Taking root as a field of inquiry independent from biology, geography, and other related disciplines in the 1960s, Environmental Sciences developed with ecology at its base. Students pursuing the Applied Ecology option first take BI 370 Ecology which fulfills the Environmental Sciences BS core requirement in the Biosphere category. This science-based option takes an applied ecology approach and therefore includes field and geographic methods for collecting and measuring data on ecological change at various scales. Students seeking a concentration in policy and management are encouraged to consider the Conservation, Resources, and Sustainability option.

In the Applied Ecology option, students take at least one advanced ecology course, selecting from plant, forest, wetland riparian, and rangeland ecologies. Their choice may lead to taking related courses in the electives category of the option. For example, Forest Ecology (FES 341) could be followed by Forest Types of the Northwest (FES 342), Wildland Fire Ecology (FOR/FW/RNG 446), and Ecological Restoration (FES/FW 445). Another related series could begin with Rangeland Ecology and Management (RNG 341) followed by Rangeland Ecology-Grassland or Shrublands (RNG 352/352), Rangeland-Animal Relations (RNG 442), and Rangeland Analysis (RNG 441). In consultation with their advisor, students will find many possibilities for pursuing their interests in ecology.

Because environmental scientists who focus on ecology usually conduct fieldwork, the curriculum contains a field methods course either in plant ecology (BOT 440) or wildland plant identification (RNG 353). Ecological Methods (BI 371) is only available with the instructor’s permission (students must consult with their advisor). Complementing the field methods requirement, students take at least one geographic methods course. Various types of ecological data can be analyzed and presented for policy making from local to global scales using geographic information systems (GIS) and remote sensing.

Students with this specialization prepare for employment with the U.S. Forest Service, Bureau of Land Management, National Park Service, state fish & wildlife service, and related federal and state agencies. They are prepared for research or management careers. Non-governmental organizations that focus on ecological restoration and land trusts also hire students in this area (e.g. Institute for Applied Ecology, McKenzie River Trust).

Internships and research projects in applied ecology have ranged from stream monitoring with the U.S. Forest Service in the Umpqua National Forest (Roseburg, OR) to research on the spotted wing drosophila in an OSU entomology Lab, and post-dam removal vegetation GIS mapping at OSU to working as a biology trainee with the Environmental Protection Agency in Newport, OR. Beyond Oregon, students have worked on plant pest & disease diagnosis with the Warren Chemical & Equipment Co., Rapid City, South Dakota, control of the invasive coqui frog with AmeriCorps on Maui, and marine conservation in Machalilla National Park, Equilibrio Azul, Ecuador.
The Applied Ecology option is for Environmental Sciences students who want to work in ecological restoration, enjoy research or field work, or be employed by a government agency. Because of the hands-on nature of the option, it includes field and geographic methods for data collections and analysis in ecological change. Students seeking a concentration in policy and management are encouraged to consider the Conservation, Resources, and Sustainability option.

Classes used to fulfill requirements in the specialization cannot double count with ENSC Core. All courses must be taken for a letter grade, no S/U grades. Students must earn at least a C- in upper division (300 or higher) major/option courses.

**BACKGROUND COURSE:** Meets an ENSC core requirement

On Campus | Ecampus
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BI 370 Ecology (3)

**APPLIED ECOLOGY CORE: 10-20 Total Credits**

**ECOLOGICAL STUDIES (Select a minimum of 1 course from below)**

On Campus | Ecampus
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□ □ 

BOT 341 Plant Ecology (4) [+]

□ □ 

FES 341 Forest Ecology (3)

□ □ 

FW 479 Wetlands and Riparian Ecology (3) [+]

□ □ 

RNG 341 Rangeland Ecology and Management (3)

**FIELD METHODS (Select a minimum of 1 course from below)**

On Campus | Ecampus
---|---

□ □ 

BI 371 Ecological Methods (3) [+, WIC]

□ □ 

BOT 440 Field Methods in Plant Ecology (4) [+]

□ □ 

RNG 353 Wildland Plant Identification (4)

**GEOGRAPHIC METHODS (Select 1 to 3 courses from below)**

On Campus | Ecampus
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GEO 301 Map and Image Interpretation (4)

□ □ 

GEO 360 Cartography (4)

□ □ 

GEO 365 Introduction to Geographic Information Systems (4) [+]

□ □ 

GEO 444 Remote Sensing (4) [+]

□ □ 

GEO 465 Geographic Information Systems and Science (4) [+]

**ELECTIVES: Select 9-17 credits from below.**

On Campus | Ecampus
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BI 311 Genetics (4) or PBG 430 Plant Genetics (3) [+], On campus only]

□ □ 

BI 345 Introduction to Evolution (3) [*]

□ □ 

BI 445 Evolution (3) [S]

□ □ 

BI 351 Marine Ecology (3) [+]

□ □ 

BI 481 Biogeography (3) [+]

□ □ 

BOT 313 Plant Structure (4) [+]

□ □ 

BOT 321 Plant Systematics (4) [+]

□ □ 

BOT 331 Plant Physiology (4) [+]

□ □ 

BOT/FES 415 Forest Insect and Disease Management (5) [+]

□ □ 

FES 342 Forest Types of the Northwest (3)

□ □ 

FES/HORT 350 Urban Forestry (3) [+]
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**Total Credits**: 27 (Background course not included)