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**

- **ECON 0110** or **HIST 0150A**  
  Principles of Economics  \(^1\)  
  History of Capitalism  
- **ENVS 0490**  
  Environmental Science in a Changing World  
- **ENVS 0110**  
- **BIOL 0210** or **EEPS 0240**  
  Diversity of Life  
  Earth: Evolution of a Habitable Planet  

**Methods - one course**

- **ENVS 1920**  
  Methods for Interdisciplinary Environmental Research  

**Electives - three courses**

Electives provide increased environmental expertise and further enhance a student’s ability to customize a course of study. Acceptable electives include any ENVS courses, classes with significant environmental content, and prerequisites for classes students take to fulfill requirements within their declared track.

**Capstone - one or two courses**

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

**Track Specific Requirements**

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

**Foundational courses (choose two):**

- **CHEM 0330**  
  Equilibrium, Rate, and Structure  
- **EEPS 0220**  
  Earth Processes  
- **ENGN 0030**  
  Introduction to Engineering  
- **ENGN 0490**  
  Fundamentals of Environmental Engineering  
- **PHYS 0030**  
  Basic Physics A  
- **PHYS 0050**  
  Foundations of Mechanics  

**Climate (choose one):**

- **EEPS 0850**  
  Weather and Climate  
- **EEPS 1430**  
  Principles of Planetary Climate  
- **ENGN 1931R**  
  The Chemistry of Environmental Pollution  
- **ENVS 1245**  
  Air Pollution & Chemistry  

**Policy (choose one):**

- **ANTH 1601**  
  Reimagining Climate Change  
- **ENVS 0710**  
  Powering the Past: Environmental Histories of Energy Use and Social Change  
- **ENVS 1415**  
  Power, Justice, and Climate Change  
- **ENVS 1615**  
  Making Connections: The Environmental Policy Process  
- **ENVS 1925**  
  Energy Policy and Politics  
- **POLS 1435**  
  Politics of Climate Change  
- **POLS 1822I**  
  Geopolitics of Oil and Energy  

**Energy Technology and Infrastructure (choose one):**

- **ENGN 0490**  
  Fundamentals of Environmental Engineering  
- **ENGN 0720**  
  Thermodynamics  
- **ENGN 1930U**  
  Renewable Energy Technologies  
- **ENGN 1931P**  
  Energy and the Environment  
- **ENVS 1400**  
  Sustainable Design in the Built Environment  
- **ENVS 1580**  
  Environmental Stewardship and Resilience in Urban Systems  

**Track 2 - Conservation Science and Policy**

**Ecology:**

- **BIOL 0420**  
  Principles of Ecology  

**Conservation:**

- **BIOL 1470**  
  Conservation Biology  

**Ecology & Conservation Topics: Select One**

- **BIOL 1155**  
  Hormones and Behavior  
- **BIOL 1450**  
  Community Ecology  
- **BIOL 1480**  
  Terrestrial Biogeochemistry and the Functioning of Ecosystems  
- **BIOL 1515**  
  Conservation in the Genomics Age  

**Policy: Select One**

- **ANTH 1601**  
  Reimagining Climate Change  
- **ENVS 1415**  
  Power, Justice, and Climate Change  
- **ENVS 1555**  
  Urban Agriculture: The Importance of Localized Food Systems  
- **ENVS 1574**  
  Engaged Climate Policy in the U.S.: Rhode Island and Washington, DC  
- **ENVS 1615**  
  Making Connections: The Environmental Policy Process  
- **ENVS 1755**  
  Globalization and the Environment
### Track 3 – Environment and Inequality

