## ENVIRONMENTAL SCIENCES UNDERGRADUATE MAJOR (BS, HBS)

Also available via Ecampus.

**Larry C. Becker, Director**  
Environmental Sciences Undergraduate Program  
104 CEOAS Administration Building  
Oregon State University  
Corvallis, OR 97331  
541-737-1201  
Email: ceoas.undergrad@oregonstate.edu  
Website: http://ceoas.oregonstate.edu/academics/undergraduate/

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 Code:** 657

**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 unrestricted credits from the general list of approved courses and 21 credits from a restrictive list of BCC courses, which simultaneously satisfy requirements for the Environmental Sciences major. The WIC and Synthesis requirements are satisfied by courses taken as part of the environmental sciences core curriculum.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td><strong>Baccalaureate Core</strong></td>
<td></td>
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<tr>
<td>Select 48 credits</td>
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<tr>
<td><strong>Orientation</strong></td>
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<tr>
<td>ENSC 101</td>
<td>ENVIRONMENTAL SCIENCES ORIENTATION</td>
<td>1</td>
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<tr>
<td><strong>Basic Science and Math Courses</strong></td>
<td></td>
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<tr>
<td>Select one of the following options:</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>BI 211 &amp; BI 212 &amp; BI 213</td>
<td>*PRINCIPLES OF BIOLOGY</td>
<td></td>
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<tr>
<td>BI 204 &amp; BI 205 &amp; BI 206</td>
<td>*INTRODUCTORY BIOLOGY I &amp; II &amp; III</td>
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<tr>
<td><strong>Select one of the following options:</strong></td>
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<td>15</td>
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<tr>
<td><strong>Option A</strong></td>
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<tr>
<td>CH 121 &amp; CH 122 &amp; CH 123</td>
<td>and *GENERAL CHEMISTRY</td>
<td></td>
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<tr>
<td><strong>Option B</strong></td>
<td></td>
<td></td>
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<tr>
<td>CH 231 &amp; CH 261</td>
<td>GENERAL CHEMISTRY &amp; *LABORATORY FOR CHEMISTRY 231</td>
<td></td>
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<tr>
<td>CH 232 &amp; CH 262</td>
<td>GENERAL CHEMISTRY &amp; *LABORATORY FOR CHEMISTRY 232</td>
<td></td>
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<tr>
<td>CH 233 &amp; CH 263</td>
<td>GENERAL CHEMISTRY &amp; *LABORATORY FOR CHEMISTRY 233</td>
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<tr>
<td>MTH 251 &amp; MTH 252</td>
<td>and *DIFFERENTIAL CALCULUS &amp; INTEGRAL CALCULUS</td>
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<tr>
<td>or MTH 227 &amp; MTH 228</td>
<td>and *CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES I &amp; II</td>
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### Environmental Sciences and Humanities Core

**Natural Environmental Systems**

Select one Atmosphere course:

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>ATS 201</td>
<td>*CLIMATE SCIENCE</td>
<td>4</td>
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<tr>
<td>ATS 310</td>
<td>METEOROLOGY</td>
<td>4</td>
</tr>
<tr>
<td>ATS 420</td>
<td>PRINCIPLES OF CLIMATE. PHYSICS OF CLIMATE AND CLIMATE CHANGE</td>
<td>4</td>
</tr>
<tr>
<td>GEDG 323</td>
<td>*CLIMATOLOGY</td>
<td>3</td>
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Select one Biosphere course:

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<tr>
<th>Code</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>BI 370</td>
<td>ECOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 324</td>
<td>*ECOLOGICAL BIOGEOGRAPHY</td>
<td>3</td>
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Select one Geosphere course:

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CSS 205</td>
<td>*SOIL SCIENCE</td>
<td>2-4</td>
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<tr>
<td>GEO 201</td>
<td>*PHYSICAL GEOLOGY</td>
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</tr>
<tr>
<td>GEO 202</td>
<td>*EARTH SYSTEMS SCIENCE</td>
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<tr>
<td>GEO 221</td>
<td>*ENVIRONMENTAL GEOLOGY</td>
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<tr>
<td>GEO 322</td>
<td>SURFACE PROCESSES</td>
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<tr>
<td>GEOG 102</td>
<td>*PHYSICAL GEOGRAPHY</td>
<td></td>
</tr>
<tr>
<td>SOIL 205</td>
<td>SOIL SCIENCE</td>
<td></td>
</tr>
<tr>
<td>SOIL 206</td>
<td>&amp; SOIL 205 *SOIL SCIENCE LABORATORY FOR SOIL 205</td>
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<td>SOIL 395</td>
<td>&amp; SOIL 395 *WORLD SOIL RESOURCES</td>
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Select one Hydrosphere course:

