

# Natural Resources



## Undergraduate Advising Guide 2015-16

Forest Ecosystems & Society- College of Forestry - Oregon State University

**NOTE:** This Advising Guide reflects the requirements for students who were admitted in the Summer of 2011 or later. Students who were admitted prior to Summer 2011 are under the requirements of the previous curriculum. They should obtain a copy of the old curriculum from their academic advisor.

**DISCLAIMER:** Content in this guide is continually updated.  
Check the web catalog frequently for current course information at <http://catalog.oregonstate.edu>

Revised 5.13.2015

## About Natural Resources

Maintaining the integrity of the Earth's ecosystems is a key challenge of the 21<sup>st</sup> century. Increasing human population continues to place greater demands on our natural resources. Students in the Natural Resources program at Oregon State University gain an understanding of complex biophysical, social, and cultural systems shaping natural resource management. The Natural Resources program is an interdisciplinary degree. The degree emphasizes a broad-based approach to the study of natural resources, providing students the opportunity to combine areas of particular interest and focus on topics not otherwise offered at the undergraduate level. With this degree program students will:

- study an interdisciplinary curriculum based in agricultural sciences, forestry, liberal arts, and science.
- learn about the social and political components of resource management.
- begin preparation for a career in agroforestry, forest ecosystem science, natural resource planning, human dimensions, natural resource policy, watershed management, analysis of complex environmental problems, or other natural resources professions.

Recent program graduates are working as natural resource specialists and planners with state and federal agencies, attending law school, training/working as teachers in K-12 education, and pursuing graduate degrees in a variety of disciplines.

### Curriculum

The Bachelor of Science in Natural Resources curriculum consists of four blocks of study.

- Baccalaureate Core - A standard set of courses that are required for all Oregon State University students. (This section is waived for Post-Baccalaureate Students.)
- Natural Resources Core - Foundational courses that will give you a solid background in sciences, math, and policy. Minimum GPA for this block is 2.0.
- Natural Resources Breadth - Upper division (300-400) courses that will broaden your knowledge of the field of Natural Resources. Minimum GPA for this block is 2.0.
- Natural Resources Specialty Option - Focused areas of study that will tailor your degree to your career interests and goals. Minimum GPA for this block is 2.25.

Familiarize yourself with this **Student Advising Guide** as it will be your primary resource for planning your program. This Advising Guide is available in MyDegrees in the "Major" block and on our website under "Student Resources". You'll use this tool frequently so bookmark the page or print out and keep a copy in a binder along with a copy of the syllabus for each class you take. This Advising Guide is updated at least yearly so make sure you are referring to the latest version.

## Advising Rights and Responsibilities

The College of Forestry is committed to helping students succeed. Each student is assigned an advisor within their academic department to assist with appropriate course selection, explain program options in line with student interests, and provide information about mentoring and other professional opportunities. In addition, advising personnel in the College Student Services office are a valuable resource for information and assistance regarding University rules and regulations, petitions, job placement, national and international exchange programs, and referrals to University programs and resources.

The advising effort is one of mutual respect and collaboration between you and your advisor. If the process is to be effective both you and your advisor must meet certain obligations. With that in mind, here are some key responsibilities for your relationship.

### As an advisee, you should:

- Understand and accept that you are ultimately responsible for your education and your own decisions.
- You will need a new registration PIN# each term except summer:

On Campus students must make an appointment with their advisor each term to receive their PIN#.

Ecampus students will receive their PIN# from their advisor through email. These are sent by email approximately two weeks before the start of registration for each term. If you do not receive a PIN# it is your responsibility to contact your advisor prior to the start of registration.

- Be prepared when you come to advising sessions. Be active in your advising session and ask questions when you have them.
- Provide accurate and truthful information when being advised.
- Initiate a purposeful relationship with your advisor and make appointments when necessary or when in need of assistance. Office hours are available for On Campus students. Appointments are available by phone, Skype and web conferencing for Ecampus students.
- Keep your local address and phone up-to-date in Student Online Services and utilize and regularly checking your ONID account.
- Use your ONID email account to correspond with your advisor.
- Call or email to cancel appointments that cannot be kept.
- Learn and understand OSU's policies, procedures, and requirements as they relate to your academic success and/or degree completion.
- Follow through on plans-of-action identified during advising sessions.

### Advisors should:

- Develop a purposeful relationship with and be an advocate for their advisees.
- Inform students of the nature of the advisor/advisee relationship.

- Assist students in defining and developing education, career and life plans.
- Provide timely and accurate educational information.
- Promote learning opportunities that will help students define or meet personal goals.
- Assist students in preparing a program that is consistent with their abilities and interests.
- Monitor progress toward educational/career goals.
- Interpret and provide rationale for institutional policies, procedures and requirements.
- Inform students of campus resources that can enhance or supplement their academic or personal experience.

## **Requirements for Graduation**

In addition to the University and degree program requirements, students in the **Natural Resources program** must also meet specific requirements to graduate.

~**Speech** – As a Natural Resources major COMM 111, COMM 114 *or* COMM 218 may be taken to fulfill the Speech Baccalaureate Core requirement, although either COMM 111 or COMM 114 are highly recommended. *Please see advisor for details.* These courses are available On Campus only. Ecampus students must take one of these courses or an equivalent course at a local community college or online through an Oregon Community College.

~**Grades of C- or better must be earned** in all upper-division (300 – 400 level) Core and Breadth courses for Natural Resources majors.

~**S/U Grading** - The Natural Resources Program allows up to two total S/U graded courses in the Core, Breadth, or Option. *Please see advisor for details.*

~**Double Counting** - Courses may be double counted between the Baccalaureate Core and the Natural Resource Core, Breadth, or Option. Courses may NOT be double counted within the Natural Resource Major. Courses are also allowed to be double counted in a minor.

### **The Numbers Game**

- 180** – the number of quarter credits necessary to graduate from OSU
- 60** – the minimum number of upper-division (300-400 level) credits required to graduate from OSU
- 124** – the maximum number of credits that can be transferred from a community college
- 45** – of your last 75 credits earned must be OSU credits **OR** you must have at least 150 credits from OSU. (Academic Residency Requirement)

## MyDegrees

Oregon State University uses an online degree audit system to help you track your progress toward your degree. Take some time to familiarize yourself with the tools and information provided by this system. The MyDegrees system will automatically apply baccalaureate courses and courses that fit in the NR Specialty Option. Courses in the NR Core and Breadth will need to be manually applied by the Advisor as you complete each term. It's helpful if you can let your advisor know which requirement you would like the class applied to as some courses can fit in multiple areas. If you ever see something missing or in a place you didn't expect contact your advisor directly for assistance.

Tutorials on using MyDegrees are available at the website below:

<http://oregonstate.edu/registrar/mydegrees/>

## Baccalaureate Core Requirements

To support students' success in all courses, the following first-year Skills courses are to be taken and completed satisfactorily within the first 45 hours of OSU-generated credits:

*Writing I (WR 121)*

*Mathematics*

*Speech*

To prepare for the upper-division Writing Intensive Course in the major, the following Skills course is to be taken and completed satisfactorily within the first 90 hours of OSU-generated credits:

*Writing II*

For transfer students with sophomore standing or above, *Writing II and Speech* must be completed within the first 45 hours of OSU-generated credits. These requirements apply to all students, whether full time or part time.

**In addition it is highly recommended that you complete your Natural Resources requirements in math\*, statistic, economics and biology within your first year.**

*\*Some students with little math background or who took math long ago need to start with remedial courses such as MTH 65 and/or MTH95. You might also try some free online tutorials to get you up to speed. There are many sites available but one of the best is the Kahn Academy ([www.kahnacademy.org](http://www.kahnacademy.org)). Contact your advisor for an up to date list of tutorials and refresher courses.*

*If you are uncertain what level of math you are ready for, try OSU's Math Placement exam and practice test. The test also contains learning modules that can help you brush up on your skills and improve your placement score.*

<http://www.math.oregonstate.edu/mlc-placement-home>

## **Make an Appointment with your Advisor**

One of the key actions for Academic Success is having regular appointments with your Academic Advisor. Each student admitted to the Natural Resources Program will be assigned one of the advisors below. You can find your assigned advisors name on your MyDegrees page.

You can schedule an appointment through our online appointment scheduling system. If you can't make a scheduled appointment please log back in to the system to cancel the appointment so another student can use that time. If you have any problems with scheduling an appointment please contact your Advisor through email. A tutorial for the online appointment scheduling system is available at the link below.

<http://youtu.be/ybNOGy5he1Y>

### **Banks Blair**

Peavy 213B  
541-737-8662

To Schedule an Appointment:

[https://booknow.appointment-plus.com/6rv0qd30/appointments?&e\\_id=614](https://booknow.appointment-plus.com/6rv0qd30/appointments?&e_id=614)

### **Laurie Holst**

Peavy 211  
541-737-2097

To Schedule an Appointment:

[https://booknow.appointment-plus.com/6rv0qd30/appointments?&e\\_id=613](https://booknow.appointment-plus.com/6rv0qd30/appointments?&e_id=613)

### **Autumn Granger**

Peavy 209  
541-737-9135

To Schedule an Appointment:

[https://booknow.appointment-plus.com/6rv0qd30/appointments?&e\\_id=1252](https://booknow.appointment-plus.com/6rv0qd30/appointments?&e_id=1252)

### **Terina McLachlain**

Peavey 213A  
541-737-2088

To Schedule an Appointment

[https://booknow.appointment-plus.com/6rv0qd30/appointments?&e\\_id=11](https://booknow.appointment-plus.com/6rv0qd30/appointments?&e_id=11)

# Natural Resources Program Outcomes and Coursework to Meet These Outcomes

Students who graduate with a Natural Resources degree from OSU should be able to integrate technical “field” knowledge with analytical skills to solve important natural resource management problems. They should be able to communicate effectively, work collaboratively, assess their professional strengths and weaknesses, and be committed to continuous learning and professional development.

