

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

Graduate Study

Graduate students in the Department of Civil and Environmental Engineering (CEE) participate in research with renowned faculty and get hands-on experience solving some of the world's largest problems in the domains of infrastructure and environment, and related areas of interest. Education takes place inside and outside the classroom, and there are numerous opportunities to learn not only about civil and environmental engineering in an interdisciplinary research environment but also to network with peers. CEE grants the following advanced degrees: Master of Engineering in Civil and Environmental Engineering, Master of Science in Transportation, Master of Science, Civil Engineer, Environmental Engineer, Doctor of Science, and Doctor of Philosophy. The Institute's general requirements for these degrees (<https://catalog.mit.edu/mit/graduate-education>) are described under Graduate Education. Detailed information on the departmental requirements for each degree (<http://cee.mit.edu>) may be obtained on the CEE website.

Admission Requirements

CEE seeks a diverse group of applicants from a range of academic disciplines who will work together to contribute to exciting intellectual networks across the department and Institute. Applicants whose first language is not English are required to submit scores from either the International English Language Testing System (IELTS), the preferred exam, or the Test of English as a Foreign Language (TOEFL). Email the department (cee-admissions@mit.edu) or visit the CEE website (<http://cee.mit.edu>) to learn more about individual graduate programs.

Master of Engineering

The Master of Engineering (MEng) (<http://cee.mit.edu/master-of-engineering>) degree program is a professional-oriented graduate program that consists of high-level, fast-paced coursework and significant engagement with applied engineering projects that prepare graduates for a professional career path or further graduate studies at MIT or elsewhere. This nine-month program, with opportunities for individualized tracks of study in CEE, prepares students to address significant challenges in the domains of civil and environmental engineering. The degree requirements include 66 units of graduate-level subjects, 48 units of which must be departmental subjects.

Within the Structural Mechanics and Design track, students must complete 1.562 Structural Design Project I in the fall and 1.563 Structural Design Project II in the spring, plus 24 additional units of CEE subjects. Students are also required to complete an original thesis.

Students in the Environmental Engineering Science track pursue classes and research in their areas of interest, including hydrology, environmental chemistry, ecology, and environmental fluid mechanics.

Students in the Structural Mechanics and Design track pursue classes and research in areas including structural engineering mechanics, computational design and optimization, and collaborative workflows at the interface of engineering and architecture.

For current MIT students, the program is a natural extension of the Institute's four-year Bachelor of Science degree, providing them an opportunity to gain practical experience and preparing them for emerging fields in today's job market.

Master of Science in Civil and Environmental Engineering

The Master of Science is a two-year research-focused degree that culminates with a thesis. This degree prepares graduates for an advanced position in the field, and provides a foundation for doctoral studies. The degree requirements include 66 units of subject units, 34 of which must be departmental subjects. The student is also required to complete a research thesis comprised of original work.

Doctoral Degrees

The Doctor of Philosophy (PhD) or Doctor of Science (ScD) in Civil and Environmental Engineering offers in-depth study in all areas represented by the department's faculty. The Civil and Environmental Engineering doctoral program educates students to find solutions based on scientific research and implement them to make real-world contributions. The curriculum and doctoral degree program applies basic scientific principles to complex engineering design at scales from the nano to the global.

Student research is characterized by the following traits:

- Applies theoretical, numerical, experimental, and field work to cutting-edge research projects
- Considers a range of scientific and engineering issues and investigates solutions
- Emphasizes fundamental understanding of, and innovative approaches to, engineering problems by considering a vast range of scales from the nano to the macro

The doctoral program includes a three-subject core area of study that reflects key knowledge in the student's chosen field. The three subjects are selected from an approved list of four to five subjects within a specific subdiscipline of CEE. The remainder of the doctoral program consists of five graduate subjects that complement the core, including one "breadth" class. (Subjects taken in pursuit of the CEE SM can be counted towards these requirements.) The doctoral degree is granted upon completion of the required subjects, submission and defense of a thesis proposal, and submission and defense of a thesis embodying an original research contribution. A

detailed description of the doctoral program requirements can be found on the department website (<https://cee.mit.edu/resources>).

