Bachelor of Science degree with a major in Environmental Science & Management — with concentrations in:

Ecological Restoration
Energy & Climate
Environmental Education & Interpretation
Environmental Planning & Policy
Geospatial Science
Natural Resources

Minors

Ecological Restoration
Environmental Education & Interpretation
Environmental & Natural Resources Planning
Environmental Policy
Natural Resources
Natural Resources Recreation

Certificates of Study

Environmental Education & Interpretation
Environmental & Natural Resources Planning
Geospatial Science
Natural Resources Policy & Administration

Master of Science degree in Natural Resources — with a concentration in Environmental Science & Management

Department Chair
Steven R. Martin, Ph.D.

Environmental Science & Management
Natural Resources Building 200
707-826-4147
environment.humboldt.edu

Associated Faculty & Advisors
Natalie Arroyo, Gillian Black, Craig Benson, Kerry Byrne, Jeff Dunk, Yvonne Everett, Kevin Fingerman, James Graham, David Gwienzi, Jennifer Kalt, Buddhika Madurapperuma, Nick Malloy, Jennifer Marlow, Steven Martin, Judith Mayer, Melanie McCavour, Jack Murphy, Alison O’Dowd, Jennifer Ortega, Laurie Richmond, Amy Rock, Roxann Schroeder, Jennifer Tarton, William Trush, Julie Van Sickle, Casey Vaughn, Tashina Welliver

The Program

Students completing this program will have demonstrated:

- the ability to apply science to understanding ecosystems and natural resources
- the ability to understand the policy and social implications of environmental issues.
- the knowledge and skills to understand, analyze, address and manage the consequences of human actions on the physical, biological, and cultural world.
- the knowledge and skills to seek out the information and resources necessary to understand complex environmental issues.
- the writing, speaking, and electronic communication skills needed to communicate with the public and professionals concerning the environmental sciences.
- the ability to apply critical thinking skills as the basis for decision making and sound value judgments.

Graduates should find work with state, federal, and local governments, nonprofit conservation organizations, private sector consulting firms [particularly those dealing with environmental impact analysis, environmental planning, wetlands delineation, environmental restoration, geospatial applications in natural resources, energy technology and planning, and natural resource management], or go on to professional and graduate schools to study ecology, environmental law, environmental planning, human dimensions of natural resources, outdoor recreation management, geospatial science, natural resources management, wilderness management, public administration, or environmental policy.

Preparation

High school students need strong academic preparation in math, writing, and the sciences.

REQUIREMENTS FOR THE MAJOR

For a description of degree requirements to be fulfilled in addition to those listed below for the major, please see “The Bachelor’s Degree” section of the catalog, pp. 67-82.

Unit Requirements

Core units: 24
Concentration units: 39-54
Total units in the major: 73-78
Total units required for the degree: 120

Special Grade Requirement

Complete all courses in the major with a grade of C- or better.

Core Courses (24 units)

ESM 105 (3) Natural Resource Conservation
ESM 111 (1) Environmental Science Seminar
GSP 101 (2) Geospatial Concepts and

Concentrations

Complete one of the following concentrations to fulfill the requirements of the major:

Ecological Restoration Concentration (47 units)

Lower Division

BIOL 105 (4) Principles of Biology
BOT 105 (4) General Botany
CHEM 107 (4) Fundamentals of Chemistry
GSP 270 (3) Geographic Information Science [GIS]
SOIL 260 (3) Intro to Soil Science

Upper Division

BOT 350 (4) Plant Taxonomy
ESM 355 (3) Principles of Ecological Restoration
ESM 425 (3) Environmental Impact Assessment
GSP 435 (2) Grant Writing
GSP 455 (4) Applied Ecological Restoration
FOR 315 (3) Forest Management and
FOR 431 (3) Forest Restoration, or
RRS 306 (3) Rangeland Resource Principles and
RRS 430 (3) Wildland Restoration & Development
WSHD 310 (4) Hydrology & Watershed Management

Complete one upper division course approved by your advisor; from BOT, ESM, FISH, FOR, GSP, RRS, SOIL, WSHD, or WLDF. (Prerequisites may be required for some courses, depending on choice.)

NOTE: 24 units may double-count toward GE requirements.

