

Civil and Environmental Engineering

Course 1

The Department of Civil and Environmental Engineering focuses on interactions between people and their environment. We want to understand how the world works so that we can improve quality of life, make better use of limited resources, develop sustainable technologies, and create attractive places to live and work.

Our faculty includes engineers, biologists, chemists, oceanographers, mathematicians, geologists, and hydrologists.

Our students become design engineers, consultants, academics, physicians, lawyers, researchers, and entrepreneurs.

The department comprises several research and academic programs in civil engineering and environmental engineering science that emphasize science and engineering fundamentals together with hands-on design projects and case studies.

The department is a vibrant and innovative place of learning and development for the next generation of students with interests in learning, leading, and transforming the disciplines of civil and environmental engineering.

Civil and Environmental Engineering at MIT

There are currently about 100 undergraduate students and 40 faculty members in the Department of Civil and Environmental Engineering. This favorable ratio offers many opportunities for interaction between the students and faculty through classroom discussion and cooperation in small seminars and projects. Students have easy access to professors for advising on all aspects of curriculum choices and career planning.

Undergraduate Program

The department's undergraduate program emphasizes science and engineering fundamentals together with

hands-on design projects and case studies. Students combine theory, measurement, and modeling to develop a good understanding of the problem at hand and to devise desirable solutions.

The program starts with a sophomore core in ecology, mathematics and mechanics, and design. In the junior and senior years, students build on the core by taking more specialized subjects in one of three degree tracks. The department offers two designated undergraduate degrees accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

The Bachelor of Science in Civil Engineering (Course 1C) provides a solid foundation for practice in both classical and newly developing areas of civil engineering, including structural analysis and design, engineering materials, geotechnical analysis and design, sustainable built environments, and transportation and logistics. It is designed to help students develop abilities in problem formulation, problem solving, and decision making in the civil engineering context, which is characterized by varying combinations of physical and social factors. The 1C program also provides a solid foundation for graduate studies and the opportunity to transition directly into the department's Master of Engineering program, which is designed to further develop the professional engineering skills of Course 1C students.

The Bachelor of Science in Environmental Engineering Science (Course 1E) emphasizes the fundamental physical, chemical, and biological processes necessary for understanding the interactions between man and the environment. Issues considered include the provision of clean and reliable water supplies, flood forecasting and protection, development of renewable and nonrenewable energy sources, causes and implications of climate change, and the impact of human activities on natural cycles. The program provides the education necessary

for careers in environmental engineering, management, and planning while also giving a solid foundation for graduate study and research in both basic and applied environmental disciplines, such as through direct transition into the department's Master of Engineering program.

Both programs provide awareness of the socio-political context in which civil and environmental engineering problems are solved. Premedical students may satisfy medical school entrance requirements while earning the accredited degree in environmental engineering science with proper planning of their program.

A third degree, the Bachelor of Science as recommended by the Department of Civil and Environmental Engineering (Course 1A), is provided for those students whose interests and educational goals fall within the field of civil and environmental engineering in the broadest sense but who cannot achieve their goals by meeting the requirements of the Bachelor of Science in Civil Engineering (1C) or Environmental Engineering Science (1E). Typical examples are students who wish to pursue careers in medicine, law, or scientific research. Course 1A is not ABET accredited.

Research

We participate in the Undergraduate Research Opportunities Program (UROP), which provides students the opportunity to explore civil and environmental engineering by collaborating with faculty members on research projects. All full-time faculty are active in research vital to society. Topics range from detailed studies of the microbehavior of solid and aquatic organisms to the study of large-scale transportation systems. Research is conducted on the extraction of energy resources offshore and in the Arctic, on the treatment and disposal of hazardous wastes, and on the renewal of the nation's infrastructure. In addition, students may gain experience through the

department's Summer Internship Program.

Career Perspective

An education in civil and environmental engineering provides an excellent foundation for careers as diverse as engineering design, education, law, medicine, and public health, as well as for graduate study in engineering and science. Our graduates teach and carry out research in universities, work for large firms, start their own businesses, and take positions in government and nonprofit organizations. As pressures on limited natural resources grow, there will be an increasingly large demand for engineers who understand how to make best use of these resources in a sustainable manner in the products and services they design.

Contact Information

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More information is also available on the web at
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The MIT Course Catalog contains further information on the Institute, including all graduate and undergraduate courses and programs. For details on ordering the course catalogue, please visit the MIT Press Bookstore website at
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