Financial Assistance

The research of the department is an integral part of the graduate program. All doctoral students receive appointments as research or teaching assistants, as do the majority of our SM and MST students. Most of these appointments fully cover tuition, individual health insurance, and reasonable living expenses in the Cambridge area.

Applicants are encouraged to apply for traineeships and fellowships (<http://odg.mit.edu/finances/fellowships>) offered nationally by the National Science Foundation, NASA, DOE, and other governmental agencies that traditionally support students in the department. For an extensive list of such opportunities, visit the Office of Graduate Education website.

Interdisciplinary Programs

Through its interdisciplinary programs, the Department of Civil and Environmental Engineering brings together the science, technology, systems, and management skills necessary to deal with the important engineering problems of the future.

Computational Science and Engineering

The Master of Science in Computational Science and Engineering (CSE SM) (<https://cse.mit.edu/programs/sm>) is an interdisciplinary program for students interested in the development, analysis, and application of computational approaches to science and engineering. The curriculum is designed with a common core serving all science and engineering disciplines and an elective component focusing on specific disciplinary topics. Students may pursue the CSE SM as a standalone degree or as leading to the CSE PhD program described below.

The Interdisciplinary Doctoral Program in Computational Science and Engineering (CSE PhD) (<https://cse.mit.edu/programs/phd>) allows students to specialize at the doctoral level in a computation-related field of their choice through focused coursework and a thesis through one of the participating host departments in the School of Engineering or School of Science. The program is administered jointly by the Center for Computational Science and Engineering (CCSE) and the host departments; the emphasis of thesis research activities is the development of new computational methods and/or the innovative application of computational techniques to important problems in engineering and science.

For more information, see the program descriptions under Interdisciplinary Graduate Programs.

Graduate Programs in Transportation

MIT provides a broad range of opportunities for transportation-related education. Courses and classes span the School of Engineering, the Sloan School of Management, and the School of Architecture and Planning, with many activities covering

interdisciplinary topics that prepare students for future industry, government, or academic careers.

A variety of graduate degrees are available to students interested in transportation studies and research (<https://catalog.mit.edu/interdisciplinary/graduate-programs/transportation>), including a Master of Science in Transportation and PhD in Transportation, described under Interdisciplinary Graduate Programs.

Leaders for Global Operations

The 24-month Leaders for Global Operations (LGO) (<https://catalog.mit.edu/interdisciplinary/graduate-programs/leaders-global-operations>) program combines graduate degrees in engineering and management for those with previous postgraduate work experience and strong undergraduate degrees in a technical field. During the two-year program, students complete a six-month internship at one of LGO's partner companies, where they conduct research that forms the basis of a dual-degree thesis. Students finish the program with two MIT degrees: an MBA (or SM in management) and an SM from one of eight engineering programs, some of which have optional or required LGO tracks. After graduation, alumni lead strategic initiatives in high-tech, operations, and manufacturing companies.

Joint Program with the Woods Hole Oceanographic Institution

The Joint Program with the Woods Hole Oceanographic Institution (WHOI) (<http://mit.whoi.edu>) is intended for students whose primary career objective is oceanography or oceanographic engineering. Students divide their academic and research efforts between the campuses of MIT and WHOI. Joint Program students are assigned an MIT faculty member as academic advisor; thesis research may be advised by MIT or WHOI faculty. While in residence at MIT, students follow a program similar to that of other students in their home department. The program is described in more detail (<https://catalog.mit.edu/interdisciplinary/graduate-programs/joint-program-woods-hole-oceanographic-institution>) under Interdisciplinary Graduate Programs.

Inquiries

Email for detailed information (cee-apo@mit.edu) about academic policies and programs, visit the website (<http://cee.mit.edu>), or visit the Academic Programs Office, Room 1-290, 617-253-9723.