colorado: PE. Storm water treatment and management, engineering education, environmental microbiology.

Serhan Guner, Assistant Professor, Ph.D., Toronto: PEng. Structures: Non-linear analysis, Computational Modeling, Strut-and-tie modeling, Rehabilitation and retrofit design.

Liangbo Hu, Associate Professor; Ph.D., Duke. Environmental geomechanics, mechanics of porous media, experimental-based numerical modeling of geo-environmental systems.

Ashok Kumar, Professor and Chair; Ph.D., Waterloo; PEng, BCEE. Air pollution, risk analysis, pollution prevention, environmental information technology.

Azadeh Parvin, Professor; D.Sc., George Washington. Fiber composite applications for bridges and buildings, repair and rehabilitation of infrastructure, design and behavior of concrete structures, finite element modeling, laboratory testing of structural components.

Youngwoo Seo, Professor, Ph.D., Cincinnati. Environmental microbiology, biofilm controls in water and wastewater systems, water treatment.