Specifically, they should be able to:

- 1) **Describe ecological processes, including human impacts that influence ecosystem change, natural succession and the future sustainability of natural resources.**

**Coursework that Meets Outcome:**

- a) General Ecology Category of NR Core
- b) Earth Science Category of NR Core
- c) Atmospheric Science Category of NR Core
- d) Water Science Category of NR Core
- e) Soil Science Category of NR Core
- f) Chemistry Category of NR Core
- g) GIS Category of NR Core
- h) Breadth Course Selections
- i) Specialty Option Courses

- 2) **Characterize natural resources and be able to quantify at least one of these resources.**

**Coursework that Meets Outcome:**

- a) Earth Science Category of NR Core
- b) Water Science Category of NR Core
- c) Vegetation ID Category of NR Core
- d) Animal ID Category of NR Core
- e) Soil Science Category of NR Core
- f) Measurements Category of NR Core
- g) Students may select specialty option courses that meet this outcome

- 3) **Envision desired future conditions in an area to achieve a set of natural resource-related objectives, prescribe management actions needed to achieve those objectives, and evaluate success of these actions.**

**Coursework that Meets Outcome:**

- a) Environmental Assessment and Planning Category in NR Core
- b) Breadth Course Selections
- c) Specialty Option Courses

- 4) Describe how the use, management, and allocation of natural resources are affected by: laws, policies, economic factors (both market and non-market), and characteristics (including demographic, cultural, ethnic, and “values” differences) of private and public resource owners and users.**

**Coursework that Meets Outcome:**

- a) Natural Resource Policy Category of NR Core
- b) Resource Economics Category of NR Core
- c) Natural Resource Decision Making Category of NR Core
- d) Environmental Assessment and Planning Category of NR Core
- e) Political Dimensions Breadth Area (many choices)

- 5) Communicate effectively, orally and in writing, with audiences of diverse backgrounds.**

**Coursework that Meets Outcome:**

- a) Writing I and II Categories of OSU Baccalaureate Core
- b) Speech Category of OSU Baccalaureate Core
- c) Writing Intensive Course of OSU Baccalaureate Core
- d) Cultural Diversity and Difference, Power, and Discrimination Categories of OSU Baccalaureate Core
- e) Natural Resource Decision Making Category of NR Core (NR 455)
- f) Communications Category of NR Core
- g) Selected NR Core, Breadth and Specialty Option Courses

- 6) Work effectively with, and within, interdisciplinary and diverse groups to resolve management problems and achieve management objectives.**

**Coursework that Meets Outcome:**

- a) Cultural Diversity and Difference, Power, and Discrimination Categories of OSU Baccalaureate Core
- b) Natural Resource Decision Making Category of NR Core
- c) Environmental Assessment and Planning Category of NR Core
- d) Communications Category of NR Core
- e) Selected NR Core, Breadth and Specialty Option Courses



# NATURAL RESOURCES ~ Student File Checklist

Catalog Date \_\_\_\_\_

Name: \_\_\_\_\_

Advisor: \_\_\_\_\_

Student ID: \_\_\_\_\_

## NATURAL RESOURCES CORE

grade   term   circle course taken

- \_\_\_\_   \_\_\_\_   **Animal ID (2-4) - FW 312 or FW 316 or FW 318 or Z 477**
- \_\_\_\_   \_\_\_\_   **Atmospheric Science (3-4) - ATS 210 or ATS 320\* or GEO 323^**
- \_\_\_\_   \_\_\_\_   **Biology (4) - BI 101\* or 211\* or BI 204\***
- \_\_\_\_   \_\_\_\_   **Biology (4) - BI 102\* or 212\* or BI205\***
- \_\_\_\_   \_\_\_\_   **Biology (4) - BI 103\* or 213\* or BI 206\***
- \_\_\_\_   \_\_\_\_   **Chemistry (5) - CH 121 or CH 231\* and CH 261\***
- \_\_\_\_   \_\_\_\_   **Communications (3) – COMM 321 or COMM 328 or COMM 385 or COMM 440 or COMM 442 or FES 360 or FES 493**
- \_\_\_\_   \_\_\_\_   **Earth Science (4) - GEO 101\* or 102\* or 201\* or 202\* or 221\***
- \_\_\_\_   \_\_\_\_   **Environmental Assessment and Planning (3-4) –ANS/FES/FW/SOC 485\* or FES 356 or FOR/FW 445 or FW 435^ or GEO 423 or SUS 350\* or PS 449^ or PS 477 or RNG 421 or RNG 490**
- \_\_\_\_   \_\_\_\_   **General Ecology (3-4) - BI 370 or BI 306H\*^ or BOT 341 or FES 240\* or FES 341**
- \_\_\_\_   \_\_\_\_   **GIS (3-4) - FE 357 or FOR 421 or FW 303 or GEO 365 or GEO 465 or HORT 414**
- \_\_\_\_   \_\_\_\_   **Managing Natural Resources for the Future (3) - NR 201**
- \_\_\_\_   \_\_\_\_   **Mathematics (4) - MTH 112\* or 241\* or 245\* or 251\***
- \_\_\_\_   \_\_\_\_   **Measurements (3) –**  
*Biological/Physical Science choices: BI 371^ or BOT 440 or FE 208 or FOR 321 or FW 255 or GEO 451 or RNG 441*  
*Social Science choices: FES 422 or HDFS 361 or PS 300 or SOC 418*
- \_\_\_\_   \_\_\_\_   **Natural Resource Decision Making (4) - NR 455**
- \_\_\_\_   \_\_\_\_   **Natural Resource Policy (3-4) –FOR 460^ or FOR 462 or GEO 335\* or PS 475 or PS 477**
- \_\_\_\_   \_\_\_\_   **Resource Economics (3-4) - AREC 351\* or AREC 352\* or FOR 330 or FES 432 [ECON 201 or AREC 250]**
- \_\_\_\_   \_\_\_\_   **Society and Natural Resources (3-4) – ANTH 110\* or FES 251 or FES 355 or FS 492 or GEO 204**
- \_\_\_\_   \_\_\_\_   **Soil Science (4) - SOIL 205\* and SOIL 206 or CSS 205\* or CSS 305**
- \_\_\_\_   \_\_\_\_   **Statistics (4) - ST 351 or ST 201 or (MTH243 offered at Oregon Community Colleges)**
- \_\_\_\_   \_\_\_\_   **Vegetation ID (3-5) - BOT 321 or BOT 414 or BOT 425 or FES 141 or FES 241 or HORT 226 or HORT 228 or RNG 353**
- \_\_\_\_   \_\_\_\_   **Water Science (3-4) - FE 430 or FW 326 or RNG 355 or OC 201 or OC 332**

## BREADTH REQUIREMENTS

grade   term   course

- \_\_\_\_   \_\_\_\_   \_\_\_\_\_   Fisheries and Wildlife (3)
- \_\_\_\_   \_\_\_\_   \_\_\_\_\_   Forestry (3)
- \_\_\_\_   \_\_\_\_   \_\_\_\_\_   Land and Water (3)
- \_\_\_\_   \_\_\_\_   \_\_\_\_\_   Political Dimensions (3)
- \_\_\_\_   \_\_\_\_   \_\_\_\_\_   Range (3)
- \_\_\_\_   \_\_\_\_   \_\_\_\_\_   Resource Values/Philosophy (3)
- \_\_\_\_   \_\_\_\_   \_\_\_\_\_   Social Issues (3)

**SPECIALTY OPTION (Minimum of 40 Credits)**

\_\_\_\_\_ Title: \_\_\_\_\_

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**BACCALAUREATE CORE: Full listing of courses can be found at <http://catalog.oregonstate.edu/bcc.aspx>.**

grade term course

**Skills**

_____	_____	_____	Writing I (3) (WR 121)
_____	_____	_____	Writing II (3) (WR201,214, 222, 224, 241, 323 ,324, 327, 330)
_____	_____	_____	Speech (3) (Satisfied by COMM 111, 114 or 218)
_____	_____	_____	Mathematics (3) (Satisfied by MTH 112, 241, 245, or 251)
_____	_____	_____	Fitness (2) (HHS 231)
_____	_____	_____	Fitness Lab (1)

**Perspectives**

_____	_____	_____	Physical Science (including lab) (4) (Satisfied by GEO 101,102,201,202,221, <b>or</b> SOIL 205)
_____	_____	_____	Biological Science (including lab) (4) (Satisfied by BI 101 or 204 or 211)
_____	_____	_____	Physical/Biological Science (including lab) (4) (Satisfied by BI 102 or 205 or 212)
_____	_____	_____	Western Culture (3)
_____	_____	_____	Cultural Diversity (3)
_____	_____	_____	Literature and the Arts (3)
_____	_____	_____	Social Processes and Institutions (3) (Satisfied by ECON 201 <b>or</b> AREC 250)

**(No more than two Perspectives courses from same dept)**

**Difference, Power, and Discrimination**

_____	_____	_____	Difference, Power and Discrimination (3)
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**Synthesis**

_____	_____	_____	Contemporary Global Issues (3)
_____	_____	_____	Science, Technology, and Society (3)

**(Synthesis courses may not be from same department)**

**WIC**

_____	_____	_____	Writing Intensive Course (3)
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**Other Related Courses**

grade term course title

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

## NATURAL RESOURCES CORE (80 credits) Minimum GPA 2.0

*Additional on-campus or local courses may fulfill requirements as well; please consult your advisor.*

\*=Baccalaureate Core / ^=WIC (Writing Intensive Course) / **Courses in BOLD are also offered through Ecampus.**

### ANIMAL ID: Choose one

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- ( ) **FW 312** Systematics of Birds (2)
- ( ) **FW316** Systematics of Fishes (2)
- ( ) **FW 318** Systematics of Mammals (2)
- ( ) **Z 477** Aquatic Entomology (4)

### ATMOSPHERIC SCIENCE: Choose One

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- ( ) **ATS 210** Introduction to Atmospheric Sciences (3)
- ( ) **ATS 320\*** Man's Impact on Climate (3)
- ( ) **GEO 323^** Climatology (4)

### BIOLOGY I, II AND III:

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\*BI 101,102,103 (4,4,4) General Biology

**BI 204,205,206** (4,4,4) Introduction to Biology (*Biology for natural science majors*)

\*BI 211,212,213 or equivalent (4,4,4) Principles of Biology (*Biology for health science majors*)

### CHEMISTRY: Choose One

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- ( ) **CH 121** General Chemistry (5)
- ( ) **CH 231** \*General Chemistry (5) **and** CH261 Lab for CH 231 (1)

### COMMUNICATIONS: One of the following 300-400 level courses

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- ( ) **COMM 321** Introduction to Communication Theory (3)
- ( ) **COMM 328** Non Verbal Communication (3)
- ( ) **COMM 385** Comm. and Culture in Cyberspace (3)
- ( ) **COMM 440** Theories of Conflict and Conflict Management (3)
- ( ) **COMM 442** Bargaining and Negotiation Processes (3)
- ( ) **FES 360** Collaboration and Conflict Management (3)
- ( ) **FES 485** Consensus and Natural Resources (3)
- ( ) **FES 493** Environmental Interpretation (4)

### EARTH SCIENCE: Choose One

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- ( ) **GEO 101** \*The Solid Earth (4)
- ( ) **GEO 102** \*The Surface of the Earth (4)
- ( ) **GEO201** \*Physical Geology (4)
- ( ) **GEO202** \*Earth Systems Science (4)
- ( ) **GEO 221** \*Environmental Geology (4)

### ENVIRONMENTAL ASSESSMENT & PLANNING: Choose One

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- ( ) **ANS/FES/FW/SOC 485** \*Consensus and Natural Resources (3)
- ( ) **FES 356** Planning for Recreation & Tourism (4)
- ( ) **FES/FW 445** Ecological Restoration (4)
- ( ) **FW 435** ^Wildlife in Agricultural Ecosystems (4)
- ( ) **GEO423** Land Use in the American West (3)
- ( ) **SUS 304** Sustainability Assessment (4)
- ( ) **SUS 350** Sustainable Communities (4)
- ( ) **PS 449** ^Topics in Comparative Politics (4)
- ( ) **PS 477** International Environ. Politics and Policy (4)
- ( ) **RNG 421** Wildland Restoration and Ecology (4)
- ( ) **RNG 490** Rangeland Management Planning (4)

### GENERAL ECOLOGY: Choose One

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- ( ) **BI 370** General Ecology (3)
- ( ) **BI306** ^\*Environmental Ecology (3)
- ( ) **BOT 341** Plant Ecology (4)
- ( ) **FES 240** \*Forest Biology (4)
- ( ) **FES 341** Forest Ecology (3)

(Prerequisite for BI370 is a year of "biology for majors," as approved by the OSU Biology Program)

### GIS (GEOGRAPHIC INFORMATION SYSTEMS): Choose One

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- ( ) **FE 357** GIS and Forest Engineering Applications (3)
- ( ) **FOR 421** Spatial Analysis of Forested Landscapes (3)
- ( ) **FW 303** Survey Geog. Info Systems in NR (3)
- ( ) **GEO 365** Intro to Geographic Info Systems (4)
- ( ) **GEO 465** Geog. Info Systems and Science (4)
- ( ) **HORT 414** M/Information Systems in Agriculture (4)

### MANAGING NR FOR THE FUTURE

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- ( ) **NR201** Managing NR for the Future (3)

An alternative for students with considerable prior Natural Resources coursework is two one-credit seminars—see **CSS 499** (multiple topics).

