ENVIRONMENTAL SCIENCES UNDERGRADUATE MAJOR (BS, HBS)

This major offers the following option(s):

- Alternative Energy (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/alternative-energy-option/)
- Aquatic Biology (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/aquatic-biology-option/)
- Chemistry and the Environment (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/chemistry-environment-option/)
- Conservation, Resources, and Sustainability (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/conservation-resources-sustainability-option/)
- Environmental Agriculture (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/environmental-agriculture-option/)
- Environmental Policy and Economics (http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/environmental-sciences-bs-hbs/environmental-policy-economics-option/)
- 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/)

Also available at OSU-Cascades and via Ecampus.

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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

- Identify and define concepts in the natural sciences (e.g. chemistry, atmospheric sciences, ecology, geology, oceanography, soil science).
- Identify and define concepts in the humanities and social sciences (e.g economics, environmental law, ethics, resource policy, and human-environment interaction fields like agronomy and geography).
- Integrate concepts in the natural sciences with those in the humanities and social sciences.
- Demonstrate a rigorous cross-disciplinary science base (biological, physical, and social sciences) with a deeper knowledge in a specialization area by using quantitative tools to analyze and interpret data.
- Communicate ideas clearly- orally, graphically, or in writing- to address environmental sciences issues.
- Engage in and experience the application of the environmental sciences beyond the classroom through fieldwork, participation in an internship, research, study abroad, or other forms of experiential learning.

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.

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<th>Code</th>
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<th>Credits</th>
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<td>Baccalaureate Core</td>
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<td>Basic Science and Math Courses</td>
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Select one Environmental Economics and Policy course:

Humans and the Environment

BIO 221 *PRINCIPLES OF BIOLOGY CELLS
& BIO 222 and *PRINCIPLES OF BIOLOGY ORGANISMS
& BIO 223 and *PRINCIPLES OF BIOLOGY POPULATIONS

BI 204 *INTRODUCTORY BIOLOGY I
& BI 205 and *INTRODUCTORY BIOLOGY II
& BI 206 and *INTRODUCTORY BIOLOGY III

Select one of the following chemistry series: 15

Series A
CH 121 GENERAL CHEMISTRY
& CH 122 and *GENERAL CHEMISTRY
& CH 123 and *GENERAL CHEMISTRY

Series B
CH 231 GENERAL CHEMISTRY
& CH 251 and *LABORATORY FOR CHEMISTRY 231 1

CH 232 GENERAL CHEMISTRY
& CH 252 and *LABORATORY FOR CHEMISTRY 232 1

CH 233 GENERAL CHEMISTRY
& CH 253 and *LABORATORY FOR CHEMISTRY 233 1

Select one of the following: 8

MTH 251 *DIFFERENTIAL CALCULUS
& MTH 252 and INTEGRAL CALCULUS 1

MTH 227 *CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES I
& MTH 228 and *CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES II

Select one of the following: 8-10

PH 201 & *GENERAL PHYSICS
& PH 202 and *GENERAL PHYSICS 1

PH 211 & *GENERAL PHYSICS WITH CALCULUS
& PH 212 and *GENERAL PHYSICS WITH CALCULUS 1

ST 351 & INTRODUCTION TO STATISTICAL METHODS
& ST 352 and INTRODUCTION TO STATISTICAL METHODS 1

Environmental Sciences and Humanities Core

Orientation
ENSC 101 ENVIRONMENTAL SCIENCES ORIENTATION 1

Natural Environmental Systems
Select one Atmosphere course: 4

ATS 201 *CLIMATE SCIENCE 1
ATS 310 METEOROLOGY
ATS 420 CLIMATE PHYSICS
GEOG 323 *CLIMATOLOGY

Select one Biosphere course: 3

BI 370 ECOLOGY 1
GEOG 324 *ECOLOGICAL BIogeOGRAPHY

Select one Geosphere course: 3-4

CSS 205 *SOIL SCIENCE
GEO 201 *PHYSICAL GEOLOGY
GEO 202 *EARTH SYSTEMS SCIENCE
GEO 221 *ENVIRONMENTAL GEOLOGY
GEO 322 SURFACE PROCESSES
GEOG 102 *PHYSICAL GEOGRAPHY
SOIL 205 SOIL SCIENCE
& SOIL 206 and SOIL SCIENCE LABORATORY FOR SOIL 205 1
SOIL 395 *WORLD SOIL RESOURCES

