2016-2017

Student Advising Guide

Oregon State University

Natural Resources Program

College of Forestry

Department of Forest Ecosystems and Society

DISCLAIMER: Content in this guide is continually updated and is a useful planning tool. However, departments may change their course offerings and schedules without notice. For that reason students should check the web catalog frequently for the most current course information.

http://catalog.oregonstate.edu

Please help keep this guide up to date by reporting any broken links or information that has changed to:
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Revised 2.1.2017

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 unless they choose to change their catalog year. They should obtain a copy of the old curriculum from their academic advisor and discuss how newer courses may be used to meet those requirements.

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Welcome to the Natural Resources Program at OSU

Maintaining the integrity of the Earth's ecosystems is a key challenge of the 21st century. Increasing human population continues to place greater demands on our limited 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 ecological restoration, fish and wildlife conservation, 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, working with non-profit conservation groups, managing lands for private entities, attending law school, training/working as teachers in K-12 education, and pursing graduate degrees in a variety of disciplines.

Curriculum Overview

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 and Associate of Arts Oregon Transfer degree students except for two "Synthesis" courses.
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 Option - Focused areas of study that will tailor your degree to your career interests and goals. Minimum GPA for this block is 2.25.

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 Natural Resources 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/

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.

Minimum GPA met for each block in the major – 2.0 for the NR Core and Breadth, 2.25 for the option. A cumulative OSU GPA of 2.0 is required for graduation.

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 to Watch -

180 – The number of quarter credits necessary to graduate from OSU.
60 - Minimum 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 must be earned at OSU OR you must have at least 150 credits from OSU (Academic Residency Requirement.

Natural Resource Undergraduate Program Learning 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:

Describe ecological processes, including human impacts that influence ecosystem change, natural succession and the future sustainability of natural resources.	**Coursework that Meets Outcome**: General Ecology (NR Core) Earth Science (NR Core) Atmospheric Science (NR Core) Water Science (NR Core) Soil Science (NR Core) Chemistry (NR Core) GIS Category of NR Core NR Breadth Course Selections NR Option Courses
Characterize natural resources and be able to quantify at least one of these resources.	**Coursework that Meets Outcome**: Earth Science (NR Core) Water Science (NR Core) Vegetation ID (NR Core) Animal ID (NR Core) Soil Science (NR Core) Measurements (NR Core) Students may select option courses that meet this outcome

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**: Environmental Assessment and Planning (NR Core) NR Breadth Course Selections NR Option Courses
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:** Natural Resource Policy (NR Core) Resource Economics Category (NR Core) Natural Resource Decision Making (NR Core) Environmental Assessment and Planning (NR Core) Political Dimensions (NR Breadth)
Communicate effectively, orally and in writing, with audiences of diverse backgrounds.	**Coursework that Meets Outcome:** Baccalaureate Courses in: -Writing I and II -Speech -Writing Intensive Course -Cultural Diversity -Difference, Power, and Discrimination Natural Resource Decision Making (Capstone) Communications (NR Core)
Work effectively with, and within, interdisciplinary and diverse groups to resolve management problems and achieve management objectives.	**Coursework that Meets Outcome:** Cultural Diversity (Baccalaureate Core) Difference, Power, and Discrimination (Baccalaureate Core) Natural Resource Decision Making (Capstone) Environmental Assessment and Planning (NR Core) Communications (NR Core)

Academic Advising

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 should contact their Advisor (via email or a phone/WebEx appointment) prior to the term registration period. They should provide a written plan for courses that they plan to register for and what requirement they intend to fulfill. Include at least two alternative courses in case you are unable to register for your first choices. The Advisor will approve the course plan and provide the term registration PIN#.

- 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. Appointments are available by phone and web conferencing and in the advising office. Advisors may vary in the type of advising appointments they offer.
- Keep your local address and phone up-to-date in Student Online Services profile and regularly checking your ONID account.
- Use only your ONID email (@oregonstate.edu) account to correspond with your advisor and include your student ID# in correspondence.
- Cancel appointments through the online appointment system when you are unable to make them.
- 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.