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<tr>
<td>FW 456</td>
<td>FRESHWATER ECOLOGY AND CONSERVATION</td>
<td>3-5</td>
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<tr>
<td>GEO 487</td>
<td>HYDROGEOLOGY</td>
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<tr>
<td>GEOG 340</td>
<td>*INTRODUCTION TO WATER SCIENCE AND POLICY</td>
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<tr>
<td>GEOG 424</td>
<td>HYDROLOGY FOR WATER RESOURCES MANAGEMENT</td>
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<tr>
<td>OC 201</td>
<td>*OCEANOGRAPHY</td>
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Humans and the Environment
Select one Environmental Ethics course: 3-4
- AEC 250 *INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY
- AEC 253 *ENVIRONMENTAL LAW, POLICY, AND ECONOMICS
- AEC 351 *NATURAL RESOURCE ECONOMICS AND POLICY
- AEC 352 / ECON 352 *ENVIRONMENTAL ECONOMICS AND POLICY
- AEC 322 ENVIRONMENTAL LAW
- ECON 201 *INTRODUCTION TO MICROECONOMICS
- FOR 462 NATURAL RESOURCE POLICY AND LAW
- FW 324 *FOOD FROM THE SEA
- FW 415 FISHERIES AND WILDLIFE LAW AND POLICY
- FW 422 INTRODUCTION TO OCEAN LAW
- FW 462 ECOSYSTEM SERVICES
- GEOG 340 *INTRODUCTION TO WATER SCIENCE AND POLICY
- GEOG 350 LAND USE IN THE AMERICAN WEST
- GEOG 451 PLANNING PRINCIPLES AND PRACTICES FOR RESILIENT COMMUNITIES
- PPOL 446 THE POLICY AND LAW OF U.S. COASTAL GOVERNANCE
- PPOL 447 INTEGRATED POLICY: FOOD, ENERGY, WATER, CLIMATE
- PS 473 US ENERGY POLICY
- PS 475 ENVIRONMENTAL POLITICS AND POLICY
- PS 476 *SCIENCE AND POLITICS
- PS 477 INTERNATIONAL ENVIRONMENTAL POLITICS AND POLICY
- SOC 360 *POPULATION TRENDS AND POLICY
- WGG 440 *WOMEN AND NATURAL RESOURCES

Select one Environmental Economics and Policy course: 3-4
- AEC 250 *INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY
- AEC 253 *ENVIRONMENTAL LAW, POLICY, AND ECONOMICS
- AEC 351 *NATURAL RESOURCE ECONOMICS AND POLICY
- AEC 352 / ECON 352 *ENVIRONMENTAL ECONOMICS AND POLICY
- AEC 432 ENVIRONMENTAL LAW
- ECON 201 *INTRODUCTION TO MICROECONOMICS
- FOR 462 NATURAL RESOURCE POLICY AND LAW
- FW 324 *FOOD FROM THE SEA
- FW 415 FISHERIES AND WILDLIFE LAW AND POLICY
- FW 422 INTRODUCTION TO OCEAN LAW
- FW 462 ECOIRONMENT SERVICES
- GEOG 340 *INTRODUCTION TO WATER SCIENCE AND POLICY
- GEOG 350 LAND USE IN THE AMERICAN WEST
- GEOG 451 PLANNING PRINCIPLES AND PRACTICES FOR RESILIENT COMMUNITIES
- PPOL 446 THE POLICY AND LAW OF U.S. COASTAL GOVERNANCE
- PPOL 447 INTEGRATED POLICY: FOOD, ENERGY, WATER, CLIMATE
- PS 473 US ENERGY POLICY
- PS 475 ENVIRONMENTAL POLITICS AND POLICY
- PS 476 *SCIENCE AND POLITICS
- PS 477 INTERNATIONAL ENVIRONMENTAL POLITICS AND POLICY
- SOC 360 *POPULATION TRENDS AND POLICY
- WGG 440 *WOMEN AND NATURAL RESOURCES

Select one Environmental Management course: 3-4
- BOT 413 / FOR 413 FOREST PATHOLOGY
- ENT 331 / HORT 331 *POLLINATORS IN PERIL
- FES 350 / HORT 350 URBAN FORESTRY
- FES 365 MANAGEMENT FOR MULTIPLE RESOURCE VALUES
- FES 365 *ISSUES IN NATURAL RESOURCES CONSERVATION
- FES 412 FOREST ENTOMOLOGY
- FES 445 / FW 445 ECOCLOGICAL 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 435 *WILDERNESS IN AGRICULTURAL ECOSYSTEMS
- FW 464 MARINE CONSERVATION BIOLOGY
- GEO 306 *MINERALS, ENERGY, WATER, AND THE ENVIRONMENT
- GEOG 430 RESILIENCE-BASED NATURAL RESOURCE MANAGEMENT
- GEOG 440 WATER RESOURCES MANAGEMENT IN THE UNITED STATES
- GEOG 441 INTERNATIONAL WATER RESOURCES MANAGEMENT
- 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
- TRAL 352 WILDERNESS MANAGEMENT

Experiential Learning:
Select 3 credits from the following: 3
- ENSC 401 RESEARCH AND SCHOLARSHIP
- ENSC 403 THESIS
- ENSC 410 ENVIRONMENTAL SCIENCE INTERNSHIP

Alternative Approved Courses:
- BI 371 *ECOLOGICAL METHODS
- BI 373 *FIELD METHODS IN MARINE ECOLOGY
- BI 375 FIELD METHODS IN ECOLOGICAL RESTORATION
- BOT 341 PLANT ECOLOGY
- BOT 440 FIELD METHODS IN PLANT ECOLOGY
- RNG 441 RANGELAND ANALYSIS
- SOIL 466 SOIL MORPHOLOGY AND CLASSIFICATION

Specialization Area:

Approved Certificate:
- Geographic Information Science (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/geographic-information-science-certificate)
Approved Options (All options under the Environmental Sciences major):

- Conservation, Resources, and Sustainability (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/conservation-resources-sustainability-option) (EC)
- Environmental Policy and Economics (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/environmental-policy-economics-option) (EC)
- Environmental Science Education (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/environmental-science-education-option)
- Environmental Water Resources (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/environmental-water-resources-option) (EC)

1 The program must contain at least one internship, research, or study abroad 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 experiences that are appropriate, or discuss alternative approved experiential courses.

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.

EC Available via Ecampus
* Baccalaureate Core Course (BCC)
^ Writing Intensive Course (WIC)

Major Code: 657