Environmental Studies

Many of the most pressing challenges of the 21st Century are environmental ones. We must find ways to feed a growing human population while maintaining the natural life support system provided by the Earth’s ecosystems; to make built environments more efficient as urban areas continue to grow dramatically in size; and to meet the challenges posed by rising sea-level and increasing global temperatures. These challenges are complex, multifaceted and can best be solved with expertise from multiple, relevant disciplines. To prepare students to meet these challenges, the Institute at Brown for Environment and Society (IBES) offers two undergraduate degrees: an A.B. in Environmental Studies and a Sc.B. in Environmental Science. The two degrees vary primarily in the number of course requirements; the Sc.B. is a more in-depth treatment of a single field. Both degrees provide interdisciplinary exposure to the natural and social sciences, as well as public policy. Both degrees also develop depth in a primary field by requiring students to select one of five tracks of study. Concentrators might also consider pursuing the Engaged Scholars Program, which allows them to connect theory and practice and gain hands-on experience working with community partners.

Through a rigorous set of core courses, track requirements, and a course or project-based capstone experience, our students are primed to make meaningful contributions to environmental scholarship and outreach at local, national and global scales. If you have administrative questions regarding theses concentrations or wish to be added to the email directory listing upcoming events, then please contact Jeanne Loewenstein (jeanne_loewenstein@brown.edu), the academic program manager.

Standard program in Environmental Studies and Environmental Science:
The Institute at Brown for Environment and Society administers two concentrations, one offering an A.B. degree in Environmental Studies (requires 14-15 courses) and the other a Sc.B. degree in Environmental Science (requires 19-20 courses). Below are a set of course offerings arranged into four tracks:

1. Air, Climate & Energy
2. Conservation Science & Policy
3. Environment & Inequality
4. Land, Water & Food Security
5. Sustainability in Development

Requirements for the A.B. Degree

Core Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics 1</td>
<td>1</td>
</tr>
<tr>
<td>or HIST 0150A</td>
<td>History of Capitalism</td>
<td></td>
</tr>
<tr>
<td>ENVS 0490</td>
<td>Environmetal Science in a Changing World 2</td>
<td>1</td>
</tr>
<tr>
<td>ENVS 0110</td>
<td>Humans, Nature, and the Environment:</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Addressing Environmental Change in the 21st Century</td>
<td></td>
</tr>
<tr>
<td>BIOL 0210</td>
<td>Diversity of Life</td>
<td>1</td>
</tr>
<tr>
<td>or GEOL 0240</td>
<td>Earth: Evolution of a Habitable Planet</td>
<td></td>
</tr>
</tbody>
</table>

Methods - one course

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 1920</td>
<td>Methods for Interdisciplinary Environmental Research</td>
</tr>
</tbody>
</table>

Electives - three courses

You may choose among any ENVS course, any course shown on one or more of the tracks, and any prerequisites listed for a required course.

Capstone - one or two courses

This requirement can be met with a two-semester thesis (ENVS 1970 & ENVS 1971), one-semester research project (ENVS 0705 or ENVS 1971), or an approved capstone course.

Track Specific Requirements

Track 1 - Air, Climate, and Energy

Foundation courses (choose two):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
</tr>
<tr>
<td>ENGN 0030</td>
<td>Introduction to Engineering</td>
</tr>
<tr>
<td>GEOL 0220</td>
<td>Physical Processes in Geology</td>
</tr>
<tr>
<td>PHYS 0050</td>
<td>Foundations of Mechanics</td>
</tr>
</tbody>
</table>

Climate (choose one):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 0850</td>
<td>Weather and Climate</td>
</tr>
<tr>
<td>GEOL 1430</td>
<td>Principles of Planetary Climate</td>
</tr>
</tbody>
</table>

Policy (choose one):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 0710</td>
<td>Powering the Past: Environmental Histories of Energy Use and Social Change</td>
</tr>
<tr>
<td>ENVS 1415</td>
<td>Power, Justice, and Climate Change</td>
</tr>
<tr>
<td>ENVS 1925</td>
<td>Energy Policy and Politics</td>
</tr>
<tr>
<td>POLS 1822I</td>
<td>Geopolitics of Oil and Energy</td>
</tr>
</tbody>
</table>