Familiarize yourself with this Student Advising Guide as it will be your primary resource for planning your academic program. A link to this Advising Guide is available in MyDegrees in the "Major" block , on the Natural Resources Program website and on the College of Forestry website under Advising>Programs and Advising Guides. 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 frequently so print a new copy at least once a year. The year in which you are admitted to the Natural Resources major will determine your "catalog year" and the requirements in effect in that year are applicable to your academic program. However, newly added course choices will be available to all students regardless of year admitted.

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 in the first block on your MyDegrees page.

You can schedule an appointment through our online appointment scheduling system. The system will prompt you to create an account the first time that you log in. You should use your ONID email address and create a unique username and password that you will remember. If you forget your password or username you can request a password reset through the online system. You will receive reminders about your appointment through email and text messaging. If you can't attend your scheduled appointment please log back into 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.

Advising Staff:

Autumn Granger
Snell 408
541-737-9135
Autumn.Granger@oregonstate.edu
To Schedule an Appointment with Autumn:
https://booknow.appointment-plus.com/6rv0qd30/appointments?&e_id=1252

McKenzie Huber
Snell 400
541-737-2873
Mckenzie.Huber@oregonstate.edu
To Schedule an Appointment with McKenzie:
https://booknow.appointment-plus.com/6rv0qd30/appointments?&e_id=1962

Terina McLachlain
Snell 408
541-207-3580
Terina.McLachlain@oregonstate.edu
To Schedule an Appointment with Terina:
https://booknow.appointment-plus.com/6rv0qd30/appointments?&e_id=11

Teri Morris
Snell 406
541-737-1179
Teri.Morris@oregonstate.edu
To Schedule an Appointment with Teri:
https://booknow.appointment-plus.com/6rv0qd30/appointments?&e_id=1961

Baccalaureate Core

The Baccalaureate Core is an OSU requirement for all majors. Post-Baccalaureate and Associate of Arts Oregon Transfer degree students need only complete the Synthesis and Writing Intensive Course requirements. Students must complete course work in four areas: Skills, Synthesis, Perspectives and a Writing Intensive Course.

Your First 45 hours of OSU generated credits:

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.

It is highly recommended that you complete your Natural Resources requirements for math*, statistics, chemistry, 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 your math skills up to speed. There are many sites available but one of the best is the Kahn Academy (www.kahnacademy.org.) Contact your advisor for an up to date list of tutorials and refresher courses.*

Do I need to take the ALEKS Math Placement Test?

- All first-year students must take the ALEKS Math Placement Test.
- All transfer and post-baccalaureate students newly admitted to OSU must take the ALEKS Math Placement Test, unless you have earned a C- or better in a college-level course from another college or university; or via a CLEP exam, AP exam, or IB exam.
- If it has been more than a year since your last math class, taking the ALEKS Math Placement Test is strongly recommended--the Learning Module, an individualized tutorial, will provide a good refresher for your next course.

ALEKS Math Placement Test: http://www.math.oregonstate.edu/mlc-placement-home

If a course has been approved for the Baccalaureate Core an asterisk (*) will appear by the course number. A complete list of courses (both Ecampus and On Campus) fulfilling the Bacc Core requirements is found at:

http://catalog.oregonstate.edu/BCCSOCList.aSPx?category=Skills%20Courses&check=True

SCORE	COURSE PLACEMENT
75% - 100%	*MTH 251: Differential Calculus
60% - 74%	*MTH 112: Elementary Functions *MTH 241: Calculus for the Management and Social Science *MTH 245: Mathematics for Management, Life and Social Science
46% - 59%	*MTH 105: Introduction to Contemporary Mathematics *MTH 111: College Algebra
30% - 45%	MTH 095: Intermediate Algebra MTH 103: Algebraic Reasoning
15% - 29%	MTH065: Elementary Algebra
0% - 14%	If your score was below 15%, you did not place into any OSU Mathematics Course. You can use the ALEJS Learning Modules to improve your score or consider enrolling in a community college to take the appropriate prerequisite courses.

Baccalaureate Core Requirements

Course in **BOLD** are offered through Ecampus. A complete list of Baccalaureate Core Classes can be found at: http://catalog.oregonstate.edu/bcc.aspx.

