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		
Select one of the following:		12
8.21	Physics of Energy	
12.021	Earth Science, Energy, and the Environment	
Economics Foundations		
Select one of the following:		9-12
14.01	Principles of Microeconomics	
15.0111	Economic Analysis for Business Decisions	
Social Science Foundations		
Select one of the following:		12
11.142	Geography of the Global Economy	
11.165	Urban Energy Systems and Policy [2]	
14.44[J]	Energy Economics and Policy	
15.0201[J]	Economics of Energy, Innovation, and Sustainability	
15.2191[J]	Global Energy: Politics, Markets, and Policy	
Energy Technology/Engineering in Context		
Select one of the following:		12
2.60[J]	Fundamentals of Advanced Energy Conversion [1]	
11.165	Urban Energy Systems and Policy [2]	
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: [3]		24
1.018[J]	Fundamentals of Ecology	
1.020	Engineering Sustainability: Analysis and Design [1]	
1.071[J]	Global Change Science [1]	
1.801[J]	Environmental Law, Policy, and Economics: Pollution Prevention and Control	
1.C01	Machine Learning for Sustainable Systems	
2.005	Thermal-Fluids Engineering I [1]	
2.006	Thermal-Fluids Engineering II [1]	
2.570	Nano-to-Macro Transport Processes [1]	
2.612	Marine Power and Propulsion [1]	
2.627	Fundamentals of Photovoltaics	
2.813	Energy, Materials, and Manufacturing [1]	
3.003	Principles of Engineering Practice	
or 3.004	Principles of Engineering Practice	
3.010	Structure of Materials [1]	
3.020	Thermodynamics of Materials [1]	
3.030	Microstructural Evolution in Materials	
3.18	Materials Science and Engineering of Clean Energy [1]	
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 [1]	
5.372	Chemistry of Renewable Energy [1]	
5.601	Thermodynamics I	
5.602	Thermodynamics II and Kinetics	
5.811[J]	United States Energy Policy: Lessons Learned for the Future	
6.2200	Electric Energy Systems [1]	

6.2220	Power Electronics Laboratory [1]	
6.2530	Introduction to Nanoelectronics [1]	
6.2600[J]	Micro/Nano Processing Technology	
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 [1]	
10.27	Energy Engineering Projects Laboratory [1]	
10.28	Chemical-Biological Engineering Laboratory [1]	
10.302	Transport Processes [1]	
10.426	Electrochemical Energy Systems [1]	
11.149	Decarbonizing Urban Mobility	
11.162	Politics of Energy and the Environment	
12.119	Harnessing Power from Environmental Microbes and Chemical Gradients	
12.213	Alternate Energy Sources	
12.346[J]	Global Environmental Negotiations	
14.42	Environmental Policy and Economics	
15.026[J]	Global Climate Change: Economics, Science, and Policy	
16.001	Unified Engineering: Materials and Structures [1]	
16.002	Unified Engineering: Signals and Systems [1]	
16.003	Unified Engineering: Fluid Dynamics [1]	
16.004	Unified Engineering: Thermodynamics and Propulsion [1]	
22.033	Nuclear Systems Design Project	
22.04[J]	Social Problems of Nuclear Energy	
22.054[J]	Materials Performance in Extreme Environments [1]	
22.06	Engineering of Nuclear Systems [1]	
22.061	Fusion Energy [1]	
22.071	Analog Electronics and Analog Instrumentation Design	
IDS.064	Engineering, Economics and Regulation of the Electric Power Sector	
IDS.065[J]	Energy Systems for Climate Change Mitigation	
STS.032	Energy, Environment, and Society	
Total Units		**69-72**

[1] *Subject has prerequisites that are outside of the program.*

[2] *Subject can fulfill either the Social Science Foundations requirement or the Energy Technology/Engineering in Context requirement, but not both.*

[3] *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.

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