Systems Engineering

Think Connections

Smart Cities and Communities
Urban Transportation Systems
Infrastructure Sensing and Control
Societal Networks
Supply Chains and Logistics

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Systems Engineering

Systems Engineering is a contemporary interdisciplinary field in which students learn fundamental tools to design and manage large-scale complex systems over their lifecycles. Follow the Systems Engineering track to apply rigorous modeling and decision-making principles to emerging societal-scale systems.

Example Subject Roadmap:

**Sophomore Fall Term**
- 1.010 Uncertainty in Engineering
- 1.101 Introduction to Civil and Environmental Engineering Design I
- 18.03 Differential Equations
- 1.000 Computer Programming for Engineering Applications

**Sophomore Spring Term**
- Unrestricted Elective (1) or 1.00 Engineering Computation and Data Science
- 1.102 Introduction to Civil and Environmental Engineering Design II
- 1.074 Multivariate Data Analysis (second half of term)

**Junior Fall Term**
- 1.011 Project Evaluation and Management, CI-M
- 1.020 Engineering Sustainability: Analysis and Design
- 1.041 Transportation Systems Modeling

**Junior Spring Term**
- 6.003 Signals and Systems or 6.041A & 6.041B Intro to Probability

**Senior Fall Term**
- 1.013 Senior Civil and Environmental Engineering Design, CI-M
- 1.153 Transportation Policy, the Environment, and Livable Communities
- 15.053 Optimization Methods in Business Analytics
- 6.207 Networks

**Senior Spring Term**
- Unrestricted Elective (4)

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) and Unrestricted Elective (RE)

Unrestricted Electives (48-54 units)
Choose unrestricted electives to tailor your degree to gain depth in areas like Cyber-Physical Systems, Transportation Systems, and Water Resource Planning and Management.

Subject schedules may change in advance of the start of the term.

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“I want to join a growing company, so I can use my passion to push the type of infrastructure that I believe we need to make a real impact on peoples’ lives everywhere.”

Anthony McHugh ’16
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.
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.