SKILL COURSES		
Writing 1	3	**WR 121**
Writing 2	3	**WR 201**, **WR 214**, **WR 222**, **WR2 24,** **WR 241**, **WR 323**, **WR 324**, **WR 327**, **WR 330**
Speech	3	COMM 111, COMM 114, **COMM 211**, COMM 218
Lifetime Fitness and Health	2	**HHS 231**
Lifetime Fitness and Health Lab	1	**HHS 241** or any PAC (Physical Activity Course)
Mathematics	4	**MTH 111 or higher**
PERSPECTIVES		
Physical Science w/lab	4	*Can be fulfilled by Earth Science requirement in the NR Core*
Biological Science w/lab	4	*Can be fulfilled by Biology requirement in the NR Core*
Phys or Bio Science w/lab	4	*Can be fulfilled by Biology requirement in the NR Core*
One class in each of the following five areas. No more than two from the same department. Suggested courses are shown because they double count in the NR Core, Breadth or Option but many courses are available. See the link above for the course catalog.		
Western Culture	3	*See the OSU Catalog for course selections.* SUGGESTED: **AEC 253** (Double counts in F&W Option or NR Policy & Management Option), **PHL 201** (double counts in the NR Policy and Management Option
Cultural Diversity	3	*See the OSU Catalog for course selections.*
Literature & Arts	3	*See the OSU Catalog for course selections.*
Social Processes & Institutions	3	*See the OSU Catalog for course selections.* SUGGESTED: **ECON 201**, **AEC 250** are prerequisites for AEC351 and AEC/ECON352 (Resource Economics Requirement). **GEOG 240** and **ANTH 110** can also count in Society and NR in the NR Core.
Difference, Power and Discrimination	3	*See the OSU Catalog for course selections.* SUGGESTED: **FW 340**, **AG 301**, or **GEO 309** (these will double count in NR Breadth>Res Values & Phil.) **SOC 360** (double counts in NR Breadth>Social Issues).
SYNTHESIS		
Contemporary Global Issues	3	*See the OSU Catalog for course selections.* SUGGESTED: **AEC351**, **AEC/ECON352**, **FES365**, **FW325**, **GEO/GEOG 300**, **GEO308**, **PHL443**, **SOC454**, **SOC480**, **SUS350**
Science, Technology & Society	3	*See the OSU Catalog for course selections.* SUGGESTED: **ANTH330**, **ANTH481**, **BI/HORT330**, **GEOG340**, **CSS/SOIL395**, **FW350**, **FW360**, **GEO/GEOG 300,** **GEO306**, **GEO307**, **HST481**, **PS475**, **SOC456**, **SOC481**, **SOC485**, **WGSS440**
WRITING INTENSIVE COURSE (WIC)^	3	**ENSC479**, **FW435**, **FOR460**, **FES/FW439**, **GEO/GEOG323**, **HORT318**, **PS449**

NATURAL RESOURCES CORE (80 credits minimum) Minimum GPA 2.0

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

*=Baccalaureate Core / ^ =WIC (Writing Intensive Course

COR= CORVALLIS CAMPUS, CAS= CASCADES CAMPUS, DSC = ECAMPUS, EOU = EASTERN OREGON UNIVERSITY

F= FALL TERM, W = WINTER TERM, SP = SPRING TERM, SU = SUMMER TERM

ANIMAL ID (CHOOSE ONE)

COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
FW 312	Systematics of Birds	2	F	SU,W SP			One yr. intro biology	
FW 316	Systematics of Fishes	3	F	SU,W SP			BI211,212,213 OR BI204/ 205/ 206, Recommend FW315	No freshmen.
FW 318	Systematics of Mammals	2	W	SU, SP	W		One yr. intro biology	No freshmen.
Z477	Aquatic Entomology	4			F		BI 211,212, 213 C0 or BI 204/5/6 C-, Lab is a Co-requisite	

ATMOSPHERIC SCIENCE (CHOOSE ONE)

COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
ATS 201* NEW!	Climate Science	4	F, SP	F, W, SP				
~~ATS 320*~~	~~The Changing Climate~~	~~3~~						NO LONGER OFFERED
GEOG 323^ (was GEO323)	Climatology	4	SP	SU, W			GEO 101 or GEO 202 or GEO 102	
SUS 103* NEW!	Intro to Climate Change	4	F,W,SP	F,W, SP				

