Environmental Sciences Undergraduate Major (BS, HBS)

Also available via Ecampus.

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Environmental Sciences
An Environmental Sciences undergraduate degree provides a rigorous education that can lead to helping to understand and resolve some of today’s most challenging scientific and policy issues—including global climate change, pollution, biodiversity conservation, sustainability, and balancing resource use and preservation. To help reach these objectives, the Bachelor of Science in Environmental Sciences offers an interdisciplinary approach to environmental problem solving. As an Environmental Sciences major, a student completes course work in four general areas:

1. OSU’s general education courses (the baccalaureate core)
2. Basic science and math
3. Environmental sciences and humanities core
4. A specialization area

In addition, each student completes a minimum of 3 credits of experiential learning as an internship, research, study abroad, or field course. The BS degree in Environmental Sciences provides excellent training for a variety of careers—including work with federal, state, and local agencies, industry, non-profits, and education—or for graduate school. Students can pursue the BS degree either at the Corvallis campus or online through OSU Ecampus.

Major Curriculum
The Environmental Sciences major requires credits in seven categories: 48 credits of baccalaureate core; 51–53 credits of basic science and math; 27–36 credits of environmental sciences and humanities; 27–31 credits of specialization; 3 credits writing intensive course; 3 credits minimum of experiential learning; and 4–53 credits of elective courses (depends on the number of baccalaureate core electives that will also meet requirements of the major).

Baccalaureate Core
The university baccalaureate core course (BCC) requirement is met with 48 credits and a writing intensive course (WIC). The environmental sciences student satisfies the general education requirement by selecting 27–36 credits of environmental sciences and humanities; 27–31 credits of specialization; 3 credits writing intensive course; 3 credits minimum of experiential learning; and 4–53 credits of elective courses (depends on the number of baccalaureate core electives that will also meet requirements of the major).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Baccalaureate Core</td>
<td>Select 48 credits</td>
<td>48</td>
</tr>
<tr>
<td>Orientation</td>
<td>ENSC 101 ENVIRONMENTAL SCIENCES ORIENTATION</td>
<td>1</td>
</tr>
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Basic Science and Math Courses
Select one of the following options:

<table>
<thead>
<tr>
<th>Option A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BI 211</td>
<td>*PRINCIPLES OF BIOLOGY</td>
</tr>
<tr>
<td>BI 212</td>
<td>*PRINCIPLES OF BIOLOGY</td>
</tr>
<tr>
<td>BI 213</td>
<td>*PRINCIPLES OF BIOLOGY</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Option B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BI 204</td>
<td>*INTRODUCTORY BIOLOGY I</td>
</tr>
<tr>
<td>BI 205</td>
<td>*INTRODUCTORY BIOLOGY II</td>
</tr>
<tr>
<td>BI 206</td>
<td>*INTRODUCTORY BIOLOGY III</td>
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</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Option A</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>CH 121</td>
<td>GENERAL CHEMISTRY</td>
</tr>
<tr>
<td>CH 122</td>
<td>*GENERAL CHEMISTRY</td>
</tr>
<tr>
<td>CH 123</td>
<td>*GENERAL CHEMISTRY</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Option B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 231</td>
<td>GENERAL CHEMISTRY</td>
</tr>
<tr>
<td>&amp; CH 261</td>
<td>*LABORATORY FOR CHEMISTRY 231</td>
</tr>
<tr>
<td>CH 232</td>
<td>GENERAL CHEMISTRY</td>
</tr>
<tr>
<td>&amp; CH 262</td>
<td>*LABORATORY FOR CHEMISTRY 232</td>
</tr>
<tr>
<td>CH 233</td>
<td>GENERAL CHEMISTRY</td>
</tr>
<tr>
<td>&amp; CH 263</td>
<td>*LABORATORY FOR CHEMISTRY 233</td>
</tr>
<tr>
<td>MTH 251</td>
<td>*DIFFERENTIAL CALCULUS</td>
</tr>
<tr>
<td>MTH 268</td>
<td>MATHEMATICAL IDEAS IN BIOLOGY</td>
</tr>
<tr>
<td>or MTH 252</td>
<td>INTEGRAL CALCULUS</td>
</tr>
</tbody>
</table>

Select one of the following:

| PH 201  | *GENERAL PHYSICS |
| PH 202  | *GENERAL PHYSICS |
| PH 211  | *GENERAL PHYSICS WITH CALCULUS |
| PH 212  | *GENERAL PHYSICS WITH CALCULUS |
| ST 351  | INTRODUCTION TO STATISTICAL METHODS |
| ST 352  | INTRODUCTION TO STATISTICAL METHODS |

Environmental Sciences and Humanities Core

Natural Environmental Systems
Select one of the following atmosphere courses: 4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ATS 201</td>
<td>*CLIMATE SCIENCE</td>
</tr>
<tr>
<td>ATS 310</td>
<td>METEOROLOGY</td>
</tr>
<tr>
<td>ATS 420</td>
<td>PRINCIPLES OF CLIMATE: PHYSICS OF CLIMATE AND CLIMATE CHANGE</td>
</tr>
<tr>
<td>GEOG 323</td>
<td>*CLIMATOLOGY</td>
</tr>
</tbody>
</table>