**Track Intro Course:**

- **ENVS 0705 - Equity and the Environment: Movements, Scholarship, Solutions**

**Race, Class, and Gender Inequality: Select One**

- **AFRI 0090** - An Introduction to Africana Studies
- **AFRI 0210** - Afro Latin Americans and Blackness in the Americas
- **AFRI 0830** - How Structural Racism Works
- **ECON 1370** - Race and Inequality in the United States
- **ETHN 1001** - Introduction to American/Ethnic Studies
- **HIST 0150D** - Refugees: A Twentieth-Century History
- **HIST 0203** - Modern Africa: From Empire to Nation-State
- **HIST 1972J** - Racial Capitalism and U.S. Liberal Empire
- **SOC 0230** - Sex, Gender, and Society
- **SOC 1270** - Race, Class, and Ethnicity in the Modern World

**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 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

**Tools: Select One**

- **ANTH 1940** - Ethnographic Research Methods
- **APMA 1650** - Statistical Inference I
- **ECNS 0820** - Introduction to Econometrics
- **ENVS 1105** - Introduction to Environmental GIS
- **EEPS 1320** - Introduction to Geographic Information Systems for Environmental Applications
- **EEPS 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**

- **ANTH 1601** - Reimagining Climate Change
- **ENVS 0150** - Climate Futures and a Sociology of Just Transitions
- **ENVS 1415** - Power, Justice, and Climate Change

### Track 4 - Land, Water & Food Security

#### Climate: Select One

- **EEPS 0850** - Weather and Climate
- **EEPS 1430** - Principles of Planetary Climate
- **ENGN 1931R** - The Chemistry of Environmental Pollution
- **ENVS 1245** - Air Pollution & Chemistry

#### 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 0440** - Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses
- **BIOL 0940D** - Rhode Island Flora: Understanding and Documenting Local Plant Diversity

#### Environmental History: Select One

- **ANTH 0680** - Anthropology of Food
- **ENVS 0710** - Powering the Past: Environmental Histories of Energy Use and Social Change
- **ENVS 1557** - Birding Communities
- **ENVS 1910** - The Anthropocene: The Past and Present of Environmental Change
- **ENVS 1915** - Histories of Global Wetlands
- **ENVS 1916** - Animals and Plants in Chinese History
- **HIST 0150H** - Foods and Drugs in History
- **HIST 0270A** - From Fire Wielders to Empire Builders: Human Impact on the Global Environment before 1492

#### Tools: Select One

- **HIST 1820B** - Environmental History of East Asia
- **HIST 1976C** - Animal, Vegetable, Mineral: Environmental Histories of Non-Human Actors
- **HIST 1976I** - Imperialism and Environmental Change

#### Policy: Select One

- **ENVS 1350** - Environmental Economics and Policy
- **ENVS 1555** - Urban Agriculture: The Importance of Localized Food Systems
- **ENVS 1574** - Engaged Climate Policy in the U.S.: Rhode Island and Washington, DC
- **ENVS 1615** - Making Connections: The Environmental Policy Process
- **ENVS 1925** - Energy Policy and Politics
- **POLS 1435** - Politics of Climate Change
Requirements for the Sc.B. Degree

requires all 14-15 course requirements as listed in the A.B. Program

Additional Track specific requirements for the Sc.B.  

Track 1 - Air, Climate, and Energy

Tools: Select One
- APMA 1650 Statistical Inference I
- EEPS 1320 Introduction to Geographic Information Systems for Environmental Applications
- EEPS 1330 Global Environmental Remote Sensing
- ENVS 1105 Introduction to Environmental GIS
- SOC 1340 Principles and Methods of Geographic Information Systems

Track 5 - Sustainability in Development

Environment and Development: Select Two
- ANTH 0110 Anthropology and Global Social Problems: Environment, Development, and Governance
- ECON 1510 Economic Development
- ECON 1530 Health, Hunger and the Household in Developing Countries
- ENVS 0150 Climate Futures and a Sociology of Just Transitions
- ENVS 1415 Power, Justice, and Climate Change
- ENVS 1580 Environmental Stewardship and Resilience in Urban Systems
- ENVS 1755 Globalization and the Environment
- SOC 0150 Economic Development and Social Change