BIOLOGY (12 CREDITS MINIMUM) COMPLETION OF FULL 200 LEVEL SERIES IS PREFERRED

COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
BI101 **and**	General Biology	4	SU, F		F			
BI 102 **and**	General Biology	4	SU, W		W			
BI 103	General Biology	4	SU, SP					
OR								
BI 204 **and**	Introduction to Biology	4		F				Restricted to Ecampus only
BI 205 **and**	Introduction to Biology	4		W			CH 121 or higher D-	Restricted to Ecampus only
BI 206	Introduction to Biology	4		SP			CH 121 or higher D-	Restricted to Ecampus only

OR								
BI 211 **and**	Principles of Biology	4	SU, F		F			
BI 212 **and**	Principles of Biology	4	SU, W		W		CH 121 or higher D-	
BI 213	Principles of Biology	4	SU, SP		SP		CH 121 or higher D-	

CHEMISTRY (CHOOSE ONE)								
COURSE NUMBER	**COURSE NAME**	**CREDIT**	**COR**	**DSC**	**CAS**	**EOU**	**PREREQUISITES**	**RESTRICTIONS**
CH 121	General Chemistry	5	F, W, SU	SU, F, W, SP			Working knowledge of HS Algebra, logarithms and scientific notations	
CH 231*	General Chemistry	4	SU, F, W	SU, F	F		Co-requisite of CH 261, Math 111 or placement test MPAL (60)	
and CH 261*	Lab for CH 231	1	SU, F, W		F		Co-requisite for CH 231	

COMMUNICATIONS (CHOOSE ONE OF THE FOLLOWNG 300-400 LEVEL COURSES)								
COURSE NUMBER	**COURSE NAME**	**CREDIT**	**COR**	**DSC**	**CAS**	**EOU**	**PREREQUISITES**	**RESTRICTIONS**
ANS/FES/FW/ SOC 485*	Consensus and Natural Resources	3	W	F,W,SP				Upper class standing
COMM 321	Introduction to Communication Theory	3	F, W, SP		W			Maj/Min rest to COMM only for W,SP term CORV, No freshmen
COMM 322 NEW!	Small Group Problem Solving	3	F,W				COMM 218	
COMM 328	Non Verbal Communication	3	SU, F, W, SP	F, W, SP				Maj/Min rest to COMM only for Spring term CORV, No Freshmen
COMM 385	Communication and Culture in Cyberspace	3		SU, F, SP				
COMM 440	Theories of Conflict and Conflict Management	3	F				COMM 321 or instructor approval	
COMM 442	Bargaining and Negotiation Processes	3	W				COMM 321 or instructor approval	
FES 493	Environmental Interpretation	4	W	F, SP				Junior/Senior Standing
FES 430 NEW!	Forest as Classroom	4		F,SP				
NR 312 NEW!	Critical Thinking for NR Challenges	3	W					Sophomore standing desirable

EARTH SCIENCE (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
GEO 101*	The Solid Earth	4	SU, F	SU, F, W, SP				
GEOG 102 (was GEO 102)	Physical Geography	4	SU, W	W, SP				
GEO 201*	Physical Geology	4	F, W		SP			
GEO 202*	Earth Systems Science	4	W					
GEO 221*	Environmental Geology	4	SP	F, W				

ENVIRONMENTAL ASSESSMENT AND PLANNING (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
ANS/FES/FW/ SOC 485	Consensus and Natural Resources	3	W	F, W, SP				Junior/Senior standing
FES/FW 445	Ecological Restoration	4	SP	SU,F, SP	SP		BI 370 or equivalent or instructor approval	
FW 435^	Wildlife in Agricultural Ecosystems	3	W	SU, F, W, SP			BI 370 and FW 251 recommended	Junior/Senior standing for COR sections
FES 456 NEW!	Planning for Sustainable Recreation	4	SP				FES 251	
FES 457 NEW!	Planning for Sustainable Tourism	4	F,SP				FES 251	
GEOG 450 (was GEO 423)	Land Use in the American West	3	F					
PS 449^	Topics in Comparative Politics	4		SU,W				
PS 477	International Environmental Politics & Policy		W	SU, F, W,SP				
RNG 421	Wildland Restoration and Ecology	4		F		W	Course work in soils and ecology. Field Trip required	
RNG 490	Rangeland Management Planning	4	W	W		SP		
SUS 304*	Sustainability Assessment	4	F	SU,W, SP	W			
SUS 350*	Sustainable Communities	4	F, W, SP	SU, F, W, SP	F			