### MATHEMATICS: Choose One

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- ( ) **MTH 112** \*Elementary Functions (4)
- ( ) **MTH 241** \*Calculus for Mgmt, Life and Social Sciences (4)
- ( ) **MTH 245** \*Mathematics for Mgmt, Life and Social Sci. (4)
- ( ) **MTH 251** \*Differential Calculus (4)  
or equivalent locally (strongly encouraged) (4)

### MEASUREMENTS: Choose one from either Bio./Phys. or Social Sci.:

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#### BIOLOGICAL/PHYSICAL SCIENCE

- ( ) **BI 371** ^Ecological Methods (4)
- ( ) **BOT 440** Field Methods in Vegetation Science (4)
- ( ) **FE 208** Forest Surveying (4)
- ( ) **FOR 321** Forest Mensuration (5)
- ( ) **FW 255** Field Sampling of Fish and Wildlife (3)
- ( ) **GEO 451** Environmental Site Planning (3)
- ( ) **RNG 441** Rangeland Analysis (4)

#### OR SOCIAL SCIENCE

- ( ) **FES 422** Research Methods in Social Science (4)
- ( ) **HDFS 361** Applied Research Methods (4)
- ( ) **PS 300** Political Analysis (4)
- ( ) **SOC 418** Qualitative Research Methods (4)

### NATURAL RESOURCE DECISION MAKING

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**CAPSTONE CLASS: To be taken toward end of your degree**

- ( ) **NR 455** Natural Resource Decision Making (4)

## NATURAL RESOURCE CORE (CONTINUED)

### NATURAL RESOURCE POLICY: *Choose One*

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- ( ) **GEO 335** \*Intro to Water Science and Policy (3)
- ( ) **FOR 460** ^Forest Policy (4)
- ( ) **FOR 462** Natural Resource Policy and Law (3)
- ( ) **PS 475** Environmental Politics and Policy (4)
- ( ) **PS 477** International Environ. Politics and Policy (4)

### RESOURCE ECONOMICS: *Choose One*

*(prerequisite is MTH 111, plus ECON 201 or AREC250)*

*(Additional prerequisite for FOR432: Statistics)*

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- ( ) **AREC 351** \*Natural Resource Economics & Policy (3)
- ( ) **AREC 352** \*Environmental Economics and Policy (3)
- ( ) **FOR 330** Forest Resource Economics I (4)
- ( ) **FES 432** Economics of Recreation Resources (4)

### SOCIETY AND NATURAL RESOURCES: *Choose One*

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- ( ) **ANTH 110** \*Introduction to Cultural Anthropology (3)
- ( ) **FES 251** Recreation Resource Management (4)
- ( ) **FES 355** Management for Multiple Resource Values (3)
- ( ) **FES 492** Ecosystem Services Ecology, Sociology, Policy (3)
- ( ) **GEO 204** Climate Change, Water and Society (3)

### Soil Science: *Choose One*

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- ( ) **SOIL 205** \*Soil Science (3) and **SOIL 206** Lab (1)  
[Corvallis Campus Only]
- ( ) **CSS 205\*** Soil Science (4) [*Ecampus only*]
- ( ) **CSS 305** Principles of Soil Science (4) [*EOU LaGrande Campus only*]

### STATISTICS: *Choose One Four-credit course in Statistics*

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- ( ) **ST 201** Principles of Statistics (4)
- ( ) **ST 351** Intro to Statistical Methods (4)

*OR at Oregon community colleges, on campus and online:*

- ( ) **MTH 243** Probability and Statistics (4)

### VEGETATION ID: *Choose One*

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- ( ) **BOT 321** Plant Systematics (4)
- ( ) **BOT 414** Agrostology (4)
- ( ) **BOT 425** Flora of the Pacific Northwest (3)
- ( ) **FES 141** Tree and Shrub Identification (3)
- ( ) **FES 241** Dendrology (5)
- ( ) **HORT 226** Landscape Plant Materials (4)
- ( ) **HORT 228** Landscape Plant Materials (4)
- ( ) **RNG 353** Wildland Plant Identification (4)

### WATER SCIENCE: *Choose One*

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- ( ) **FE 430** Watershed Processes (4)
- ( ) **FW 326** Integrated Watershed Management (3)
- ( ) **OC 201** Oceanography (3)
- ( ) **OC332** Coastal Oceanography (3) [Hatfield Marine Science Center]
- ( ) **RNG 355** Desert Watershed Mgmt. (3)  
*(RNG 355 is prerequisite for RNG455)*

**NOTE: PARTICULAR OPTION PROGRAMS MAY SPECIFY ADDITIONAL CORE COURSES TO ASSURE THAT STUDENTS MEET PREREQUISITES FOR OPTION COURSES, OR DEVELOP BACKGROUND IN FIELDS IMPORTANT FOR THE OPTION. STUDENTS SHOULD NOT ASSUME THAT THE CORE COURSES LISTED INCLUDE ALL OF THE NECESSARY BACKGROUND IN SCIENCE OR MATH FOR EVERY OPTION.**

## **NATURAL RESOURCES BREADTH (21 credits) Minimum GPA 2.0**

\*=Bacc Core, ^=WIC **Courses in BOLD are also offered through Ecampus**

### **FISHERIES AND WILDLIFE: Choose One**

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- ( ) **FOR/FW/RNG 346** Topics in Wildland Fire (3)
- ( ) **FES/FW 445** Ecological Restoration (4)
- ( ) **FOR/FW/RNG 446** Wildland Fire Ecology (3)
- ( ) **FW/FES 452** Biodiversity Conservation in Managed Forests (3)
- ( ) **FW 311** Ornithology (3)
- ( ) **FW 315** Ichthyology (3)
- ( ) **FW 317** Mammalogy (3)
- ( ) **FW 320** Introductory Population Dynamics (4)
- ( ) **FW 321** Applied Community & Ecosystem Ecology (3)
- ( ) **FW 323** Mgmt. Princ. of Pac. Salmon in the NW (3)
- ( ) **FW 350** \*Endangered. Spec., Society, and Sustain. (3)
- ( ) **FW 427** Principles of Wildlife Diseases (4)
- ( ) **FW 435** ^Wildlife in Agricultural Ecosystems (3)
- ( ) **FW 451** Avian Conservation and Management (3)
- ( ) **FW 454** ^Fishery Biology (4)
- ( ) **FW 458** Mammal Conservation and Management (4)
- ( ) FW 465 Marine Fisheries (4)
- ( ) **FW 473** Fish Ecology (4)
- ( ) **FW 481** Wildlife Ecology (4)

### **FORESTRY: Choose One**

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- ( ) BOT/FES 415 Forest Insect and Disease Management (5)
- ( ) FE 370 Harvesting Operations (4)
- ( ) **FES 341** Forest Ecology (3) *(May use this one if you did not use it for the NR Core/Ecology requirement).*
- ( ) **FES 342** Forest Types of the Northwest (3)
- ( ) **FES/HORT 350** Urban Forestry (3)
- ( ) **FES/FW 445** Ecological Restoration (4)
- ( ) FES/NR/RNG 477 /577 (3)
- ( ) **FOR/RNG 436** Wildland Fire Science and Management (4)
- ( ) **FOR/FW/RNG 346** Topics in Wildland Fire (3)
- ( ) FOR 441 Silviculture Principles (4)
- ( ) **FOR/FW/RNG 446** Wildland Fire Ecology (3)
- ( ) FOR/FE 456 \*International Forestry (3)
- ( ) FOR 457 Techniques for Forest Resource Analysis (4)
- ( ) FOR/FE 459 Forest Resource Plan. & Decision Making (4)
- ( ) FOR 460 ^Forest Policy (4)
- ( ) FW/FES 452 Biodiversity Conservation in Managed Forests (3)
- ( ) WSE 470 \*Forests, Wood, and Civilization (3)

### **LAND AND WATER: Choose One**

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- ( ) FE 430 Watershed Processes (4)
- ( ) **FW 456** Limnology (5)
- ( ) **FW 479** Wetlands and Riparian Ecology (3)
- ( ) **GEO 306** Minerals, Energy, Water and the Environment (3)
- ( ) **GEO 307** \*National Park Geology and Preservation (3)
- ( ) **GEO 308** \*Global Change and Earth Sciences (3)
- ( ) **SOIL 335** \*Introduction to Water Science and Policy (3)
- ( ) **GEO 424** International Water Resources Management (3)
- ( ) **GEO 425** Water Resources Management in the U.S. (3)
- ( ) **RNG 355** Desert Watershed Management (3)
- ( ) **RNG 455** Riparian Ecology and Management (3)
- ( ) **SOIL 395** \*World Soil Resources (3)
- ( ) SOIL 466 Soil Morphology and Classification (4)