Energy Technology and Infrastructure (choose one):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 1400</td>
<td>Sustainable Design in the Built Environment</td>
</tr>
<tr>
<td>ENVS 1580</td>
<td>Environmental Stewardship and Resilience in Urban Systems</td>
</tr>
<tr>
<td>ENGN 0720</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>ENGN 1930U</td>
<td>Renewable Energy Technologies</td>
</tr>
<tr>
<td>ENGN 1931P</td>
<td>Fuels, Energy and the Environment</td>
</tr>
</tbody>
</table>

Track 2 - Conservation Science and Policy

Ecology:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 0420</td>
<td>Principles of Ecology</td>
</tr>
</tbody>
</table>

Conservation:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1470</td>
<td>Conservation Biology</td>
</tr>
</tbody>
</table>

Ecology & Conservation Topics: Select One

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 0455</td>
<td>Coastal Ecology and Conservation</td>
</tr>
<tr>
<td>BIOL 1450</td>
<td>Community Ecology</td>
</tr>
<tr>
<td>BIOL 1480</td>
<td>Terrestrial Biogeochemistry and the Functioning of Ecosystems</td>
</tr>
</tbody>
</table>

Policy: Select One

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 1415</td>
<td>Power, Justice, and Climate Change</td>
</tr>
<tr>
<td>ENVS 1555</td>
<td>Urban Agriculture: The Importance of Localized Food Systems</td>
</tr>
<tr>
<td>ENVS 1575</td>
<td>Engaged Climate Policy at the UN Climate Change Talks</td>
</tr>
<tr>
<td>ENVS 1615</td>
<td>Making Connections: The Environmental Policy Process</td>
</tr>
<tr>
<td>ENVS 1755</td>
<td>Globalization and the Environment</td>
</tr>
<tr>
<td>ENVS 1925</td>
<td>Energy Policy and Politics</td>
</tr>
</tbody>
</table>

Statistics: Select One

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 0650</td>
<td>Essential Statistics</td>
</tr>
<tr>
<td>APMA 1650</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>BIOL 0495</td>
<td>Statistical Analysis of Biological Data</td>
</tr>
<tr>
<td>ECON 1620</td>
<td>Introduction to Econometrics</td>
</tr>
</tbody>
</table>

Track 3 – Environment and Inequality

Track Intro Course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 0705</td>
<td>Equity and the Environment: Movements, Scholarship, Solutions</td>
</tr>
<tr>
<td>AFRI 0090</td>
<td>An Introduction to Africana Studies</td>
</tr>
<tr>
<td>AFRI 0210</td>
<td>Afro Latin Americans and Blackness in the Americas</td>
</tr>
</tbody>
</table>

Environmental Studies 1
ECON 1370 Race and Inequality in the United States
ETHN 1000 Introduction to American/Ethnic Studies
GNSS 1600 Embodying Feminisms/Feminist Embodiments
HIST 0203 Modern Africa: From Empire to Nation-State
HIST 1974J Decolonizing Minds: A People's History of the World
SOC 0230 Sex, Gender, and Society
SOC 1270 Race, Class, and Ethnicity in the Modern World
SOC 1872C Race and Ethnic Relations, Identity, and Inequality

Environment and Inequality: Select One
ANTH 0110 Anthropology and Global Social Problems: Environment, Development, and Governance
ENVS 0710 Powering the Past: Environmental Histories of Energy Use and Social Change
ENVS 1415 Power, Justice, and Climate Change
ENVS 1910 The Anthropocene: The Past and Present of Environmental Change
HIST 0270A From Fire Wielders to Empire Builders: Human Impact on the Global Environment before 1492
HIST 0270B From the Columbian Exchange to Climate Change: Modern Global Environmental History

PHP 1700 Current Topics in Environmental Health

Tools: Select One
ANTH 1940 Ethnographic Research Methods
ECON 1620 Introduction to Econometrics
EDUC 1100 Introduction to Qualitative Research Methods
ENVS 1105 Introduction to Environmental GIS
GEOL 1320 Introduction to Geographic Information Systems for Environmental Applications
GEOL 1330 Global Environmental Remote Sensing
SOC 1100 Introductory Statistics for Social Research
SOC 1117 Focus Groups for Market and Social Research
SOC 1340 Principles and Methods of Geographic Information Systems
SOC 2610 Spatial Thinking in Social Science