† Course requires one or more prerequisites that are not required elsewhere in the major.
Energy & Climate Concentration (54 units)

Lower Division

BIOL 105 (4) Principles of Biology, or
BOT 105 (4) General Botany
CHEM 107 (4) Fundamentals of Chemistry **
ECON 104 (3) Contemporary Topics in Economics
MATH 105I (3) Calculus for the Biological Sciences & Natural Resources
PHYX 106 (4) College Physics: Mechanics & Heat
PHYX 107 (4) College Physics: Electromagnetism & Modern Physics

Upper Division

ECOD 450 (4) Energy Economics & Climate Policy
ENGR 305 (3) Appropriate Technology
ENGR 371 (3) Energy Systems & Technology
ESM 370 (3) Energy, Technology & Society
ESM 411 (3) Energy & Climate Capstone
ESM 425 (3) Environmental Impact Assessment

Complete two climate science courses:
CHEM 370 (3) Earth System Chemistry
OCN 420I (3) Oceans and Climate
WSHD 458 (3) Climate Change & Land Use

Complete two tools courses:
ECOD 423 (3) Environmental & Natural Resource Economics
ESM 309B (3) Environmental Communication
ESM 435 (2) Grant Proposal Writing
GSP 270 (3) Geographic Information Science (GIS)
GEDG 301 (3) International Environmental Issues & Globalization

NOTE: 24 units may double-count toward GE requirements.

Environmental Education & Interpretation Concentration (48 units)

BIOL 105 (4) Principles of Biology, or
BOT 105 (4) General Botany
CHEM 107 (4) Fundamentals of Chemistry **
ECON 104 (4) Descriptive Astronomy
GEOG 106 (3) Physical Geography, or
PHYX 104 (4) Intro to Geology, or

ESM 210 (3) Public Land Use Policies & Management
ESM 215 (3) Natural Resources & Recreation
CD 209 (3) Middle Childhood Development
ESM 350 (3) Fundamentals of Environmental Education & Interpretation
ESM 351 (1) Environmental Interpretation Field Trip
ESM 353 (3) Environmental Education & Interpretation Graphics
ESM 430 (3) NR Management in Protected Areas
ESM 450 (3) Applied Environmental Education & Interpretation
ESM 453 (4) Environmental Education & Interpretation Practicum (capstone)

ESM 482 (2) Internship, or
ESM 499 (2) Directed Study

Complete one skills course:
ART 340 (3) Graphic Design II
ART 356 (3) Museum & Gallery Practices
ESM 309B (3) Environmental Communication
ESM 425 (3) Environmental Impact Assessment
GSP 270 (3) Geographic Information Science (GIS)
GSP 330 (3) Mobile Mapping

Plus one upper division natural resources management course [3 units], approved by advisor, from FISH, FOR, ESM, RRS, SOIL, WSHD, WLF.

NOTE: 24 units may double-count toward GE requirements.

Environmental Planning & Policy Concentration (45-47 units)

Lower Division

BOT 105 (4) General Botany
CHEM 107 (4) Fundamentals of Chemistry **

ESM 210 (3) Public Land Use Policies & Management
GSP 270 (3) Geographic Information Science (GIS)

Upper Division

ESM 360 (3) Intro to Environmental Planning
ESM 365 (3) Local Government Planning
ECOD 423 (3) Environmental & Natural Resource Economics
ESM 425 (3) Environmental Impact Assessment
ESM 435 (2) Grant Proposal Writing
ESM 460 (3) Environmental Planning for Public Lands & Rural Communities, or

ESM 482 (3) Coastal & Marine Planning

ESM 425 (3) Environmental Impact Assessment
ESM 430 (3) NR Management in Protected Areas
ESM 435 (2) Grant Proposal Writing
ESM 440 (2) Managing Recreation Visitors &
ESM 440L (1) Managing Recreation Visitors Lab
ESM 482 (2) Internship, or
ESM 499 (2) Directed Study

Complete one skills course:
ESM 253 (3) Interpretive Computer Graphics
ESM 309B (3) Environmental Communication
ESM 350 (3) Fundamentals of Environmental Education & Interpretation
GSP 330 (3) Mobile Mapping
GSP 370 (3) Intermediate GIS

Plus one upper division natural resources management course [3 units], approved by advisor, from FISH, FOR, ESM, RRS, SOIL, WSHD, WLF.

NOTE: 24 units may double-count toward GE requirements.

Environmental Science & Management 143
Complete one ecology & management course:

- ESM 370 [3] Energy Technology & Society
- ESM 420 [3] Ecosystem Analysis
- ESM 430 [3] Natural Resource Management in Protected Areas
- FISH 476† [3] Ecology of Running Waters
- WLDF 460† [3] Conservation Biology

Complete one natural resource science fundamentals course:

- FOR 130 [3] Dendrology
- SOIL 260 [3] Intro to Soil Science
- BOT 350† [4] Plant Taxonomy

Complete two upper division policy and management courses, chosen from a list of approved courses provided by your advisor, from ENGR, FISH, FOR, GEOG, NAS, PHIL, PSCI, RRS, SOIL, WSHD, WLDF. (Prerequisites may be required for some courses, depending on choice.)