### **POLITICAL DIMENSIONS: Choose One**

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- ( ) **AREC 432** Environmental Law (4)
- ( ) AREC/PS/SOC 407 Seminar: Current Issues in Rural Policy (4)
- ( ) BI 301 \*Human Impacts on Ecosystems (3)
- ( ) FES 351 Recreation Behavior and Management (4)
- ( ) **FES 352** Wilderness Management (3)
- ( ) **FES 365** \*Issues in Nat. Resources Conservation (3)
- ( ) **FES 454** Managing at the Wildland-Urban Interface (3)
- ( ) FOR 462 Natural Resource Policy and Law (3)
- ( ) **FW 325** \*Global Crises in Resource Ecology (3)
- ( ) **FW 350** \*Endangered Species, Society and Sustain. (3)
- ( ) **GEO 300** \*Sustainability for the Common Good (3)
- ( ) **GEO 335** \*Intro to Water Science and Policy (3)
- ( ) **GEO 423** Land Use Planning (3)
- ( ) **HST 481** \*Environmental History of the U.S. (4)
- ( ) **PS 455** Politics of Climate Change (4)
- ( ) **PS 449** ^Topics in Comparative Politics (4)
- ( ) **PS 475** Environmental Politics and Policy (4)
- ( ) **PS 476** \*Science and Politics (4)
- ( ) **PS 477** International Environ. Politics and Policy (4)
- ( ) **SOC/ANS/FW/FES 485** \*Consensus and Natural Resources (3)

### **RANGE: Choose One**

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- ( ) **FOR/FW/RNG 346** Topics in Wildland Fire (3)
- ( ) **FOR/RNG 436** Wildland Fire Science and Management (4)
- ( ) **FES/FW 445** Ecological Restoration (4)
- ( ) FES/NR/RNG 477 \*Agroforestry (3)
- ( ) **FOR/FW/RNG 446** Wildland Fire Ecology (3)
- ( ) **RNG 341** Rangeland Ecology and Management (3)
- ( ) **RNG 351** Range Ecology I-Grasslands (3)
- ( ) **RNG 352** Range Ecology II-Shrublands (3)
- ( ) **RNG 421** Wildland Restoration and Ecology (4)
- ( ) RNG 441 Rangeland Analysis (4)
- ( ) **RNG 442** Rangeland-Animal Relations (4)
- ( ) **RNG 490** Rangeland Management Planning (4)

### **RESOURCE VALUES/PHILOSOPHY: Choose One**

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- ( ) **AG 301** \*Ecosystems Science of the Pacific NW Indians (3)
- ( ) ANTH 477 Ecological Anthropology (3)
- ( ) **ANTH 481** \*Natural Resources and Community Values (3)
- ( ) ANTH 482 \*Anthropology of International Development (4)
- ( ) **FES 453** Nature-Based Tourism (3)
- ( ) **FW 340** \*Multicultural Perspectives in Natural Resources (3)
- ( ) **GEO 309** \*Environmental Justice (3)
- ( ) GEO 420 Geography of Resource Use (3)
- ( ) **HST 481** \*Environmental History of the United States (4)
- ( ) **PHL 440** Environmental Ethics (3)
- ( ) **PHL 443** World Views and Environmental Values (3)

## NATURAL RESOURCES BREADTH (CONTINUED)

SOCIAL ISSUES: *One of the following*

- ( ) ANTH 330 \*Evolution of People, Tech. and Society (3)
- ( ) FES 351 Recreation Behavior and Management (4)
- ( ) FES 352 Wilderness Management (3)
- ( ) TOL 371 Eco and Adventure Tourism (3) [Cascades Campus only]
- ( ) FES 453 Nature-Based Tourism (3)
- ( ) FES 493 Environmental Interpretation (4)
- ( ) FES 492 Ecosystem Services and Ecology, Sociology Policy (3)
- ( ) SOC 360 \*Population Trends and Policy (4)
- ( ) SOC 381 Social Dimensions of Sustainability (4)
- ( ) SOC 424 Social Psychology (4)
- ( ) SOC 454 \*Leisure and Culture (4)
- ( ) SOC 456 \*Science and Technology in Social Context (4)
- ( ) SOC 475 Rural Sociology (4)
- ( ) SOC 480 \*Environmental Sociology (4)
- ( ) SOC 481 \*Society and Natural Resources (4)
- ( ) SOC/ANS/FES/FW 485 \*Consensus in Natural Resources (3)
- ( ) WGSS 440 \*Women and Natural Resources (3)

Note: Most SOC classes require SOC 204 or equivalent prerequisite.

## OSU BACCALAUREATE CORE COURSES

The Baccalaureate Core is an OSU requirement for all majors (Post-Bacc students need only complete the Synthesis and Writing Intensive Courses). Students must complete course work in four areas: Skills, Synthesis, Perspectives and a Writing Intensive Course. A complete list of courses (both ecampus and On Campus) fulfilling the Bacc Core requirements is found at <http://catalog.oregonstate.edu/bcc.aspx>. The courses noted below are suggestions and most can double count in the NR Breadth, Core or Option. For course equivalencies from Oregon and other institutions, see <http://oregonstate.edu/admissions/transfer/transfercredit.html>. Courses in **BOLD** below are also offered through Ecampus.

FOR FULL LISTING OF COURSES SEE: <http://catalog.oregonstate.edu/bcc.aspx>.

### SKILL COURSES (15)

- ( ) Writing I (3) \_\_\_\_\_  
WR 121
- ( ) Writing II (3) \_\_\_\_\_  
WR 201, 214, 222, 224, 241, 323, 324, 327, 330
- ( ) Speech (3) \_\_\_\_\_  
COMM 111, 114, or 218 (**Not currently offered online at OSU**)
- ( ) Lifetime Fitness for Health (3) \_\_\_\_\_  
HHS 231 (2) plus either HHS 241 (1) **OR** a PAC class
- ( ) Mathematics (3-4) \_\_\_\_\_  
MTH 112, 241, 245, 251 will also fulfill the NR Core Math Requirement

### SYNTHESIS (6) *Two courses must be from different departments*

- ( ) Contemporary Global Issues (3) \_\_\_\_\_  
AREC 351, AREC352, FES 365, FW 325, GEO 300, GEO 308, PHL 443, SOC 454, SOC 480, SUS350, (Can double count in NR Core /Breadth and /or Option)
- ( ) Science, Tech & Society (3) \_\_\_\_\_  
ANTH 330, ANTH 481, ATS 320, BI/HORT 330, GEO 335, CSS/SOIL 395, FW 350, FW 360, GEO 300, GEO 306, GEO 307, HST 481, PS 476, SOC 456, SOC 481, SOC 485, FES/NE/RNG 477, WGSS 440 (Can double count in NR Core/Breadth/Option)

### WRITING INTENSIVE COURSE (WIC) (3)

- ( ) AG421, ENSC 479, FW 435, FOR 460, FES/FW 439, GEO 323, HORT 318, PS449  
(Can double count in the NR Core/Breadth/Option)

### PERSPECTIVES (27) *Only 2 courses may be used from 1 department*

#### Lab sciences (12):

- ( ) Physical Science w/lab (4) \_\_\_\_\_ Can be Fulfilled in NR Core \_\_\_\_\_
- ( ) Bio. Science w/lab (4) \_\_\_\_\_ Can be Fulfilled in NR Core \_\_\_\_\_
- ( ) Phys. or Bio. Science w/lab (4) \_\_\_\_\_ Can be Fulfilled in NR Core \_\_\_\_\_

#### One class in each of the following five areas (15):

**Suggested courses are shown below because they double-count elsewhere in your NR program, but many other courses are available! See the link above for full course listings.**

- ( ) Western Culture (3) \_\_\_\_\_  
AREC 253 (double-counts in F&W Option or NR Policy Option), PHL 201 (double-counts in NR Policy Option)
- ( ) Cultural Diversity (3) \_\_\_\_\_
- ( ) Literature & Arts (3) \_\_\_\_\_
- ( ) Social Proc. & Inst. (3) \_\_\_\_\_  
ECON 201, AREC 250 (*prerequisites for AREC 351 and AREC 352 in NR Core*)
- ( ) Difference, Power & Discrimination (3) \_\_\_\_\_  
FW 340, AG 301, or GEO 309 (double-count in NR Breadth: Res. Val/Phil.), SOC 360 (double-counts in NR Breadth: Social Issues)

# Specialty Options

(Minimum GPA 2.25 in the Option)

**ecampus** signifies that the entire Option can be completed through Ecampus online courses.

(See the Natural Resources Website for additional information about Specialty Options.)

All options must have no more than 20 credits from one department; no more than 20 lower division credits, and a minimum of 20 upper division credits

\*Baccalaureate Core Course / ^ WIC Intensive Course / **Courses in BOLD are also offered by Ecampus.**

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## Arid Land Ecology

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Students pursuing this option will develop skills and knowledge necessary to manage natural resources in the arid lands of western North America.

### Courses in Rangeland Resources (18 credits)

**RNG 341** Rangeland Ecology and Management (3)  
**RNG 352** Range Ecology II-Shrublands (3)  
**RNG 353** Wildland Plant Identification (4)  
**RNG 421** Wildland Restoration and Ecology (4)  
**RNG 442** Rangeland-Animal Relations (4)

### Courses in Animals, Plants, Soils, and Ecology (23 credits)

BOT 313 Plant Structure (4)  
BOT 321 Plant Systematics (4)  
BOT 414 Agrostology (4)  
SOIL 466 Soil Morphology and Classification (4)  
**FOR/RNG 436** Wildland Fire Science and Management (4)  
**FOR/FW/RNG 446** Wildland Fire Ecology (3)

### Additional courses required in Natural Resources Core and Breadth:

*Measurements (Core) OR Range (Breadth)*  
RNG 441 Rangeland Analysis (4)

*Environmental Assessment and Planning (Core) OR Range (Breadth)*  
**RNG 490** Rangeland Management Planning (4)

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## Ecological Restoration **ecampus**

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This option will help students understand complexities associated with restoration of terrestrial and aquatic ecosystems, and how restoration decisions involve significant interactions between ecological and social systems.

