Energy Studies is a multidisciplinary academic program (MAP) in Yale College. The curriculum is designed to provide selected undergraduates with the knowledge and skills needed for advanced studies, leadership and success in energy-related fields. Energy Studies scholars must also complete the requirements of a Yale College major. Yale College does not offer a major in energy studies.

Study of the past, present, and future of energy through different disciplines is the content of Energy Studies. The challenge now for the future of energy is to accelerate a transition to cleaner, more sustainable energy sources capable of providing affordable electricity, heating, and transportation in ways less harmful to human health and the environment than current technology based largely on fossil fuels. The task is large. About 1.2 billion people around the world remain without electricity, and 2.7 billion put their health at risk by the traditional use of solid biomass for cooking. Moreover, emissions from today’s energy systems are by far the leading contributors to harmful air pollution and to the greenhouse gases causing rapid climate change. Better energy science and technology are needed for the 21st century, but also needed to achieve the goal of clean, affordable energy for all is a better understanding of the environmental, social, political, and economic impacts of rising human energy use.

Students normally apply to Energy Studies in the fall term of sophomore year. The full requirements for the program are the completion of six courses from a list approved by the faculty advisory committee (see reverse side), plus a senior capstone project. Three of the courses must be distributed across the three tracks:

I Energy Science and Technology,
II Energy and the Environment, and

Additionally, only two of the courses can be from the department of the student’s major (double majors can use two courses from each of their two majors). Courses must be taken for a full letter grade to qualify for Energy Studies. Other activities include field trips, special guest lectures, bi-weekly program dinners, and participation in the Yale Alumni in Energy Conference.

The capstone of the program is a senior project, which may take the form of a traditional senior essay (with permission, the student’s senior essay in the major may fulfill this requirement), a credited or uncredited independent study project, or a written report on an internship in an energy-related field.
COURSES IN ENERGY STUDIES

Below are some of the courses accepted for Energy Studies. These lists are not exhaustive. See the website for further information. In Spring 2020 term, ENRG 400 will be the Senior Capstone Seminar.

I Energy Science and Technology
APHY 100, Energy Technology and Society
CENG 300, Chemical Engineering Thermodynamics
CENG 315, Transport Phenomena
CHEM 430, Statistical Mechanics and Thermodynamics
EENG 406, Photovoltaic Energy
G&G 274, Fossil Fuels and World Energy
G&G 275, Renewable Energy
MENG 211, Thermodynamics for Mechanical Engineers
MENG 389, Mechanical Engineering IV: Fluid Thermal Energy Science
PHYS 180, University Physics
PHYS 420, Thermodynamics and Statistical Mechanics

The following broad full-year science courses count as one course in Track I.
CHEM 161/165, General Chemistry I and II
CHEM 163/167, Comprehensive University Chemistry I and II
CHEM 332/333, Physical Chemistry I and II
PHYS 180/181, University Physics
PHYS 200/201, Fundamentals of Physics
PHYS 260/261, Intensive Introductory Physics
PHYS 401/402, Advanced Classical Physics from Newton to Einstein

II Energy and the Environment
ENVE 120, Introduction to Environmental Engineering
ENVE 360, Green Engineering and Sustainable Design
ENVE 373, Air Pollution Control
ENVE 377, Water Quality Control
ENVE 416, Chemical Engineering and Process Design
ENVE 448, Environmental Transport Processes
ENVE 473, Air Quality and Energy
G&G 010, Earth, Resources, Energy, and the Environment
G&G 140, Atmosphere, Ocean, and Environmental Change
G&G 207, The Science of Water
G&G 216, Global Warming: Climate Physics
G&G 322, Physics of Weather and Climate

III Energy and Society: Economic, Political and Social Issues
AMST 236, American Energy History
AMST 425, American Culture and the Rise of the Environment
ANTH 409, Climate and Society from Past to Present
ANTH 473, Abrupt Climate Change and Societal Collapse
ARCG 226, Global Environmental History
ECON 330, The Economics of Natural Resources
ECON 412, International Environmental Economics
EVST 226, Global Environmental History
EVST 228, Climate Change and the Humanities
EVST 247, Politics of the Environment
EVST 255, Environmental Politics and Law
GLBL 217, Sustainability in the 21st Century
PLSC 212, Democracy and Sustainability
PLSC 219, Politics of the Environment

SAMPLE COURSES OF STUDY

Energy Science & Technology Focus
APHY 100 · G&G 140 · ECON 330
G&G 274 · EENG 406 · PHYS 420
APHY 100 · G&G 275 · GLBL 217
G&G 322 · ENVE 373 · MENG 389

Energy & Sustainability Focus
APHY 100 · G&G 216 · GLBL 217
ECON 330 · ENVE 360 · PLSC 212
APHY 100 · ECON 330 · PLSC 212
G&G 140 · ENVE 360 · EVST 255

Energy & The Environment Focus
APHY 100 · ENVE 120 · G&G 140
ENVE 473 · G&G 274 · ECON 330
APHY 100 · G&G 140 · PLSC 219
G&G 275 · EVST 255 · ECON 412

Energy Policy & Climate Change Focus
APHY 100 · G&G 140 · G&G 322
ECON 330 · ANTH 409 · EVST 247
APHY 100 · G&G 207 · G&G 322
ANTH 473 · ECON 412 · PLSC 219