Select one Hydrosphere course: 3-5

FW 456 FRESHWATER ECOLOGY AND CONSERVATION
GEO 487 HYDROGEOLOGY
GEOG 340 *INTRODUCTION TO WATER SCIENCE AND POLICY 1
GEOG 424 HYDROLOGY FOR WATER RESOURCES MANAGEMENT
OC 201 *OCEANOGRAPHY

Humans and the Environment

Select one Environmental Economics and Policy course:

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 1
AEC 432 ENVIRONMENTAL LAW
ECON 201 *INTRODUCTION TO MICROECONOMICS 1
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 450 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
PPOL 448 MARINE POLICY IN THE UNITED STATES
PS 473 US ENERGY POLICY
PS 475 ENVIRONMENTAL POLITICS AND POLICY 1
PS 476 *SCIENCE AND POLITICS
PS 477 INTERNATIONAL ENVIRONMENTAL POLITICS AND POLICY
SOC 360 *POPULATION TRENDS AND POLICY
WGSS 440 *WOMEN AND NATURAL RESOURCES

Select one Environmental Ethics course: 3-4

ANTH 481 *NATURAL RESOURCES AND COMMUNITY VALUES
CH 374 *TECHNOLOGY, ENERGY, AND RISK
ES 353 *ENVIRONMENTAL RACISM
ES 448/PHL 448/REL 448 NATIVE AMERICAN PHILOSOPHIES
FES 435/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 1
PHL 325 *SCIENTIFIC REASONING
PHL 440 *ENVIRONMENTAL ETHICS
PHL 443/REL 443 *WOMEN AND NATURAL RESOURCES
PS 461 ENVIRONMENTAL POLITICAL THEORY
SOC 456 *SCIENCE AND TECHNOLOGY IN SOCIAL CONTEXT
SOC 480 ENVIRONMENTAL SOCIOLOGY
SOC 481 *SOCIETY AND NATURAL RESOURCES
SUS 331 *SUSTAINABILITY, JUSTICE, AND ENGAGEMENT
WGSS 440 *WOMEN AND NATURAL RESOURCES

Select one Human Environment course: 3-4

AG 301 *ECOSYSTEM SCIENCE OF PACIFIC NW INDIANS
BI 301 *HUMAN IMPACTS ON ECOSYSTEMS
BI 347 *OCEANS IN PERIL
BI 348 *HUMAN ECOLOGY
EEH 411 **PERSPECTIVES IN ENVIRONMENTAL ARTS AND HUMANITIES
ENSC 479 *ENVIRONMENTAL CASE STUDIES 1
FW 324 *FOOD FROM THE SEA
FW 325 *GLOBAL CRISIS IN RESOURCE ECOLOGY
FW 470 *ECOLOGY AND HISTORY: LANDSCAPES OF THE COLUMBIA BASIN
GEO 308 *GLOBAL CHANGE AND EARTH SCIENCES
GEOG 203 *HUMAN-ENVIRONMENT GEOGRAPHY
GEOG 300 *SUSTAINABILITY FOR THE COMMON GOOD
GEOG 350 *GEOGRAPHY OF NATURAL HAZARDS
GEOG 431 GLOBAL RESOURCES AND DEVELOPMENT
HST 481 *ENVIRONMENTAL HISTORY OF THE UNITED STATES
OC 333 OCEANS, COASTS, AND PEOPLE

* denotes an environmental science course.
** denotes an environmental humanities course.
Environmental Sciences Undergraduate Major (BS, HBS) 3

Approved Options (All options under the Environmental Sciences major):

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

* Baccalaureate Core Course (BCC)

^ Writing Intensive Course (WIC)

1 Available at OSU-Cascades
2 Available via Ecampus
3 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
4 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

Major Code: 657

First Year

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