### Required Courses (29–30 credits)

**BOT 321** Plant Systematics (4)  
**SOIL 466** Soil Morphology and Classification (4)  
**or** **SOIL 366** Ecosystems of Wildland Soils (3)  
**FES/FW 445** Ecological Restoration (4)  
**GEO 423** Land Use in the American West (3)  
**CH 122** \*General Chemistry (5)  
**or** **CH 232** \*General Chemistry (4) **and** **CH 262** \*Laboratory for Chemistry 232 (1)  
**FOR/RNG 436** Wildland Fire Science and Management (4)

**or** **FOR/FW/RNG 446** Wildland Fire Ecology (3)  
**FW 479** Wetlands and Riparian Ecology (3)  
**or** **RNG 455** Riparian Ecology and Management (3)  
**BI 345** \*Introduction to Evolution (3)  
**or** **CSS/PBG 430** Plant Genetics (3)

### Social and Ethical Considerations

**Choose one course from below:**

**PHL 440** Environmental Ethics (3)  
**PHL 443** \*World Views and Environmental Values (3)  
**SOC 480** \*Environmental Sociology (4)  
**SOC 481** \*Society and Natural Resources (4)

### Ecological and Natural Resource Electives

**Choose a minimum of 8 credits:**

BOT/FES 415 Forest Insect and Disease Management (5)  
BOT 488 Environmental Physiology of Plants (3)  
**CSS/CROP 440** Weed Management (4)  
SOIL 468 Soil Landscape Analysis (4)  
**FS/FW 452** Biodiversity Conservation in Managed Forests (3)  
FOR 441 Silviculture Principles (4)  
**FW 320** Introductory Population Dynamics (4)  
**FW 321** Applied Community and Ecosystem Ecology (3)  
**FW 426** Coastal Ecology and Resource Management (5) <sup>1</sup>Hybrid Course  
**FW 451** Avian Conservation and Management (3)  
FW 454 \*Fishery Biology (4)  
**FW 456** Limnology (5)  
**FW 458** Mammal Conservation and Management (4)  
FW 464 Marine Conservation Biology (3)  
**FW 473** Fish Ecology (4)  
**FW 481** Wildlife Ecology (4)  
**RNG 421** Wildland Restoration and Ecology (4) <sup>2</sup>  
**BI 351** Marine Ecology (3)

<sup>1</sup> Hatfield Marine Science Center as well as either Ecampus or Corvallis Campus  
<sup>2</sup> Eastern Oregon University

### Additional courses required in Natural Resources Core and Breadth:

*Biology (Core)*  
BI211, 212, 213 (12) Principle of Biology **OR**  
BI 204,205,206(12) Introductory Biology

*General Ecology (Core)*  
BI370 Ecology (3)

*Statistics (Core)*  
ST351 Intro to Statistical Methods (4)

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## Fish and Wildlife Conservation

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This option prepares the student for a career in the broad arena of natural resource and wildlife conservation, with an emphasis on understanding of the relationship between animal species and their habitat requirements and the ability to apply this knowledge to the management of ecosystems as a means of conserving fish and wildlife.

### Required Courses (22 credits)

**FOR 111** Introduction to Forestry (3)  
**or FES 342** Forest Types of the Northwest (3)  
**FOR/FW/RNG 346** Topics in Wildland Fire (3)  
**or FOR/RNG 436** Wildland Fire Science and Management (4)  
**or FOR/FW/RNG 446** Wildland Fire Ecology (3)  
**FW 323** Management Principles of Pacific Salmon in the Northwest (3)  
**or FW 470** \*Ecology and History: Landscapes of the Columbia Basin (3)  
**or FW 360** \*Origins of Fish and Wildlife Management-Evolution, Genetics, and Ecology (3)  
**FES/FW 445** Ecological Restoration (4)  
**FW 251** Principles of Fish and Wildlife Conservation (3)  
**RNG 341** Rangeland Ecology and Management (3)  
**RNG 455** Riparian Ecology and Management (3)

### Fish and Wildlife Biology

#### Choose three of the following:

**FW 311** Ornithology (3)  
**FW 315** Ichthyology (3)  
**FW 317** Mammalogy (3)  
**FW 320** Introductory Population Dynamics (4)  
**FW 321** Applied Community and Ecosystem Ecology (3)

### Habitat Management

#### Choose two of the following:

**FW 326** Integrated Watershed Management (3)  
**FW 435** ^Wildlife in Agricultural Ecosystems (3)  
**FW 479** Wetlands and Riparian Ecology (3)

### Natural Resources Policy

#### Choose one of the following:

**PS 475** Environmental Politics and Policy (4)  
**SOC 481** \*Society and Natural Resources (4)

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## Forest Ecosystems

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This option will assist students in understanding the nature of forest ecosystems and the processes by which they function. Course work includes an understanding of the multiple resources and values associated with forest ecosystems and some of the techniques involved in managing them.

### Ecological Foundations (21 credits)

**BOT 415/FES 415** Forest Insect and Disease Management (5)  
**FES 341** Forest Ecology (3)  
**FOR/FW/RNG 346** Topics in Wildland Fire (3)  
**FOR 441** Silviculture Principles (4)  
**FES/FW 452** Biodiversity Conservation in Managed Forests (3)  
**FW 251** Principles of Fish and Wildlife Conservation (3)

### Ecology Breadth Courses (Choose at least 9 credits)

**BOT 321** Plant Systematics (4)  
**BOT 442** Plant Population Ecology (3)  
**FOR/RNG 436** Wildland Fire Science and Management (4)  
**or FOR/FW/RNG 446** Wildland Fire Ecology (3)  
**FES/FW 445** Ecological Restoration (4)  
**FES/RNG 477** \*Agroforestry (3)  
**FW 458** Mammal Conservation and Management (4)  
**RNG 351** Range Ecology I-Grasslands (3)  
**RNG 352** Range Ecology II-Shrublands (3)  
**RNG 455** Riparian Ecology and Management (3)

### Technical Electives (Choose at least 10 credits)

**BOT 425** Flora of the Pacific Northwest (3)  
**FE 208** Forest Surveying (4)  
**FE 209** Forest Photogrammetry and Remote Sensing (4)  
**FE 370** Harvesting Operations (4)  
**FOR 321** Forest Mensuration (5)  
**ST 352** Introduction to Statistical Methods (4)

### Additional Course Required in the NR Core and Breadth:

*Vegetation ID (NR Core)*  
**FES 141** Tree and Shrub Identification (3) **or**  
**FES 241** Dendrology (5)

*General Ecology (NR Core)*  
**FES240** Forest Biology (4)

*Water Science (NR Core)*  
**FE430** Watershed Processes (4)

*Natural Resource Policy (NR Core) or Forestry (NR Breadth)*  
**FOR460**^ Forest Policy (4)



*The student will develop an understanding of the interconnectedness of human behavior and natural resource issues. Includes skills and knowledge to better understand the cultural, social, and philosophical issues associated with natural resources.*

### **Ethical Issues**

**Select 6 credits from the following:**

**ANTH 110** \*Introduction to Cultural Anthropology (3)  
**BI/FS/TOX 435** \*Genes and Chemicals in Agriculture: Value and Risk (3)  
**PHL 201** \*Introduction to Philosophy (4)  
**PHL 205** \*Ethics (4)  
PHL 439 Philosophy of Nature (3)  
**PHL 440** Environmental Ethics (3)  
**PHL 443** \*World Views and Environmental Values (3)  
PHL 470 Philosophy of Science (3)

### **Management and Communication Issues**

**Select 13 credits from the following:**

**AREC 253** \*Environmental Law, Policy, and Economics (4)  
**AREC 351** \*Natural Resource Economics and Policy (3)  
**AREC 352** \*Environmental Economics and Policy (3)  
FES 351 Recreation Behavior and Management (4)  
**FES 352** Wilderness Management (3)  
**FES 355** Management for Multiple Resource Values (3)  
**FES 365** \*Issues in Natural Resources Conservation (3)  
**FOR/FW/RNG 446** Wildland Fire Ecology (3)  
**FW 251** Principles of Fish and Wildlife Conservation (3)  
**FW 326** Integrated Watershed Management (3)  
**SOC/ANS/FES/FW 485** \*Consensus and Natural Resources (3)

### **Social Issues (21 credits)**

*Required background course*

**SOC 204** \*Introduction to Sociology (3)

**Select 18 credits from the following:**

ANTH 477 Ecological Anthropology (3)  
**ANTH 481** \*Natural Resources and Community Values (3)  
**AREC 432** Environmental Law (4)  
**FW 340** \*Multicultural Perspectives in Natural Resources (3)  
**FW 350** \*Endangered Species, Society, and Sustainability (3)  
**GEO 300** \*Sustainability for the Common Good (3)  
**HST 481** \*Environmental History of the U.S. (4)  
**PS 475** Environmental Politics and Policy (4)  
**SOC 360** \*Population Trends and Policy (4)  
**SOC 454** \*Leisure and Culture (4)  
**SOC 456** \*Science and Technology in Social Context (4)  
**SOC 480** \*Environmental Sociology (4)  
**SOC 481** \*Society and Natural Resources (4)  
**WGSS 440** \*Women and Natural Resources (3)  
**WGSS 450** Ecofeminism (3)

*Some of our Natural Resources students come to OSU with a great deal of prior coursework that cannot easily be applied to our standard specialty option requirements, but is still very applicable to a natural resources degree. In addition some students may have a desire to focus on a very narrow field of study which is not available through our standard options. We encourage those students to create an Individualized Specialty Option, drawing on both their past work and OSU coursework.*

*If you are interested in creating your own specialty area, discuss this with your advisor as soon as possible. The advisor will be able to guide you in creating an option that works for you and satisfies the program requirements.*

### **Student-designed specialty options must:**

- contain at least 20 credits of upper-division courses
- consist of a minimum of 40 credits, encompassing at least three departments, with not more than 20 credits from one department
- have course work that reflects stated knowledge and skill "goals"
- not come close to "duplicating" existing majors
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## **Law Enforcement and Natural Resources**

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*The student will develop skills and knowledge necessary to practice natural resource law enforcement.*

COMM 440 Theories of Conflict and Conflict Management (3)  
**or FES 360** Collaboration and Conflict Management (3)  
**FES 251** Recreation Resource Management (4)  
**FES/FW 452** Biodiversity Conservation in Managed Forests (3)  
**FW 251** Principles of Fish and Wildlife Conservation (3)  
**FW 316** Systematics of Fishes (2)  
**FW 318** Systematics of Mammals (2)  
**FW 341** Fish and Wildlife Law Enforcement (2)  
**FW 458** Mammal Conservation and Management (4)  
**SOC 204** \*Introduction to Sociology (3)

### **Choose four of the following classes:**

**SOC 340** Deviant Behavior and Social Control (4)  
SOC 440 Juvenile Delinquency (4)  
**SOC 441** Criminology and Penology (4)  
**SOC 442** Sociology of Drug Use and Abuse (4)  
SOC 448 Law and Society (3)

**Recommended additional training (not required):** Students may consider attending an approved law enforcement training program.

### **Additional Courses required in NR Core and Breadth:**

*Vegetation ID (Core)*  
FES 141 Tree and Shrub Identification (3) OR  
FES241 Dendrology (4)

*NR Policy (Core) or Political Dimensions (Breadth)*  
FOR 492 NR Policy and Law (3)

*Forestry (Breadth)*  
FOR 441 Silviculture Principles (4)

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## Natural Resource Education

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*This option will prepare students for careers as educators within the broad field of natural resources and to help them learn to bridge the gap in knowledge that exists between experts and others. The focus is on youth or community education that occurs outside of formal school settings. Those interested in becoming K–12 teachers should explore options offered by the College of Education, including their Education Double Degree.*

### Natural Resource Base (17 credits)

**FES 251** Recreation Resource Management (4)  
**FW 251** Principles of Fish and Wildlife Conservation (3)  
**RNG 341** Rangeland Ecology and Management (3)  
**Plus** 7 additional credits from AG, FE, FOR, FS, FW, GEO or another area of natural resources.

### Education/Communication Processes (23 credits)

**FES 493** Environmental Interpretation (4)  
**SOC 450** Sociology of Education (4)  
TCE 216 \*Purpose, Structure, and Function of Education in a Democracy (3)  
TCE 219 Civil Rights and Multicultural Issues in Education (3)  
TCE 253 Learning Across the Lifespan (3)  
**WR 327** \*Technical Writing (3)  
**Plus** 3 upper-division credits in speech communication, education (see especially Teacher and Counselor Education), agriculture education, writing, or an allied communication/education field; supervised internships can be used to meet this requirement, if approved in advance.