Select one of the following biosphere course:

| BI 370  | ECOLOGY |

Select one of the following geosphere courses: 3–4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CSS 205</td>
<td>*SOIL SCIENCE</td>
</tr>
<tr>
<td>GEO 202</td>
<td>*EARTH SYSTEMS SCIENCE</td>
</tr>
<tr>
<td>GEO 221</td>
<td>*ENVIRONMENTAL GEOLOGY</td>
</tr>
<tr>
<td>GEO 322</td>
<td>SURFACE PROCESSES</td>
</tr>
<tr>
<td>GEOG 102</td>
<td>*PHYSICAL GEOGRAPHY</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
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<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GEOG 350</td>
<td>*GEOGRAPHY OF NATURAL HAZARDS</td>
</tr>
<tr>
<td>SOIL 205</td>
<td>SOIL SCIENCE</td>
</tr>
<tr>
<td>&amp; SOIL 206</td>
<td>and *SOIL SCIENCE LABORATORY FOR SOIL 205</td>
</tr>
<tr>
<td>SOIL 395</td>
<td>*WORLD SOIL RESOURCES</td>
</tr>
</tbody>
</table>

Select one of the following hydrosphere courses: 3-5
- FW 456  | FRESHWATER ECOLOGY AND CONSERVATION                                          |
- GEOG 340 | *INTRODUCTION TO WATER SCIENCE AND POLICY                                     |
- GEO 487  | HYDROGEOLOGY                                                                 |
- OC 201   | *OCEANOGRAPHY                                                                 |

Humans and the Environment
Select one of the following economics courses: 3-4
- AEC 250  | *INTRODUCTION TO ENVIRONMENT ECONOMICS AND POLICY                             |
- ECON 201 | *INTRODUCTION TO MICROECONOMICS                                               |
- ECON 202 | *INTRODUCTION TO MACROECONOMICS                                               |
- FW 462   | ECO SYSTEM SERVICES                                                           |

Select one of the following ethics and environmental ethics courses: 3-4
- ANTH 481 | *NATURAL RESOURCES AND COMMUNITY VALUES                                       |
- CH 374   | *TECHNOLOGY, ENERGY, AND RISK                                                 |
- ES 353   | *ENVIRONMENTAL RACISM                                                         |
- ES 448   | NATIVE AMERICAN PHILOSOPHIES                                                  |
- or PHL 448 | NATIVE AMERICAN PHILOSOPHIES and NATIVE AMERICAN PHILOSOPHIES                  |
- FES 435  | *GENES AND CHEMICALS IN AGRICULTURE: VALUE AND RISK                           |
- or TOX 435 | *GENES AND CHEMICALS IN AGRICULTURE: VALUE AND RISK                          |
- FES 485  | *CONSSENSUS AND NATURAL RESOURCES                                             |
- FW 340   | *MULTICULTURAL PERSPECTIVES IN NATURAL RESOURCES                              |
- GEO 309  | *ENVIRONMENTAL JUSTICE                                                        |
- PHL 325  | *SCIENTIFIC REASONING                                                         |
- PHL 439  | PHILOSOPHY OF NATURE                                                          |
- PHL 440  | *ENVIRONMENTAL ETHICS                                                         |
- PHL 443  | *WORLD VIEWS AND ENVIRONMENT VALUES                                           |
- or REL 443 | *WORLD VIEWS AND ENVIRONMENT VALUES and REL 443     |
- PS 461   | ENVIRONMENTAL POLITICAL THEORY                                                |
- SOC 456  | *SCIENCE AND TECHNOLOGY IN SOCIAL CONTEXT                                    |
- SOC 480  | *ENVIRONMENTAL SOCIOLOGY                                                      |
- SOC 481  | *SOCIETY AND NATURAL RESOURCES                                                |
- WGSS 440 | *WOMEN AND NATURAL RESOURCES                                                  |

Select one of the following human environment courses: 3-4
- AG 301   | *ECOSYSTEM SCIENCE OF PACIFIC NW INDIANS                                      |
- BI 301   | *HUMAN IMPACTS ON ECOSYSTEMS                                                  |
- BI 348   | *HUMAN ECOLOGY                                                                |
- ENSC 479 | **ENVIRONMENTAL CASE STUDIES                                                   |
- FW 325   | *GLOBAL CRISIS IN RESOURCE ECOLOGY                                             |
- GEO 308  | *GLOBAL CHANGE AND EARTH SCIENCES                                              |
- FW 470   | *ECOLOGY AND HISTORY: LANDSCAPES OF THE COLUMBIA BASIN                         |
- GEOG 203 | *HUMAN-ENVIRONMENT GEOGRAPHY                                                   |
- GEOG 300 | *SUSTAINABILITY FOR THE COMMON GOOD                                            |

