Civil Engineering

Civil engineering is critically important today as our communities strain to sustain limited natural resources, accommodate growth, and innovate for sustainable infrastructure.

Pursue our Civil Engineering track, within our general engineering degree program, to create innovative design built on strong fundamentals for the sustainability of existing structures, and for sustainable designs of new structures and systems.

Civil Engineering Track
Structures, Materials, Mechanics, and Computation

The Civil Engineering track emphasizes design innovations based on strong fundamentals for sustaining existing structures and building new sustainable structures and systems. Leverage knowledge, skills, and tools to transform lives on a global scale.

“Course 1 was an easy decision for me knowing that the department covers many research areas and offers each student an opportunity to explore his or her own passions in depth.”

Rebecca Sugrue '17

Example Subject Roadmap:

Sophomore Fall Term

- 1.000 Computer Programming for Scientific and Engineering Applications
  - GIR 12
- 1.050 Solid Mechanics
  - CORE 12
- 18.03 Differential Equations
  - GIR 12
- 1.101 Introduction to Civil and Environmental Engineering Design
  - CORE 6

Sophomore Spring Term

- 1.074 Multivariate Data Analysis
  - CORE 6
- 1.036 Structural Mechanics and Design
  - CORE 12
- 1.106 Multiscale Characterization of Materials
  - CORE 6
- 1.060 Fluid Mechanics I (first half of term)
  - CORE 12
- 1.060B Fluid Mechanics II (second half of term)
  - CORE 12

Junior Fall Term

- 1.010 Uncertainty in Engineering
  - RE 12
- 1.058 Structural Dynamics
  - RE 12

Junior Spring Term

- 1.011 Project Evaluation and Management, CI-M
  - RE 12
- 1.021J Introduction to Modeling and Simulation
  - RE 12
- 1.035 Multiscale Characterization of Materials
  - RE 12

Senior Fall Term

- 1.054 Mechanics and Design of Concrete Structures
  - RE 12
- Unrestricted Elective (1)
  - RE 12
- HASS (6)

Senior Spring Term

- 1.013 Senior Civil and Environmental Engineering Design, CI-M
  - RE 12
- 1.037 Soil Mechanics and Geotechnical Design
  - RE 12
- Unrestricted Electives (4)
  - RE 12

Degree requirements include satisfactorily fulfilling both MIT’s General Institute Requirements (GIRs) and CEE’s Departmental Program.

Track = General Department Requirements (GDR) + Core Subjects and Labs + Restricted Electives (RE) + Unrestricted Electives

Unrestricted Electives (48-54 units)


Subject schedules may change in advance of the start of the term.
This is Civil and Environmental Engineering:

Grounded in science and engineering, we understand the world, invent and lead with creative design. We pursue ‘big engineering’ through innovations which may begin locally, but scale broadly and quickly to impact people everywhere. Course 1 at MIT’s unique living and learning environment blurs the distinction between the classroom, the research lab, and real-world applications. Course 1 aims to:

- Make cities more livable, sustainable, and secure;
- Leverage secrets from ocean depths to improve human health;
- Manage impacts of climate change; and
- Reduce waste and preserve natural resources.

Prepare to lead in new and emerging fields with careers like:

Civil Engineer, Innovation Officer, Data Analytics Engineer, Global Insights Consultant or Materials Chemist, Sustainable Infrastructure Designer/Consultant, Chief Resiliency Officer, Megacities Urban Planner, Natural Resources Specialist, Climate Change Consultant, Startup Founder/CEO/CTO, Innovation and Insights Officer, Product Lifecycle Executive, Resource Development Officer, Professor and Director NGO.

Continue your education with a Master’s degree.

Apply to CEE’s 9-month Master of Engineering Program (MEng) to advance your knowledge and prepare for other leadership roles in industry or academia.

Innovation Comes in Many Forms

Recent CEE graduate student Justin Chen collaborated with MIT computer science student Neal Wadhwa to combine high-speed video with computer vision techniques to reveal imperceptible vibrations in buildings, bridges and PVC pipes. The vibrations, caused by people or nature, may indicate instability or structural damage. The duo built structural models and devised algorithms that will lead to new software development for industry. This innovation provides a faster, cheaper, and noninvasive alternative to existing monitoring techniques.