NOTE: 24 units may double-count toward GE requirements.

Geospatial Science Concentration (39 units)

**Lower Division**

- GEOG 106 [3] Physical Geography

**Upper Division**


**Environmental Science & Management**


Complete one natural resources depth or course approved by advisor: minimum 3 units:

- ESM 360 [3] Intro to Environmental Planning Methods
- ESM 430 [3] Natural Resource Mgmt. in Protected Areas
- FISH 300 [3] Intro to Fishery Biology
- FOR 307 [3] California’s Forests & Woodlands
- GEOL 300† [3] Geology of California
- GEOL 303 [3] Earth Resources & Global Environmental Change
- GEOL 308 [3] Natural Disasters
- OCN 304 [3] Resources of the Sea

NOTE: 27 units may double-count toward GE requirements.

**Requirements for the Minors**

**Special Grade Requirement**

Complete all courses in the minor with a C- or better.

**Ecological Restoration Minor**

**Total units required for the minor: 16**

- SOIL 260 [3] Intro to Soil Science

Complete either:

- FOR 315 [3] Forest Management and
- RRS 306 [3] Rangeland Resource Principles and

**Environmental Education & Interpretation Minor**

**Total units required for the minor: 19**

- ESM 215 [3] Natural Resources & Recreation
- ESM 253 [3] Interpretive Computer Graphics [or equivalent]
- ESM 350/351 [3/1] Fundamentals of Environmental Education & Interpretation, and Field Trip
- ESM 430 [3] NR Management in Protected Areas

**Environmental & Natural Resources Planning Minor**

**Total units required for the minor: 18-19**

- GEOG 106 [3] Physical Geography
- ESM 360 [3] Intro to Environmental Planning Methods
- Plus two courses from the following:
  - ESM 325 [3] Environmental Law & Regulation

**Environmental Policy Minor**

**Total units required for the minor: 18-19**

- ESM 105 [3] Natural Resources Conservation
- ESM 325 [3] Environmental Law & Regulation
- PSCI 306 [3] Environmental Politics

Complete one course from the following:

- PSCI 373 [4] Politics of Sustainability
- PSCI 412 [4] Legal Research

**Environmental Education**

- ESM 215 [3] Natural Resources & Recreation
- ESM 253 [3] Interpretive Computer Graphics [or equivalent]
- ESM 350/351 [3/1] Fundamentals of Environmental Education & Interpretation, and Field Trip
- ESM 430 [3] NR Management in Protected Areas

**Environmental & Natural Resources Planning Minor**

- GEOG 106 [3] Physical Geography
- ESM 360 [3] Intro to Environmental Planning Methods
- Plus two courses from the following:
  - ESM 325 [3] Environmental Law & Regulation

**Environmental Policy Minor**

- ESM 105 [3] Natural Resources Conservation
- ESM 325 [3] Environmental Law & Regulation
- PSCI 306 [3] Environmental Politics

Complete one course from the following:

- PSCI 373 [4] Politics of Sustainability
- PSCI 412 [4] Legal Research

**Environmental Science & Management**

2020-2021 Humboldt State University Catalog
### Natural Resources Minor

Total units required for the minor: **19**

- BIOL 105 (4) Principles of Biology
- ESM 105 (3) Natural Resource Conservation
- SOIL 260 (3) Introduction to Soil Science

At least three courses from the following (at least 6 units must be 300 or above):

- ESM 210 (3) Public Land Use Policies & Management
- ESM 215 (3) Natural Resources & Recreation
- ESM 365 (3) Local Government Planning
- FISH 300 (3) Introduction to Fishery Biology
- FOR 315 (3) Forest Management
- FOR 374 (3) Wilderness Area Mgmt.
- OCN 301 (3) Marine Ecosystems — Human Impact
- OCN 304 (3) Resources of the Sea
- RRS 306 (3) Wildland Resource Principles
- WLDF 301 (3) Principles of Wildlife Management

### Natural Resources Recreation Minor

Total units required for the minor: **17-18**

- ESM 210 (3) Public Land Use Policies & Management
- ESM 215 (3) Natural Resources & Recreation
- ESM 305 (3) Environmental Conflict Resolution, **or**
- ESM 309B (3) Environmental Communication
- FOR 374 (3) Wilderness Area Mgmt.
- ESM 415 (3) Recreation & Park Planning, **or**
- ESM 440 (2) Managing Recreation Visitors
- ESM 430 (3) NR Management in Protected Areas