



# Yale Energy Studies

SOCIETY • TECHNOLOGY • ENVIRONMENT

Yale College  
Programs of Study  
*Fall and Spring Terms*

2018–2019



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**Energy Studies** is a multidisciplinary academic program (MAP) in Yale College. The curriculum is designed to provide selected undergraduates the broad 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.

**Multidisciplinary study of world energy forms the content of Energy Studies.**

One of society's biggest challenges for the 21st century is the creation of sustainable energy systems. Basic energy services such as heating, lighting, and transportation should not only be accessible to all in today's world, but also available in ways that are less harmful to health and the environment than current systems based on combustion of fossil fuels. Better energy science and technology are needed, but also needed to achieve the goal of clean, affordable energy for all is a better understanding of the environmental, economic, political and social impacts of rising human energy use.

**Students normally apply to Energy Studies in the fall term of sophomore year.**

Successful applicants are expected to take the gateway course "Energy Technology and Society" during the next spring term. 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 of Energy Studies,

- I *Energy Science and Technology,*
- II *Energy and the Environment, and*
- III *Energy and Society: Economic, Political and Social Issues.*

Additionally, three of the courses must be outside the department of the student's major. Double majors can use three courses from each of their two majors provided that the six courses meet the distributional requirement across the three tracks of Energy Studies. **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 group project culminating in a substantial report, or a written report on a summer job or internship in an energy-related field. Jobs and internships are normally coordinated through the Energy Studies office and the Yale Center for International and Professional Experience.

## COURSES IN ENERGY STUDIES

The following courses in YCPS 2018-19 are accepted for Energy Studies.  
These lists are not exhaustive. See the website for further information.

### I *Energy Science and Technology*

APHY 100b, Energy Technology and Society (Gateway Course)  
CENG 300a, Chemical Engineering Thermodynamics  
CENG 315b, Transport Phenomena  
CHEM 430a, Statistical Mechanics and Thermodynamics  
EENG 406b, Photovoltaic Energy  
EENG 401b, Semiconductor Silicon Devices and Technology  
G&G 274a, Fossil Fuels and Energy Transitions  
G&G 275b, Renewable Energy  
MENG 211b, Thermodynamics for Mechanical Engineers  
MENG 389b, Mechanical Engineering IV: Fluid Thermal Energy Science  
PHYS 180a, University Physics  
PHYS 420a, 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 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 120b, Introduction to Environmental Engineering  
ENVE 360b, Green Engineering and Sustainable Design  
ENVE 373a, Air Pollution Control  
ENVE 377a, Water Quality Control  
ENVE 416b, Chemical Engineering and Process Design  
ENVE 448a, Environmental Transport Processes  
ENVE 473b, Air Quality and Energy  
G&G 010a, Earth, Resources, Energy, and the Environment  
G&G 120a, Earth's Changing Climate  
G&G 140a, Atmosphere, Ocean, and Environmental Change  
G&G 207b, The Science of Water  
G&G 216b, Global Warming: Climate Physics  
G&G 322a, Physics of Weather and Climate

### III *Energy and Society: Economic, Political and Social Issues*

AMST 236b, American Energy History  
AMST 425b, American Culture and the Rise of the Environment  
ANTH 409a, Climate and Society from Past to Present  
ANTH 473b, Abrupt Climate Change and Societal Collapse  
ARCG 226a, Global Environmental History  
ECON 330b, The Economics of Natural Resources  
ECON 412b, International Environmental Economics  
EVST 226a, Global Environmental History  
EVST 228a, Climate Change and the Humanities  
EVST 247b, Politics of the Environment  
EVST 255b, Environmental Politics and Law  
GLBL 217a, Sustainability in the 21st Century  
HIST 042a, Oil and Empire  
PLSC 212a, Democracy and Sustainability  
PLSC 219b, Politics of the Environment

## SAMPLE CURRICULA

### *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