Policy: Select One
ENVS 1415 Power, Justice, and Climate Change
ENVS 1555 Urban Agriculture: The Importance of Localized Food Systems
ENVS 1575 Engaged Climate Policy at the UN Climate Change Talks
INTL 1700 International Law
POLS 0400 Introduction to International Politics
POLS 1730 Politics of Globalization
URBN 1000 Fieldwork in the Urban Community
URBN 1220 Planning Sustainable Cities
URBN 1250 The Political Foundations of the City

Track 4 - Land, Water & Food Security

Climate: Select One
GEOL 0850 Weather and Climate
GEOL 1430 Principles of Planetary Climate

Biology: Select One
BIOL 0160 Plants, Food, and People
BIOL 0210 Diversity of Life
BIOL 0420 Principles of Ecology
BIOL 0430 The Evolution of Plant Diversity
BIOL 0455 Coastal Ecology and Conservation

Environmental History: Select One
ANTH 0680 Anthropology of Food
ENVS 1910 The Anthropocene: The Past and Present of Environmental Change
HIST 0270A From Fire Wielders to Empire Builders: Human Impact on the Global Environment before 1492
HIST 0270B From the Columbian Exchange to Climate Change: Modern Global Environmental History
HIST 1820A Environmental History

Policy: Select One
ENVS 1350 Environmental Economics and Policy
ENVS 1555 Urban Agriculture: The Importance of Localized Food Systems
ENVS 1575 Engaged Climate Policy at the UN Climate Change Talks
ENVS 1615 Making Connections: The Environmental Policy Process
ENVS 1925 Energy Policy and Politics
POLS 1740 Politics of Food

Tools: Select One
ENVS 1105 Introduction to Environmental GIS
GEOL 1320 Introduction to Geographic Information Systems for Environmental Applications
GEOL 1330 Global Environmental Remote Sensing
SOC 1340 Principles and Methods of Geographic Information Systems

Track 5 - Sustainability in Development

Environment and Development: Select Two
ECON 1410 Urban Economics
ECON 1530 Health, Hunger and the Household in Developing Countries
ENVS 1415 Power, Justice, and Climate Change
ENVS 1555 Urban Agriculture: The Importance of Localized Food Systems
ENVS 1580 Environmental Stewardship and Resilience in Urban Systems
ENVS 1755 Globalization and the Environment

Policy: Select One
ENVS 1350 Environmental Economics and Policy
ENVS 1575 Engaged Climate Policy at the UN Climate Change Talks
ENVS 1615 Making Connections: The Environmental Policy Process
ENVS 1925 Energy Policy and Politics

Analysis Tools: Select One
ECON 1620 Introduction to Econometrics
ANTH 1940 Ethnographic Research Methods
EDUC 1100 Introduction to Qualitative Research Methods
ENVS 1105 Introduction to Environmental GIS
GEOL 1320 Introduction to Geographic Information Systems for Environmental Applications
GEOL 1330 Global Environmental Remote Sensing
SOC 1100 Introductory Statistics for Social Research
### Requirements for the Sc.B. Degree

**Tools: Select One**  
- ENVS 1350 Environmental Economics and Policy  
- ENVS 1415 Power, Justice, and Climate Change  
- ENVS 1575 Engaged Climate Policy at the UN Climate Change Talks  
- ENVS 1615 Making Connections: The Environmental Policy Process  
- ENVS 1755 Globalization and the Environment  
- ENVS 1925 Energy Policy and Politics  
- POLS 1822I Geopolitics of Oil and Energy

**Math (choose one):**  
- MATH 0090 Introductory Calculus, Part I

**Additional Track specific requirements for the Sc.B.**  

**Focus Two - Environmental Health and Inequality:** Select Three  
- AMST 1700I Anthropology and Global Social Problems: Environment, Development, and Governance  
- DEVL 1803R Caribbean and Pacific Small States: On the Margins of Development  
- ECON 1355 Environmental Issues in Development Economics  
- ECON 1510 Economic Development  
- ENVS 1415 Power, Justice, and Climate Change  
- HIST 0150D Refugees: A Twentieth-Century History  
- PHP 1070 The Burden of Disease in Developing Countries  
- POLS 1440 Security, Governance and Development in Africa  
- POLS 1730 Politics of Globalization  
- SOCI 0150 Economic Development and Social Change  
- ENV 1340 Economics of Global Warming  
- ENVS 1355 Environmental Economics and Policy  
- POLS 1822I Geopolitics of Oil and Energy  

