EMENGY STUDIES MINOR at MIT

The energy minor really gives students the tools to use their technical background to address climate issues. The curriculum does an amazing job of bridging the gap between academia and what’s going on in the world.

Christian Welch
SB '13 Mechanical and Ocean Engineering; Energy Studies Minor
SM '15 Mechanical Engineering

“Going into college, I was really interested in the energy field in general, especially in renewables, and I wanted to get some perspective on oil and gas as well. The breadth of the Energy Studies Minor really helped solidify that interest, and it’s still directing me to new places where I can continue to focus on energy.

Jacqueline Han
SB '14 Political Science

REQUIREMENTS
The curriculum has two components. The first is a core that provides an integrated perspective on energy and associated environmental challenges. The second component is a customized program of electives each student selects in close consultation with his or her Energy Studies Minor faculty advisor.

CORE CURRICULUM
Energy Science Foundations
Fundamental laws and principles that govern energy sources, conversion, and use

Social Science Foundations of Energy
Social scientific perspectives and tools that explains human behavior in an energy context

Energy Technology/Engineering in Context
The application of laws and principles to a specific energy context

ENERGY ELECTIVES
Twenty-four elective units
Students can take 24 energy elective units to focus on their individual areas of interest.

ENERGY COMMONS
Energy Studies Minor students have access to the Energy Commons Space on the lower level of building 10. In this student community space, students can meet with friends and collaborators, enjoy special events, or just relax between classes. For more information, contact the MITEI Education Office in E19-307 or askmitei-ed@mit.edu.

energy.mit.edu/minor

Contact:
Ann Greaney-Williams, Academic Coordinator
MITEI Education Office, Building E19-370D
617-324-7236, agreaney@mit.edu

energy.mit.edu/minor

The world’s complex climate and energy challenges require innovative problem-solvers. Here at MIT, the Energy Studies Minor for undergraduates sets students on the path to tackle these vital issues, building strong foundational knowledge of diverse energy topics while providing hands-on learning opportunities to work with world-renowned researchers, policy analysts, and thought leaders. Students make ground-breaking discoveries and prepare for exciting careers in industry, government, and academia.

The Energy Studies Minor is an Institute-wide program developed by the MIT Energy Initiative that complements the deep expertise obtained in any MIT major with a broad, interdisciplinary understanding of science, technology, social sciences, and policy issues surrounding energy and climate change.
Choose 24 units from the following:

- 1.071J Global Change Science
- 2.006 Thermal-Fluids Engineering II
- 2.612 Marine Power and Propulsion
- 2.627 Fundamentals of Photovoltaics
- 2.813 Energy, Materials, and Manufacturing
- 2.599F Fundamentals of Smart and Resilient Grids
- 3.003 Principles of Engineering Practice (Fall)
- 3.004 Principles of Engineering Practice (Spring)
- 3.18 Materials Science and Engineering of Clean Energy
- 4.401 Environmental Technologies in Buildings
- 6.131 Power Electronics Laboratory
- 6.701 Introduction to Nanoelectronics
- 8.044 Statistical Physics I
- 10.04J A Philosophical History of Energy
- 10.05 Foundational Analyses of Problems in Energy and the Environment
- 10.213 Chemical and Biological Engineering Thermodynamics
- 10.27 Energy Engineering Projects Laboratory (15 units)
- 10.28 Chemical-Biological Engineering Laboratory (15 units)
- 10.426 Electrochemical Energy Systems
- 11.142 Geography of the Global Economy
- 11.165 Urban Energy Systems and Policy
- 12.213 Alternate Energy Sources (6 units)
- 12.346J Global Environmental Negotiations (6 units)
- 15.542J Energy Management for a Sustainable Future
- 22.033 Nuclear Systems Design Project
- 22.04 Engineering of Nuclear Systems
- EC.711J D-Lab: Energy
- STS.032 Energy, Environment, and Society
- 5.762, 10.922, 10.966, 10.985, and 16.639J
- 1.801J Environmental Law, Policy, and Economics: Pollution Prevention and Control
- 11.16J Politics of Energy and the Environment
- 22.04J Social Problems of Nuclear Energy
- 1.801J Environmental Law, Policy, and Economics: Pollution Prevention and Control
- 11.16J Politics of Energy and the Environment
- 12.213 Alternate Energy Sources (6 units)
- 12.346J Global Environmental Negotiations (6 units)
- 15.542J Energy Management for a Sustainable Future
- 22.033 Nuclear Systems Design Project
- 22.04 Engineering of Nuclear Systems
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Students who take more than the required subjects from any of the core curriculum subject lists may count the additional coursework toward the elective requirement.

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**CORE CURRICULUM**

**Science Foundations**

Choose one of the following options:

**Option 1 (one subject)**
- 8.21 Physics of Energy

**Option 2 (two subjects)**

select a combination from the following list (subject titles below):
- 3.012 and 6.007
- 3.012 and 12.021
- 6.007 and 2.005
- 6.007 and 5.60
- 6.007 and 12.021
- 12.021 and 2.005
- 12.021 and 5.60
- 2.005 Thermal-Fluids Engineering I
- 3.012 Fundamentals of Materials Science and Engineering
- 5.60 Thermodynamics and Kinetics
- 6.007 Electromagnetic Energy: From Motors to Solar Cells
- 12.021 Earth Science, Energy, and the Environment

**Technology/Engineering in Context**

Choose one of the following:
- 2.60J Fundamentals of Advanced Energy Conversion
- 4.42J Fundamentals of Energy in Buildings
- 22.081J Introduction to Sustainable Energy

**Social Science Foundations**

Required subjects:

**Option 1 (one subject)**
- 14.01 Principles of Microeconomics
- 15.011J Economic Analysis for Business Decisions

**Option 2 (two subjects)**

select one subject from each of the following groups:

**GROUP A**
- 14.42 Environmental Policy and Economics
- 15.026J Global Climate Change: Economics, Science, and Policy

**GROUP B**
- 1.801J Environmental Law, Policy, and Economics: Pollution Prevention and Control
- 11.16J Politics of Energy and the Environment
- 22.04J Social Problems of Nuclear Energy

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**ENERGY ELECTIVES**

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2 See energy.mit.edu/minor for potential elective and core subject substitutions or additions.
3 All elective subjects are 12-unit subjects unless otherwise noted.