### Additional courses required in Natural Resources Core and Breadth:

*Vegetation ID (Core)*  
FES 141 Tree and Shrub Identification (3)  
**or** **FES 241** Dendrology (5)

**Note:** Writing I, Writing II, and Speech are required by the baccalaureate core, and may not be used toward the "3 additional credits" requirement above. WR 327 must be taken in addition to Writing I, Writing II, and Speech.

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## Natural Resource Policy & Management

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*This option will prepare students for careers in the broad arena of natural resource and environmental conservation, with an emphasis on the social and political aspect of resource issues.*

### Social Science Foundation

Students must take **at least two courses** from the following. [PS and SOC are prerequisites for certain upper-division courses]

**PHL 201** \*Introduction to Philosophy (4)  
**PS 201** \*Introduction to United States Government and Politics (4)  
**PSY 201** \*General Psychology (3)  
**or** **PSY 202** \*General Psychology (3)  
**SOC 204** \*Introduction to Sociology (3)

*(NR Policy and Management Option continued...)*

### Social Sciences and Natural Resources

Students must take **at least three courses** from the following, with no more than two from any one department:

**AG 301** \*Ecosystem Science of Pacific NW Indians (3)  
**AG 421** ^Leadership Development (3)  
**ANS/FW/SOC 485** \*Consensus and Natural Resources (3)  
**COMM 321** Introduction to Communication Theory (3)  
**FOR 111** Introduction to Forestry (3)  
**FW 251** Principles of Fish and Wildlife Conservation (3)  
**FW 323** Management Principles of Pacific Salmon in the Northwest (3)  
**FW 340** \*Multicultural Perspectives in Natural Resources (3)  
**FW 470** \*Ecology and History: Landscapes of the Columbia Basin (3)  
**GEO 300** \*Sustainability for the Common Good (3)  
**SOC 360** \*Population Trends and Policy (4)  
**SOC 454** \*Leisure and Culture (4)  
**SOC 456** \*Science and Technology in Social Context (4)  
**SOC 480** \*Environmental Sociology (4)  
**SOC 481** \*Society and Natural Resources (4)

### Natural Resource Policy and Management

Students must choose **25 credits** from the list of courses below:

**AREC 253** \*Environmental Law, Policy, and Economics (4)  
**BOT 440** Field Methods in Vegetation Science (4)  
**ENSC 479** \*Environmental Case Studies (3)  
**FES 342** Forest Types of the Northwest (3)  
**FOR/FW/RNG 346** Topics in Wildland Fire (3)  
**FES 352** Wilderness Management (3)  
**FES 365** \*Issues in Natural Resources Conservation (3)  
**FOR/RNG 436** Wildland Fire Science and Management (4)  
**FES/FW 445** Ecological Restoration (4)  
**FOR/FW/RNG 446** Wildland Fire Ecology (3)  
**FW 303** Survey of Geographic Information Systems in Natural Resources (3)  
**FW 311** Ornithology (3)  
**FW 315** Ichthyology (3)  
**FW 317** Mammalogy (3)  
**FW 320** Introductory Population Dynamics (4)  
**FW 321** Applied Community and Ecosystem Ecology (3)  
**FW 325** \*Global Crises in Resource Ecology (3)  
**FW 326** Integrated Watershed Management (3)  
**FW 350** \*Endangered Species, Society, and Sustainability (3)  
**FW 427** Principles of Wildlife Diseases (4)  
**FW 435** ^Wildlife in Agricultural Ecosystems (3)  
**FW 479** Wetlands and Riparian Ecology (3)  
**GEO 301** Map and Image Interpretation (4)  
**GEO 308** \*Global Change and Earth Sciences (3)  
**GEO 365** Introduction to Geographic Information Systems (4)  
**GEO 465** Geographic Information Systems and Science (4)  
**PS 449** ^Topics in Comparative Politics (4)  
**PS 475** Environmental Politics and Policy (4)  
**RNG 455** Riparian Ecology and Management (3)  
**RNG 490** Rangeland Management Planning (4)

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## Conservation & Technology

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Students will develop the skills necessary to apply natural resources techniques and ecological concepts on the ground and to acquire the knowledge necessary to assist management within both the ecosystem and socio-political components of natural resource management.

**Note:** This option is designed for the OSU-Cascades Campus. Students utilize course work from the Cascades campus partner institution Central Oregon Community College. The option may be modified to provide appropriate transfer of courses from other community colleges with forest technology degree programs.

### Conservation Courses (3 courses, 9 credits)

**FES 365** \*Issues in Natural Resources Conservation (3)  
**FW 251** Wildlife Conservation (3)<sup>1</sup>  
**FW 325** \*Global Crises in Resource Ecology (3) (Ecampus only)  
**FW 350** \*Endangered Species, Society and Sustainability (3)

### Technology Courses (3 courses, 8-9 credits)

BI 371 ^Ecological Methods (3)  
FOR 220A Aerial Photo (3)<sup>1</sup>  
FOR 230A Map, Compass, and GPS (3)<sup>1</sup>  
FOR 230B Forest Surveying (3)<sup>1</sup>  
SOIL408 Soil Judging and/or NR 499 Field Instruments (2)  
FOR 199 Datasets in NR (3)<sup>1</sup>

### Sustainability (1 courses, 4 credits)

**SUS 350** \*Sustainable Communities (4)

### Ecology and Ecosystems

(18-19 credits from the following department or electives approved by Program Lead )

SOIL 366 Ecosystems of Wildland Soils (3)  
FOR 240B Wildlife Ecology (3)<sup>1</sup>  
**FES 342** Forest Types of the Northwest (3)  
FES/TOL 444 Ecological Aspects of Park Management (3)<sup>2</sup>  
**FES/FW 445** Ecological Restoration (4)  
**FW 311** Ornithology (3)  
**FW 317** Mammalogy (3)  
**FW 320** Introductory Population Dynamics (4)  
**FW326** Integrated Watershed (3)  
**FW 479** Wetlands and Riparian Ecology (3)  
**FW 481** Wildlife Ecology (4)  
**PS 475** Environmental Politics and Policy (4)  
**RNG 351** Range Ecology I-Grasslands (3)  
**ENSC 479** Environmental Case Studies<sup>^</sup> (3)

<sup>1</sup>COCC = Central Oregon Community College

<sup>2</sup>OSU-Cascades

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## Recreation and Tourism Management

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This option prepares students for careers managing people and natural resource areas to provide high quality recreation and tourism opportunities.

### Recreation and Tourism Management Foundation (19–20 credits)

**FES 251** Recreation Resource Management (4)  
**FES 351** Recreation Behavior and Management (4)  
**FES 356** Planning for Recreation and Tourism (4)  
**FES 422** Research Methods in Social Science (4)  
**FES 352** Wilderness Management (3)#  
or **FES 453** Nature-Based Tourism (3)#  
or **FES 493** Environmental Interpretation (4)#

# Of these three courses, the two courses not taken for this option must be taken in the Natural Resources Breadth sections (e.g., Social Issues, Resource Values/Philosophy, Political Dimensions).

### Technical/Field Skills (choose 10–11 credits)

COMM 382 Telemedia Design and Production (4)  
**CS 195** Introduction to Web Authoring (4)  
**FE 208** Forest Surveying (4)  
**FW 255** Field Sampling of Fish and Wildlife (3)  
FW 341 Fish and Wildlife Law Enforcement (2)  
**GEO 301** Map and Image Interpretation (4)  
**GEO 360** Cartography (4)  
GEO 445 Computer-Assisted Cartography (3)

### Applications in Recreation and Social Science (choose 10–11 credits)

ANTH 477 Ecological Anthropology (4)  
ANTH 480 Topics in Applied Anthropology (1–4)  
**AREC 253** \*Environmental Law, Policy, and Economics (4)  
COMM 324 Communication in Organizations (3)  
COMM 326 Intercultural Communication (3)  
**PS 475** Environmental Politics and Policy (4)  
**SOC 454** \*Leisure and Culture (4)  
**SOC 481** \*Society and Natural Resources (4)

### Additional courses required in the Natural Resources Core or Breadth:

*Social Issues, Resource Values/Philosophy OR Political Dimensions*

FES352 Wilderness Management (3) or

FES453 Nature-Based Tourism (3) or

FES493 Environmental Interpretation (4)

**(Take two of the above courses)**

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## Resource Conservation

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*This option will prepare students for careers in natural resources and conservation. It is offered on the Corvallis campus and is designed for transfer students from the Forest Technology program at Central Oregon Community College. The option may be modified to provide appropriate transfer of courses from other community colleges with forest technology academic programs.*

### Central Oregon Community College/Forest Resource Technology (20 credits)

FOR 202 Forest Entomology/Pathology (3)  
FOR 205 Silviculture and Harvesting Processes (5)  
FOR 230A Map, Compass and GPS (3)  
FOR 230B Forest Surveying (3)  
FOR 240B Wildlife Ecology (3)  
FOR 260 Conservation of Natural Resources (3)

### OSU/Natural Resources (Choose 20 credits)

SOIL 466 Soil Morphology and Classification (4)  
FE 370 Harvesting Operations (4)  
**FOR/RNG 436** Wildland Fire Science and Management (4)  
FOR 441 Silviculture Principles (4)  
**FES/FW 445** Ecological Restoration (4)  
**FOR/FW/RNG 446** Wildland Fire Ecology (3)  
FOR/FE 456 \*International Forestry (3)  
FES 433 Planning Agroforestry Projects (2)  
**FES/FW 439** ^Human Dimensions of Fisheries and Wildlife Management (3)  
**FES/FW 452** Biodiversity Conservation in Managed Forests (3)  
FES/NR/RNG 477 \*Agroforestry (3)  
FW 341 Fish and Wildlife Law Enforcement (2)

COCC course catalog online:

[http://current.cocc.edu/Degrees\\_Classes/Catalog/default.aspx](http://current.cocc.edu/Degrees_Classes/Catalog/default.aspx)

**Advising Note: To graduate from OSU student must complete a minimum of 60 credits of upper-division coursework (300-400 level classes). Students completing this option may need additional elective coursework to meet this requirement.**

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## Sustainable Agroforestry

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*The student pursuing this option will develop skills and knowledge necessary to design and manage integrated sustainable land management systems involving co-production of woody plants and agricultural plants and animals.*