Policy: Select Two
- ENVS 1350 Environmental Economics and Policy
- ENVS 1555 Urban Agriculture: The Importance of Localized Food Systems
- ENVS 1574 Engaged Climate Policy in the U.S.: Rhode Island and Washington, DC
- ENVS 1615 Making Connections: The Environmental Policy Process
- ENVS 1925 Energy Policy and Politics
- POLS 1435 Politics of Climate Change
- POLS 1822I Geopolitics of Oil and Energy

Tools: Select One
- ANTH 1940 Ethnographic Research Methods
- APMA 1650 Statistical Inference I
- ECON 1620 Introduction to Econometrics
- EEPS 1320 Introduction to Geographic Information Systems for Environmental Applications
- EEPS 1330 Global Environmental Remote Sensing
- ENVS 1105 Introduction to Environmental GIS
- ENGN 1930M Introduction to Environmental GIS

Climate and Thermal Change (choose two):
- EEPS 0230 Geochemistry: Earth and Planetary Materials and Processes
- EEPS 1120 Palaeoceanography
- EEPS 1370 Environmental Geochemistry
- EEPS 1510 Introduction to Atmospheric Dynamics
- ENGN 0720 Thermodynamics
- EEPS 1520 Ocean Circulation and Climate
- ENGN 0720 Thermodynamics
- ENGN 1710 Heat and Mass Transfer
- ENGN 1930M Industrial Design
- ENGN 1931R The Chemistry of Environmental Pollution
- ENVS 1245 Air Pollution & Chemistry

Track 2 - Conservation Science and Policy

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

Evolution: Select One
- BIOL 0480 Evolutionary Biology

Organismal Diversity: Select One
- BIOL 0410 Invertebrate Zoology
- BIOL 0430 The Evolution of Plant Diversity (BIOL 0460 - Insect Biology)
- BIOL 0440 Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses
- BIOL 0940D Rhode Island Flora: Understanding and Documenting Local Plant Diversity
- BIOL 1880 Comparative Biology of the Vertebrates

Env. Econ: Select One
- ECON 1340 Economics of Global Warming
- ENVS 1350 Environmental Economics and Policy
- ECON 1355 Environmental Issues in Development Economics

Tools: Select One
- EEPS 1320 Introduction to Geographic Information Systems for Environmental Applications
<table>
<thead>
<tr>
<th>Track 3 – Environment and Inequality</th>
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<tbody>
<tr>
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<tr>
<td>ECON 1370 Race and Inequality in the United States</td>
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<tr>
<td>ETHN 1200I History and Resistance in Representations of Native Peoples</td>
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<tr>
<td>SOC 1270 Race, Class, and Ethnicity in the Modern World</td>
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<tr>
<td>SELECT A FOCUS AREA (pick three courses from only one focus area)</td>
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**FOCUS ONE - Environmental Inequality in Globalization and Development: Select Three**

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<tbody>
<tr>
<td>ANTH 0110</td>
<td>Anthropology and Global Social Problems: Environment, Development, and Governance</td>
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<tr>
<td>ECON 1355</td>
<td>Environmental Issues in Development Economics</td>
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<td>ECON 1510</td>
<td>Economic Development</td>
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<td>Health, Hunger and the Household in Developing Countries</td>
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<td>HIST 0150D</td>
<td>Refugees: A Twentieth-Century History</td>
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<tr>
<td>PHP 1070</td>
<td>Global Burden of Disease</td>
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<tr>
<td>POLS 1440</td>
<td>Security, Governance and Development in Africa</td>
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<tr>
<td>POLS 1730</td>
<td>Politics of Globalization</td>
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<td>SOC 0150</td>
<td>Economic Development and Social Change</td>
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**FOCUS TWO - Environmental Health and Inequality: Select Three**