**Track 3 – Environment and Inequality**  

**Tools: Select One**  
- ANTH 1940 Ethnographic Research Methods  
- ECON 1620 Introduction to Econometrics  
- EDUC 1100 Introduction to Qualitative Research Methods  
- ENVS 1105 Introduction to Environmental GIS  
- GEOL 1320 Introduction to Geographic Information Systems for Environmental Applications  
- GEOL 1330 Global Environmental Remote Sensing  
- SOCI 1100 Introductory Statistics for Social Research  

**Track 2 - Conservation Science and Policy**

**Math: Select One**  
- MATH 0090 Introductory Calculus, Part I

**Evolution: Select One**  
- BIOL 0480 Evolutionary Biology  
- BIOL 0410 Invertebrate Zoology  
- BIOL 0430 The Evolution of Plant Diversity (BIOL 0460 - Insect Biology)  
- BIOL 0940C Sophomore Seminar: Insect Biology  
- BIOL 0940D Rhode Island Flora: Understanding and Documenting Local Plant Diversity  
- BIOL 1880 Comparative Biology of the Vertebrates  
- BIOL 1340 Ecology of Global Warming  

**Environ. Econ. Select One**  
- ECON 1340 Environmental Economics and Policy  
- ENVS 1105 Introduction to Environmental GIS  
- GEOL 1320 Introduction to Geographic Information Systems for Environmental Applications  
- GEOL 1330 Global Environmental Remote Sensing  
- SOCI 1100 Introductory Statistics for Social Research  
- SOCI 1340 Principles and Methods of Geographic Information Systems  

**Total Credits: 14-15**

1. The ECON 0110 core requirement can be waived for students with an AP exam score of 4 or 5 in Microeconomics.  
2. The core requirement of ENVS 0490 can be waived for students with an AP exam score of 4 or 5 in Environmental Science.  
3. Students pursuing the Sc.B. must take ECON 1620.

---

**ENVS 1105 Introduction to Environmental GIS**  
**GEOL 1320 Introduction to Geographic Information Systems for Environmental Applications**  
**GEOL 1330 Global Environmental Remote Sensing**  
**SOC 1340 Principles and Methods of Geographic Information Systems**  

**Track 1 - Air, Climate, and Energy**

**Math:**  
- MATH 0090 Introductory Calculus, Part I  

**Tools (choose one):**  
- APMA 0650 Essential Statistics  
- ECON 1620 Introduction to Econometrics  
- ENVS 1105 Introduction to Environmental GIS  
- GEOL 1320 Introduction to Geographic Information Systems for Environmental Applications  
- GEOL 1330 Global Environmental Remote Sensing  

**Climate and Thermal Change (choose two):**  
- ENGN 0720 Thermodynamics  
- ENGN 1720 Design of Thermal Engines  
- ENGN 1930M Industrial Design  
- GEOL 1370 Environmental Geochemistry  
- GEOL 1510 Introduction to Atmospheric Dynamics  
- GEOL 1520 Ocean Circulation and Climate

**Total Credits: 14-15**  

---

**Additional Track specific requirements for the A.B. Program**

**5**

**Focus One - Environmental Inequality in Globalization and Development:** Select Three  
- ECON 1370 Race and Inequality in the United States  
- GNSS 1600 Embodying Feminisms/Feminist Embodiments  
- ETHN 1200I History and Resistance in Representations of Native Peoples  
- HIST 1974J Decolonizing Minds: A People's History of the World  
- SOC 1270 Race, Class, and Ethnicity in the Modern World  
- SOC 1872C Race and Ethnic Relations, Identity, and Inequality  

**Select A Focus Area (pick three courses from only one focus area):**  

**FOCUS ONE - Environmental Inequality in Globalization and Development: Select Three**  
- ANTH 0110 Anthropology and Global Social Problems: Environment, Development, and Governance  
- DEVL 1803R Caribbean and Pacific Small States: On the Margins of Development  
- ECON 1355 Environmental Issues in Development Economics  
- ECON 1510 Economic Development  
- ENVS 1415 Power, Justice, and Climate Change  
- HIST 0150D Refugees: A Twentieth-Century History  
- PHP 1070 The Burden of Disease in Developing Countries  
- POLS 1440 Security, Governance and Development in Africa  
- POLS 1730 Politics of Globalization  
- SOCI 0150 Economic Development and Social Change  
- ENV 1340 Economics of Global Warming  
- ENVS 1355 Environmental Economics and Policy  