### Required Courses

BOT 488 Environmental Physiology of Plants (3)  
**CH 122** \*General Chemistry (5)  
**or CH 232** General Chemistry (4) **and** CH 262 \*Laboratory for Chemistry 232 (1)  
CSS/CROP/HORT300 Crop Production in Pacific Northwest Agro ecosystems (4)  
CSS 306 Problem Solving: Soil Science Applications (1) [CSS taught at EOU La Grande campus only]  
CSS 315 ^Nutrient Management and Cycling (4)  
**or HORT 316** Plant Nutrition (4)  
**CSS 440** Weed Management (4)  
**or FES/FW 445** Ecological Restoration (4)  
FOR 441 Silviculture Principles (4)  
**or HORT 301** The Biology of Horticulture (3)  
FES 433 Planning Agroforestry Projects (2)  
FES/NR/RNG 477 \*Agroforestry (3)  
HORT 311 Plant Propagation (4)  
**RNG 442** Rangeland-Animal Relations (4)

### Choose one of the following courses:

ANS 215 Beef/Dairy Industries (3)  
ANS 216 Sheep/Swine Industries (3)  
**CROP 310** Forage Production (4)  
HORT 451 Tree Fruit Physiology and Culture (4)  
HORT 452 Berry and Grape Physiology and Culture (4)

### Additional Courses Required in Natural Resources Core and Breadth:

CSS 305 Principles of Soil Science (4) [Taught at EOU La Grande campus only] **or** SOIL 205\* Soil Science (3) and SOIL 206 Lab **or** **CSS 205** Soil Science (4)  
RNG 441 Rangeland Analysis (4)

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## Urban Forest Landscapes

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*This option will help students understand the complexities surrounding the culture and management of urban forest ecosystems. It includes an examination of the economic, social, and environmental benefits and values of trees in urban areas, and the relationship between people and trees.*

### Urban Forest Foundations (21–22 credits)

**FES/HORT 350** Urban Forestry (3) REQUIRED  
**FES/HORT 447** Arboriculture (4) REQUIRED  
**FES/FW 445** Ecological Restoration (4)  
**FES/HORT 455** Urban Forest Planning, Policy and Management (4) REQUIRED  
**HORT 226** Landscape Plant Materials I: Deciduous Hardwoods and Conifers (4)  
**HORT 318** ^Applied Ecology of Managed Ecosystems (3)  
or **HORT 316** Plant Nutrition (4)

### Social/Political/Community Integration (20–21 credits)

**ANS/FW/SOC 485** \*Consensus and Natural Resources (3)  
**ANTH 481** \*Natural Resources and Community Values (3)  
**FS 492** Ecosystem Services Ecology, Sociology, Policy (3)  
**SOC 481** \*Society and Natural Resources (4)  
**FOR 462** Natural Resource Policy and Law (3)  
or **PS 475** Environmental Politics and Policy (4)  
**GEO 423** Land Use in the American West (3)  
or **FW 435** ^Wildlife in Agricultural Ecosystems (3)

**Note: Students in this option must complete FES/HORT350, FES/HORT447 and FES/HORT455 or transfer course approved by the Natural Resources Program Director.**

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## Watershed Management

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*Students will obtain skills and knowledge about natural water systems and water quality, specifically management of surface water in forest and rangeland ecosystems.*

**CH 122** \*General Chemistry (5)  
or **CH 232** \*General Chemistry (4) and **CH 262** \*Laboratory for Chemistry 232 (1)  
**SOIL 466** Soil Morphology and Classification (4)  
**FE 208** Forest Surveying (4)  
**FW 315** Ichthyology (3)  
and **FW 316** Systematics of Fishes (2)  
or just **GEO 487** Hydrogeology (4)  
**FW 456** Limnology (5)  
**MTH 251** \*Differential Calculus (4)  
**MTH 252** Integral Calculus (4)  
**PH 201** PH 202. \*General Physics (5,5)  
**RNG 455** Riparian Ecology and Management (3)  
or **FW 479** Wetlands and Riparian Ecology (3)

### Additional Courses Required in Natural Resources Core and Breadth:

**CSS 305** Principles of Soil Science (4) [Taught at EOU La Grande campus only] or **SOIL 205** \*Soil Science (3) and **SOIL 206** (1) or **CSS 205** Soil Science (4)  
**FE 430** Watershed Processes (4)  
**GEO 102** \*The Surface of the Earth (4)  
**RNG 355** Desert Watershed Management (3)

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## Wildland Fire Ecology

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*This option will help students understand the nature of fire in wildland ecosystems. It includes an understanding of the dynamics of fire behavior and post fire response.*

### Foundations in Wildland Fire and Recovery (21 Credits)

**FOR/FW/RNG 346** Topics in Wildland Fire (3)  
**FOR/RNG 436** Wildland Fire Science and Management (4)  
**FOR 441** Silviculture Principles (4)  
**FOR/FW/RNG 446** Wildland Fire Ecology (3)  
**FES 454** Managing at the Wildland-Urban Interface (3)  
**FES/FW 445** Ecological Restoration (4)  
or **RNG 421** Wildland Restoration and Ecology (4)

### Ecological and Natural Resource Electives (Choose 19 credits)

**BOT/FES 415** Forest Insect and Disease Management (5)  
**BOT 442** Plant Population Ecology (3)  
**CSS/CROP 440** Weed Management (4)  
**SOIL 466** Soil Morphology and Classification (4)  
**SOIL 468** Soil Landscape Analysis (4)  
**FES 342** Forest Types of the Northwest (3)  
**FES/FW 452** Biodiversity Conservation in Managed Forests (3)  
**FW 458** Mammal Conservation and Management (4)

### Additional courses required in Natural Resources Core and Breadth

**CSS 305** Principles of Soil Science (4) [Taught at EOU La Grande campus only] or **SOIL 205** \*Soil Science (3) and **SOIL 206** Lab or **CSS 205** Soil Science (4)

## CHOOSING A SPECIALTY OPTION

A 40+ credit Specialty Option is required for the B.S. in Natural Resources. Some students come into the program already knowing which option they want to pursue, others take a few terms for exploring and finding out where their interests lie.

However, you will need to officially declare the option in order for its checklist to appear in MyDegrees. You should declare your Option no later than 3 terms before you plan to graduate. Talk to your Academic Advisor about your goals and for assistance with declaring the Specialty Option.

### Arid Land Ecology

#### **Goal of Specialty Option:**

- To develop skills and knowledge necessary to manage natural resources in the arid lands of Western North America.

#### **Knowledge Gained:**

- An understanding of ecological principles and relationships.
- Insight into functions of arid land ecosystems.
- Means to manage arid land ecosystems in a sustainable fashion.

#### **Skills Learned:**

- Ability to communicate with users of arid ecosystems.
- Ability to analyze and solve natural resource problems of arid lands.
- Ability to develop resource management plans which integrate plant ecology, climatology, geology, grazing, and land restoration practices, with societal concerns and conflict resolution approaches.

#### **Employment Opportunities:**

- Curriculum prepares students to work for state, federal, and private organizations.
- Students meet requirements for federal positions of General Biological Science and Natural Resource Specialist.
- Students may qualify as a Range Management Specialist, Soil Conservationist, or Natural Resource Specialist with the federal.

### Ecological Restoration

#### **Goal of Specialty Option:**

- To help students understand complexities associated with restoration of terrestrial and aquatic ecosystems, and how restoration decisions involve significant interactions between ecological and social systems.

#### **Knowledge Gained:**

- An understanding of components and processes associated with terrestrial and aquatic ecosystems.
- An ability to understand the nature of conservation and recovery associated with management of terrestrial and aquatic ecosystems.

#### **Skills Learned:**

- Students will learn to identify, describe and discuss major components of terrestrial and aquatic ecosystem that provide insights to restoration challenges. Included will be knowledge on how ecosystems respond to disturbance and how they recover.
- Students will learn to design and implement management plans that foster the repair and recovery of ecological function in degraded wild land ecosystems.

#### **Employment Opportunities:**

- Prepares students to work for state, federal, and private organizations and agencies that manage for ecological restoration of degraded wild land ecosystems.
- With wise use of electives, students in this specialty could qualify for at least the following federal job categories (GS-5): General Biological Science, Agricultural Extension, Ecology (with some additional math and physical sciences), Soil Conservation.

- Graduates will also be prepared for involvement with research, graduate school opportunities, and the development and evaluation of public policy.

## **Fish and Wildlife Conservation**

### **Goal of Specialty Option:**

- To prepare the student for a career in the broad arena of natural resource and wildlife conservation, with an emphasis on understanding of the relationship between animal species and their habitat requirements and the ability to apply this knowledge to the management of ecosystems as a means of conserving fish and wildlife.

### **Knowledge Gained:**

- Background in basic biological, physical and social sciences which underlie sound management and conservation of the nation's natural resources, with emphasis on fish and wildlife.
- Understanding of how humans have impacted the environment and the implications of these impacts for current and future management of fish and wildlife species and their habitats.
- Understanding of ecological, social, and political principles, relationships and perspectives relevant to the conservation of fish and wildlife resources.

### **Skills Learned:**

- Ability to integrate biological, physical, social, and political aspects of natural resources with the conservation of these resources in ecosystems that provide habitat for fish and wildlife species.
- Ability to apply management principles to the effective interaction of scientific and social components of natural resource conservation approaches especially as these pertain to fish and wildlife.
- Ability to communicate clearly and to work cooperatively with others, especially within the context of fish and wildlife resource management on public and private lands.

### **Employment Opportunities:**

- The emphasis on biological and ecological components of natural resource conservation and management will qualify graduates for employment positions with public agencies at municipal, state and federal levels.
- Graduates will also be qualified to work with environmental and natural history educational groups.
- With proper selection of elective courses, curriculum may meet minimum qualifications for US government positions in the following series: general biological science, ecology, wildlife refuge management, fish and wildlife administration.

## **Forest Ecosystems**

### **Goal of Specialty Option:**

- To help students understand the nature of forest ecosystems and the processes by which they function. Includes an understanding of the multiple resources and values associated with forest ecosystems and some of the techniques involved in managing them.

### **Knowledge Gained:**

- An understanding of important components and processes that occur in forested ecosystems.
- An understanding of why and how humans manage forest ecosystems to accomplish a variety of important objectives.
- An understanding of how knowledge of forest ecosystems and associated management techniques are reflected in and affected by forest policy.
- An understanding of some impacts of human activities on forest ecosystems.

### **Skills Learned:**

- Students will learn to identify, describe, and discuss the importance of the major components and processes that occur in forested ecosystems. Included will be knowledge of how forest systems respond to human and other natural disturbances.
- Students will learn to interpret, assess, and implement management plans that maintain the ecological integrity of forest ecosystems.

**Employment Opportunities:**

- Prepares students to work for state, federal, and private organizations and agencies that manage forest ecosystems.
- With wise use of electives, students in this specialty could qualify for at least the following federal job categories (GS-5): General Biological Science, Agricultural Extension, Ecology (with some additional math and physical sciences), Soil Conservation, General Fish and Wildlife Administration, and Forestry.
- Graduates will also be prepared for involvement with forest research and the development and evaluation of public forest policy.

## Human Dimensions in Natural Resources

**Goal of Specialty Option:**

- To develop an understanding of the interconnectedness of human behavior and natural resource issues. Includes skills and knowledge to better understand the cultural, social, and philosophical issues associated with natural resources.

