MINOR IN ENERGY STUDIES

The Energy Studies Minor complements the deep expertise obtained in any MIT major with broad, interdisciplinary training in science, technology, and the social sciences, including policy issues surrounding energy and climate change.

Students take classes in four core areas, plus 24 units of electives. The core consists of:

- Science Foundations: fundamental laws and principles that govern energy sources, conversion, and uses;
- Economics Foundations: how economic principles underlie every aspect of energy;
- Social Science Foundations: social scientific perspectives that help explain human behavior in an energy context, and;
- Energy Technology/Engineering in Context: the application of laws and principles to a specific energy context.

The elective component (generally two classes) allows students to focus on their individual areas of interest.

Developed and administered by the MIT Energy Initiative, the Energy Studies Minor sets students on the path to tackle the world’s complex climate and energy challenges. Through the minor, students build strong foundational knowledge of diverse energy topics while benefiting from hands-on learning opportunities to work with world-renowned researchers, policy analysts, and thought leaders. Students also make groundbreaking discoveries and prepare for exciting careers in industry, government, and academia.

Core Curriculum

**Science Foundations**

8.21 Physics of Energy

or 12.021 Earth Science, Energy, and the Environment

**Economics Foundations**

14.01 Principles of Microeconomics

or 15.011 Economic Analysis for Business Decisions

**Social Science Foundations**

Select one of the following:

11.142 Geography of the Global Economy


15.0201[J] Economics of Energy, Innovation, and Sustainability


**Energy Technology/Engineering in Context**

Select one of the following:

2.60[J] Fundamentals of Advanced Energy Conversion

11.165 Urban Energy Systems and Policy

22.081[J] Introduction to Sustainable Energy

EC.711[J] Introduction to Energy in Global Development

EC.712[J] Applications of Energy in Global Development

Electives

Select 24 units from the following:

1.018[J] Fundamentals of Ecology

1.020 Engineering Sustainability: Analysis and Design

1.071[J] Global Change Science

1.079 Rock-on-a-Chip: Microfluidic Technology for Visualization of Flow in Porous Media

1.801[J] Environmental Law, Policy, and Economics: Pollution Prevention and Control

2.005 Thermal-Fluids Engineering

2.006 Thermal-Fluids Engineering II

2.570 Nano-to-Macro Transport Processes

2.603 Fundamentals of Smart and Resilient Grids

2.612 Marine Power and Propulsion

2.627 Fundamentals of Photovoltaics

2.813 Energy, Materials, and Manufacturing

3.003 Principles of Engineering Practice

or 3.004 Principles of Engineering Practice

3.010 Structure of Materials

3.020 Thermodynamics of Materials

3.030 Microstructural Evolution in Materials

3.154[J] Materials Performance in Extreme Environments

3.18 Materials Science and Engineering of Clean Energy

4.401 Environmental Technologies in Buildings

4.432 Modeling Urban Energy Flows for Sustainable Cities and Neighborhoods

5.352 Synthesis of Coordination Compounds and Kinetics

5.372 Chemistry of Renewable Energy

5.60 Thermodynamics and Kinetics

6.061 Introduction to Electric Power Systems

6.131 Power Electronics Laboratory

6.701 Introduction to Nanoelectronics

10.04 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

10.28 Chemical-Biological Engineering Laboratory

10.302 Transport Processes

10.426 Electrochemical Energy Systems

11.162 Politics of Energy and the Environment

12.213 Alternate Energy Sources

12.346[J] Global Environmental Negotiations

14.42 Environmental Policy and Economics


16.001 Unified Engineering: Materials and Structures

16.002 Unified Engineering: Signals and Systems

16.003 Unified Engineering: Fluid Dynamics

16.004 Unified Engineering: Thermodynamics and Propulsion

22.033 Nuclear Systems Design Project

22.04[J] Social Problems of Nuclear Energy

22.054[J] Materials Performance in Extreme Environments

22.06 Engineering of Nuclear Systems

STS.032 Energy, Environment, and Society

Total Units 69-72

2 Subject has prerequisites that are outside of the program.

2 See the Energy Studies Minor website (http://energy.mit.edu/minor) for potential elective and core subject substitutions or additions.

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. A minimum of three subjects (or 36 units) taken for the Energy Studies Minor cannot also count toward a student's major or other minor.

Contact Rachel Shulman (rshulman@mit.edu), academic coordinator, MIT Energy Initiative Education Office, Room E19-306C, 617-324-7236, or visit the Energy Studies Minor website (http://energy.mit.edu/minor) for more information.