GEOG 431  | GLOBAL RESOURCES AND DEVELOPMENT                                              |
- GEOG 450 | LAND USE IN THE AMERICAN WEST                                                  |
- HST 481  | *ENVIRONMENTAL HISTORY OF THE UNITED STATES                                   |
- SUS 102  | *INTRODUCTION TO ENVIRONMENT SCIENCE AND SUSTAINABILITY                       |
- SUS 350  | *SUSTAINABLE COMMUNITIES                                                      |
- WGSS 440 | *WOMEN AND NATURAL RESOURCES                                                  |
- Z 349    | *BIODIVERSITY: CAUSES, CONSEQUENCES, AND CONSERVATION                         |

Select one of the following environmental law and policy: 3-4
- AEC 253  | *ENVIRONMENTAL LAW, POLICY, AND ECONOMICS                                     |
- AEC 351  | *NATURAL RESOURCE ECONOMICS AND POLICY                                         |
- AEC 352  | *ENVIRONMENTAL ECONOMICS AND POLICY                                            |
- or ECON 352 | ENVIRONMENTAL ECONOMICS AND POLICY                                          |
- AEC 432  | ENVIRONMENTAL LAW                                                             |
- FOR 462  | NATURAL RESOURCE POLICY AND LAW                                               |
- FW 415   | FISHERIES AND WILDLIFE LAW AND POLICY                                          |
- FW 422   | INTRODUCTION TO OCEAN LAW                                                     |
- GEOG 340 | *INTRODUCTION TO WATER SCIENCE AND POLICY                                      |
- PS 475   | ENVIRONMENTAL POLITICS AND POLICY                                             |
- PS 476   | *SCIENCE AND POLITICS                                                         |
- PS 477   | INTERNATIONAL ENVIRONMENT POLITICS AND POLICY                                 |
- SOC 360  | *POPULATION TRENDS AND POLICY                                                 |
- WGSS 440 | *WOMEN AND NATURAL RESOURCES                                                  |

Select one of the following environmental management courses: 3-4
- BOT 413  | FOREST PATHOLOGY                                                              |
- or FOR 413 | FOREST PATHOLOGY                              |
- FES 350  | URBAN FORESTRY                                                                |
- or HORT 350 | URBAN FORESTRY                               |
- FES 355  | MANAGEMENT FOR MULTIPLE RESOURCE VALUES                                       |
- FES 365  | *ISSUES IN NATURAL RESOURCES CONSERVATION                                     |
- FES 412  | FOREST ENTOMOLOGY                                                             |
- FES 445  | ECOLOGICAL RESTORATION                                                        |
- or FW 445 | ECOLOGICAL RESTORATION                                                      |
- FOR 346  | TOPICS IN WILDLAND FIRE                                                        |
- FW 251   | PRINCIPLES OF FISH AND WILDLIFE CONSERVATION                                  |
- FW 323   | MANAGEMENT PRINCIPLES OF PACIFIC SALMON IN THE NORTHWEST                       |
- FW 326   | INTEGRATED WATERSHED MANAGEMENT                                               |
- FW 431   |                                                                                             |
- FW 435   | *WILDLIFE IN AGRICULTURAL ECOSYSTEM                                             |
- FW 464   | MARINE CONSERVATION BIOLOGY                                                    |
- GEO 306  | *MINERALS, ENERGY, WATER, AND THE ENVIRONMENT                                 |
- GEOG 430 | RESILIENCE-BASED NATURAL RESOURCE MANAGEMENT                                  |
- GEOG 441 | INTERNATIONAL WATER RESOURCES MANAGEMENT                                     |
GEOG 440  WATER RESOURCES MANAGEMENT IN THE UNITED STATES
GEOG 452  SUSTAINABLE SITE PLANNING
NR 455   NATURAL RESOURCE DECISION MAKING
RNG 341  RANGELAND ECOLOGY AND MANAGEMENT
RNG 355  DESERT WATERSHED MANAGEMENT
RNG 421  WILDLAND RESTORATION AND ECOLOGY
RNG 455  RIPARIAN ECOHYDROLOGY AND MANAGEMENT
RNG 490  RANGELAND MANAGEMENT PLANNING

Experiential Learning
Select 3 credits 1

Specialization Area
Select 27 credits 2

1 The program must contain at least one course, internship, or research experience that provides opportunities for hands-on experience in design and collection of observations in the physical, biological or social environment. Students are urged to work with advisors at an early stage in their study to identify courses or experiences that are appropriate.

2 This requirement can be met by completing an approved certificate, option, or minor from a participating program in the environmental or closely related sciences, or working with advisors to develop an innovative course cluster to analyze environmental systems.

* Baccalaureate Core Course (BCC)
^ Writing Intensive Course (WIC)

Specialization Area
Approved Certificates:
• Geographic Information Science

Approved Options (All options under the Environmental Sciences major):
• Alternative Energy
• Applied Ecology (EC)
• Aquatic Biology (EC)
• Conservation, Resources, and Sustainability (EC)
• Earth Systems (EC)
• Environmental Agriculture (EC)
• Environmental Policy and Economics (EC)
• Environmental Science Education
• Environmental Water Resources (EC)

Note: EC Available via Ecampus

Major Code: 657