**Knowledge Gained:**

- An understanding of the diversity of human values and their impact on natural resources.
- An understanding of the complex social and cultural systems associated with natural resources management.

**Skills Learned:**

- Students will learn communication skills, especially as they relate to natural resource conflicts.
- Ability to apply social, cultural and political principles to natural resource issues.

**Employment Opportunities:**

- An in-depth understanding of the human dimensions of natural resources provides students important social and communication skills to work for state, federal, and private organizations.

## Law Enforcement and Natural Resources

**Goal of Specialty Option:**

- To develop skills and knowledge necessary to practice natural resource law enforcement.

**Knowledge Gained:**

- An understanding of fish and wildlife species as they relate to enforcement of fish and game regulations.
- An understanding of recreational use of natural resources.
- An understanding of social deviance and underlying factors causing people to break laws.

**Skills Learned:**

- Ability to communicate to the public knowledge about natural resources.
- Ability to make public contacts in an informed, unbiased, and fair fashion.

**Employment Opportunities:**

- Graduates are prepared to practice law enforcement in public natural resource agencies.
- The courses outlined provide background for employment as a ranger, game warden, or police officer in the context of social control of natural resource use.

## Natural Resource Education

**Goal of Specialty Option:**

- To prepare students for careers as educators within the broad field of natural resources and to help them learn to bridge the gap in knowledge that exists between experts and others. The focus is on youth or community education that occurs outside of formal school settings. Those interested in becoming K-12 teachers should explore options offered by the College of Education, including their dual degree option.



**Knowledge Gained:**

- Students in this specialty will learn to translate their knowledge of natural resources into sound educational programs.

**Coursework will emphasize:**

- a fundamental understanding of the ecology and management of land-based natural resources.
- a fundamental understanding of the analysis, design, development, and implementation of sound educational programs.

**Skills Learned:**

- Students will learn to speak and write clearly about natural resource issues, concepts, and techniques.
- Students will learn to use existing curricula and materials to teach a variety of audiences (youth through adult, professional through novice) about issues, concepts, and techniques in natural resources.
- Students will learn to analyze, design, develop, implement, and evaluate educational materials and curricula in natural resources (e.g., interpretive displays, classroom lesson plans, audio-visual programs, field tours, information campaigns)

**Employment Opportunities:**

- Graduates might become interpreters, curriculum designers, public affairs specialists, public relation specialists, environmental educators, etc. in public agencies, private industry, or non-profit organizations

*This specialty will not qualify graduates to become certified classroom teachers in Oregon.*

## **Natural Resource Policy and Management**

**Goal of Specialty Option:**

- To prepare students for careers in the broad arena of natural resource and environmental conservation, with an emphasis on the social and political aspects of resource issues.

**Knowledge Gained:**

- Background in basic biological, physical and social sciences which underlie sound management and conservation of natural resources.
- Understanding of why and how humans have impacted the environment and the implications of these impacts historically, currently and for the future.
- Understanding of ecological, social, and political principles, relationships and perspectives relevant to the conservation of natural resources.

**Skills Learned:**

- Ability to integrate biological, social, and political aspects of natural resources with the conservation of these resources.
- Ability to apply knowledge of resource policy, law and planning to the scientific and social components of natural resource conservation approaches.
- Ability to communicate clearly and work cooperatively with others, especially within the context of public involvement processes involving resource management on public lands.

**Employment Opportunities:**

- The emphasis on social and political components of natural resource management combined with the scientific and management knowledge will qualify graduates for positions involving community-based conservation initiatives such as watershed councils, local land-use planning groups, and NGO's.
- Graduates will also be qualified to work with environmental and natural history educational groups.
- With proper selection of elective courses, curriculum may meet minimum qualifications for the US government positions in the following series: general biological science, park ranger, and agricultural extension.

## Recreation and Tourism Management

### **Goal of Specialty Option:**

- Prepare students for careers managing people and natural resource areas to provide high quality recreation and tourism opportunities.

### **Knowledge Gained:**

- Foundation in social, biological, and physical sciences related to recreation and tourism management.
- Expertise in human use of natural ecosystems for recreation and tourism.
- Application of management principles to help the public enjoy high quality recreation and tourism experiences while protecting natural resource systems.

### **Skills Learned:**

- Plan and manage recreation and tourism resources by evaluating social, managerial, biological, and physical impacts; implementing methods and models for including public participation and communication; and developing management strategies and plans.
- Know and apply current laws, policies, regulations, and conventions that govern recreation and tourism management in Oregon, the United States, and other countries.
- Work effectively and ethically with individuals and groups to promote understanding within and between groups, organizations, and cultures to help resolve recreation and tourism management issues.
- Incorporate qualitative, quantitative, spatial and temporal information to develop recreation and tourism management policies and plans, and systematically evaluate them including short-term and long-term implications.
- Use a variety of oral, written, and technological methods to communicate professionally, build consensus, and resolve conflicts among diverse members of the general public and recreation, tourism, and resource professionals.

### **Employment Opportunities:**

- Graduates find employment as managers and planners for federal land managing agencies such as the US Forest Service, National Park Service, Bureau of Land Management, and Army Corp of Engineers, or for the state, county or local parks. Others are employed as recreation or tourism consultants, private tour guides, commercial outfitters, or educators in interpretive or academic settings. Typical job titles include park ranger, naturalist, resource planner, environmental educator, wilderness manager, wildland law enforcement officer, tourism planner, and nature-based recreation or tourism specialist.

## Resource Conservation

### **Goal of Specialty Option:**

- To prepare students for careers in natural resources and conservation.

### **Knowledge Gained:**

- Background in basic biological and physical science which underlie sound management and conservation of the nation's resources.
- Understanding of why and how humans have impacted the environment and the implications of these impacts historically, currently and for the future.
- Understanding of ecological relationships and perspectives relevant to the conservation of natural resources.

### **Skills Learned:**

- Ability to integrate biological and physical aspects of natural resources to the conservation of these resources.
- Ability to apply knowledge of ecosystems and ecology to the effective interaction of scientific components of natural resource conservation approaches.
- Ability to work cooperatively with others, especially within the context of restoration of degraded ecosystems.

### **Employment Opportunities:**

- Emphasis of natural resource management combined with the foundational scientific and management knowledge acquired will qualify

graduates for positions involving community-based conservation initiatives such as watershed councils, local land-use planning groups, and NGO's.

- Graduates will also be qualified to work with environmental and natural history educational groups.
- With proper selection of elective courses, curriculum may meet minimum qualifications for the US government positions in the following series: forestry, biological sciences, and soil conservationist.

***NOTE: This option is offered on the Corvallis campus, designed for transfer students from the Forest Technology program at Central Oregon Community College. The option may be modified to provide appropriate transfer of course from other community colleges with forest technology degree programs.***

## **Sustainable Agroforestry**

### **Goal of Specialty Option:**

- To develop skills and knowledge necessary to design and manage integrated sustainable land management systems involving co-production of woody plants and agricultural plants and animals.

### **Knowledge Gained:**

- Background in basic biological, physical, and social sciences which underlie agroforestry systems.
- Understanding of ecological, social, and economic principles and relationships relevant to natural resource management.
- Insight into structure and function of sustainable agro-ecosystems.

### **Skills Learned:**

- Ability to integrate social, biological and economic aspects of natural resource management.
- Ability to design, manage and evaluate agroforestry systems for the temperate zone.
- Ability to communicate clearly and to work cooperatively with others.

### **Employment Opportunities:**

- Curriculum prepares students to work for public land management agencies, environmental consulting firms, and environmental groups.
- Meets minimum qualifications for US governmental positions as General Biological Science, Ecologist, and Natural Resource Specialist.
- International orientation of the curriculum should make students with appropriate language skills employable by Peace Corps and other governmental and private international development groups.

## **Urban Forest Landscapes**

### **Goal of Specialty Option:**

- To help students understand the complexities surrounding the culture and management of urban forest ecosystems. Includes an examination of the economic, social, and environmental benefits and values of trees in urban areas, and the relationship between people and trees.

### **Knowledge Gained:**

- An understanding of people-plant interactions in managing urban landscapes.
- An understanding of forestry and horticultural principles as they relate to care of urban forest landscapes.
- An understanding of important economic, social, political, and environmental components and processes that occur in management of urban ecosystems.
- An understanding of methods necessary for successfully planning and managing urban forest ecosystems, balancing urban natural resource values and needs, and resolving conflicts.

### **Skills Learned:**

- Students will learn to identify, describe and discuss the importance of the major components and processes that relate to the creation of sustainable urban ecosystems.

- Students will learn to interpret, assess and implement management plans that maintain the ecological integrity of urban landscapes.

**Employment Opportunities:**

- Prepare students to work for local, state and regional governments involved in land use planning, urban natural resource management, urban forestry, and natural area restoration and management.
- Prepare students to work with private and non-profit organizations that deal with management of urban natural resources.

**Watershed Management**

**Goal of Specialty Option:**

- To help students obtain skills and knowledge about natural water systems and water quality, specifically management of surface water in forest and rangeland ecosystems.

**Knowledge Gained:**

- An understanding of the chemical, physical, and biological components of water.
- An understanding of the factors that affect water quality and watershed function and the reasons why these are affected.
- An understanding of the management of the interactions between aquatic and terrestrial systems.

**Skills Learned:**

- The ability to manage a watershed by looking at all components of the system.
- The ability to analyze data and be able to come to conclusions and make management decisions.
- The ability to communicate clearly and to work cooperatively with others.

**Employment Opportunities:**

- Prepares students to work for federal government agencies such as the National Forest Service, Fish and Wildlife, Natural Resources Conservation Service, and the Bureau of Land Management.
- Prepares students to work for state and local government agencies such as the Department of Environmental Quality, wastewater treatment plants, and city watersheds.
- Prepares students to work for private industries such as environmental consulting firms, logging companies, and others.
- Prepares students for graduate work.

**Wildland Fire Ecology**

**Goal of Specialty Option:**

- To help students understand the nature of fire in wildland ecosystems. Includes an understanding of the dynamics of fire behavior and post fire response.

**Knowledge Gained:**

- An understanding of important components and processes associated with wildland fire.
- An understanding of recovery process associated with the post-fire environment.

**Skills Learned:**

- Students will learn to, describe the importance of the major components and processes associated with fire in wildland ecosystems. Included will be knowledge on how ecosystems respond to fire and how they recover.
- Students will learn to implement management plans that maintain the ecological integrity of wildland ecosystems.

**Employment Opportunities:**

- Prepares students to work for state, federal, and private organizations and agencies that manage fire in wildland ecosystems.
- With wise use of electives, students in this specialty could qualify for at least the following federal job categories (GS-5): General Biological Science, Ecology (with some additional math and physical sciences), and Soil Conservation.
- Graduates will also be prepared for involvement with research, graduate school opportunities, and the development and evaluation of public forest policy.