**Total Credits: 14-15**

---

**FOCUS TWO - Environmental Health and Inequality: Select Three**  
- AFRI 1060W Policy, Culture and Discourse that Shape Health and Access to Healthcare  
- AMST 1700I Community Engagement with Health and the Environment  
- BIO 0410 Invertebrate Zoology  
- BIOL 0430 The Evolution of Plant Diversity (BIOL 0460 - Insect Biology)  
- BIOL 0940C Sophomore Seminar: Insect Biology  
- BIOL 0940D Rhode Island Flora: Understanding and Documenting Local Plant Diversity  
- BIOL 1880 Comparative Biology of the Vertebrates  
- BIOL 1340 Ecology of Global Warming  
- ECON 1340 Environmental Economics and Policy  

**Total Credits: 14-15**
ANTH 1310  International Health: Anthropological Perspectives
BIOL 1820  Environmental Health and Disease
HIST 1960Q  Medicine and Public Health in Africa
PHP 0320  Introduction to Public Health
PHP 1070  The Burden of Disease in Developing Countries
PHP 1530  Case Studies in Public Health: The Role of Governments, Communities and Professions
PHP 1700  Current Topics in Environmental Health
PHP 1710  Climate Change and Human Health
PHP 1920  Social Determinants of Health

FOCUS THREE - Environmental Inequalities in Food, Water, and Energy: Select Three
AMST 1906P  Food in American Society and Culture
DEVL 1803R  Caribbean and Pacific Small States: On the Margins of Development
ENVS 0710  Powering the Past: Environmental Histories of Energy Use and Social Change
ENVS 1415  Power, Justice, and Climate Change
ENVS 1555  Urban Agriculture: The Importance of Localized Food Systems
ENVS 1580  Environmental Stewardship and Resilience in Urban Systems
ENVS 1925  Energy Policy and Politics
ETHN 1750B  Treaty Rights and Food Fights: Eating Local in Indian Country

Track 4 - Land, Water & Food Security
Math: Select One
MATH 0090  Introductory Calculus, Part I ¹
Chemistry: Select One
CHEM 0330  Equilibrium, Rate, and Structure
Earth/Life Systems: Select Three
BIOL 1470  Conservation Biology
BIOL 1475  Biogeography
BIOL 1480  Terrestrial Biogeochemistry and the Functioning of Ecosystems
GEOL 0240  Earth: Evolution of a Habitable Planet
GEOL 1130  Ocean Biogeochemical Cycles
GEOL 1310  Global Water Cycle
GEOL 1370  Environmental Geochemistry
GEOL 1510  Introduction to Atmospheric Dynamics
GEOL 1660  Instrumental Analysis with Environmental Applications

Track 5 - Sustainability in Development
Sociology and Politics: Select One
ENVS 1755  Globalization and the Environment
POLS 0400  Introduction to International Politics
SOC 1870K  Demographics and Development
Critical Perspectives on Development: Select One
AMST 1700I  Community Engagement with Health and the Environment
ANTH 0110  Anthropology and Global Social Problems: Environment, Development, and Governance
SOC 1871D  Sophomore Seminar in Sociology of Development
Economic Perspectives: Select Two
ECON 1110  Intermediate Microeconomics
ECON 1340  Economics of Global Warming

Total Credits 19-20

¹ The track requirement of MATH 0090 can be waived for students with an AP exam of 4 or 5 on Calc AB.

Honors

Students interested in graduating with honors in their concentration must complete a thesis determined to be of the highest quality and must have excelled in their coursework required for the concentration, which is defined here as receiving a grade of “A” in the majority of courses taken to fulfill the concentration. You can learn more by visiting the honors page (https://www.brown.edu/academics/institute-environment-society/education/undergraduate/honors) on the IBES website.
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Helvetica was used instead of Arial.

The editor may contact Leepfrog for a draft with the correct fonts in place.