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<td>AFRI 1920</td>
<td>Health Inequality in Historical Perspective</td>
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<tr>
<td>ANTH 1310</td>
<td>International Health: Anthropological Perspectives</td>
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<tr>
<td>BIOL 1820</td>
<td>Environmental Health and Disease</td>
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<td>HIST 1960Q</td>
<td>Medicine and Public Health in Africa</td>
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<tr>
<td>PHP 0320</td>
<td>Introduction to Public Health</td>
</tr>
<tr>
<td>PHP 1070</td>
<td>Global Burden of Disease</td>
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<tr>
<td>PHP 1101</td>
<td>World of Food: Personal to Global Perspectives on Nutrition, Agriculture and Policy</td>
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<tr>
<td>PHP 1700</td>
<td>Current Topics in Environmental Health</td>
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<tr>
<td>PHP 1710</td>
<td>Climate Change and Human Health</td>
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<td>PHP 1920</td>
<td>Social Determinants of Health</td>
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**FOCUS THREE - Environmental Inequalities in Food, Water, and Energy: Select Three**

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<tr>
<td>ENVS 0710</td>
<td>Powering the Past: Environmental Histories of Energy Use and Social Change</td>
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<tr>
<td>ENVS 1415</td>
<td>Power, Justice, and Climate Change</td>
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<td>ENVS 1555</td>
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<td>ENVS 1580</td>
<td>Environmental Stewardship and Resilience in Urban Systems</td>
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<td>ENVS 1915</td>
<td>Histories of Global Wetlands</td>
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<td>ENVS 1925</td>
<td>Energy Policy and Politics</td>
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<tr>
<td>ETHN 1750B</td>
<td>Treaty Rights and Food Fights: Eating Local in Indian Country</td>
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**Track 4 - Land, Water & Food Security**

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<tr>
<th>Math: Select One</th>
<th>Chemistry: Select One</th>
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<tr>
<td>MATH 0090</td>
<td>Introductory Calculus, Part I</td>
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<th>Earth/Life Systems: Select Three</th>
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<tr>
<td>BIOL 1470 Conservation Biology</td>
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<tr>
<td>BIOL 1480 Terrestrial Biogeochemistry and the Functioning of Ecosystems</td>
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<tr>
<td>EEPS 0240 Earth: Evolution of a Habitable Planet</td>
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<td>EEPS 0830 Water In Our World</td>
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<td>EEPS 1120 Paleocenography</td>
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<td>EEPS 1130 Ocean Biogeochemical Cycles</td>
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<td>EEPS 1310 Global Water Cycle</td>
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<td>EEPS 1370 Environmental Geochemistry</td>
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<td>EEPS 1510 Introduction to Atmospheric Dynamics</td>
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<td>ENGN 1340 Water Supply and Treatment Systems - Technology and Sustainability</td>
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**Track 5 - Sustainability in Development**

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<tr>
<th>Sociology and Politics: Select One</th>
<th>Critical Perspectives on Development: Select One</th>
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<tr>
<td>ENVS 0150 Climate Futures and a Sociology of Just Transitions</td>
<td>ANTH 0110 Anthropology and Global Social Problems: Environment, Development, and Governance</td>
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<td>ENVS 1755 Globalization and the Environment</td>
<td>ECON 1370 Race and Inequality in the United States</td>
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<tr>
<td>POLS 0400 Introduction to International Politics</td>
<td>IAPA 1802C Infrastructure!</td>
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<td>SOC 0150 Economic Development and Social Change</td>
<td>POLS 1200 Reimagining Capitalism</td>
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<td>ANTH 0110 Anthropology and Global Social Problems: Environment, Development, and Governance</td>
<td>SOC 1620 Globalization and Social Conflict</td>
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<td>ECON 1110 Intermediate Microeconomics</td>
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<td>ECON 1560 Economic Growth</td>
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<td>IAPA 1700 Economics for Public Policy</td>
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Climate: Select One

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<tr>
<td>ENVS 1245</td>
<td>Air Pollution &amp; Chemistry</td>
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</table>

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; or students with an AP exam score of 4 or 5 on Calc BC in place of Math 0090 & 0100

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.