GENERAL ECOLOGY (CHOOSE ONE)

Course number	Course name	Credit	COR	DSC	CAS	EOU	Prerequisites	Restrictions
BI 370	General Ecology	3	F, W, SP	SU, F, W, SP	W		BI 211,212,213 (C- minimum) or BI 204, 205, 206 (C-minimum)	
BOT 341	Plant Ecology	4	SP	F, SP			BI 213 required. BOT 321 recommended.	
FES 240*	Forest Biology	4	F, SP	F, SP				
FES 341	Forest Ecology	3	F	F, SP	F			

GEOGRAPHIC INFORMATION SCIENCE (CHOOSE ONE)

Course number	Course name	Credit	COR	DSC	CAS	EOU	Prerequisites	Restrictions
CROP/HORT 414	Precision Agriculture	4	SP	W				Junior standing
FE 257	GIS and Forest Engineering Applications	3	W	F				
FW 303	Survey of Geographic Information Systems	3		SU, F, W, SP				Not a lab/skills class.
GEOG 360 (was GEO 365)	Geoscience I: GI Systems and Theory	4	F,SP	F, SP				

MANAGING NATURAL RESOURCES FOR THE FUTURE

Course number	Course name	Credit	COR	DSC	CAS	EOU	Prerequisites	Restrictions
NR 201	Managing NR for the Future	3	W	SU, F, W			No prerequisites	

MATHEMATICS (CHOOSE ONE)

Course number	Course name	Credit	COR	DSC	CAS	EOU	Prerequisites	Restrictions
MTH 112*	Elementary Functions	4	SU, F, W, SP	SU, F, W, SP	W		MTH 111 C- or better or ALEKS placement test score of 60%.	
MTH 241*	Calculus for Management, Life and Social Science	4	SU, F, W, SP	SU, F, W, SP			MTH 111 C- or better or ALEKS placement test score of 60%.	
MTH 245*	Mathematics for Management, Life and Social Science	4	SU, F, W, SP	SU, F, W, SP	W		MTH 111 C- or better or ALEKS placement test score of 60%.	
MTH 251*	Differential Calculus	4	SU, F, W, SP	SU, F, W, SP			MTH 111 C- or better or ALEKS placement test score of 75%.	

MEASUREMENTS (CHOOSE ONE FROM EITHER BIOLOGICAL/PHYSICAL COURSES OR SOCIAL SCIENCE COURSES)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Biological/Physical Science Courses:								
BI 371^	Ecological Methods	4	SP		SP		BI 370	
BOT 440	Field Methods in Plant Ecology	4		SU, SP			course in ecology and course in stats	
FE 208	Forest Surveying	4	F	SP			MTH 112 or MTH241 or MTH 251 or MTH 252 with C- or better.	Restricted to COF majors
FOR 321	Forest Mensuration	5	F				FES 141 or 241 and FE 208 and FE 209 (with C or better) AND MTH 241 or MTH 245 or MTH 251 (with C or better) AND ST201 or ST351	Restricted to COF majors, no INTO or Non-Degree
FW 255	Field Sampling of Fish and Wildlife	3	SU, F, W, SP	SU, F, W, SP			WR 121.	Maj/min rest until Phase II for CORV
GEOG 452 (was GEO 451)	Sustainable Site Planning	3					GEOG 250 recommended	Not currently scheduled
NR 325 NEW!	Scientific Methods for Analyzing Natural Resource Problems	3	SP				MTH111 and NR 201 and ST201 or ST351	We will override the STATS requirement. Upper Class Standing recommended.
RNG 441	Rangeland Analysis	4	F	SP		SP	ST 351, Lecture and Lab required for CORV	No freshman or Sophomore for DSC section
OR Social Science Courses:								
FES 422	Research Methods in Social Science	4	W		SP		ST 351,CASC co-req is TOL378, CORV requires Lec/Lab	CORV restricted to No Pre-Forestry, INTO or Non-Degree

NATURAL RESOURCE DECISION MAKING (Capstone course – take in your last year)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
NR 455	Natural Resource Decision Making	4	SP,W	SU, F	W			Senior standing. Maj/min rest to COF majors only for On Campus sections

NATURAL RESOURCE POLICY (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
AEC 454*	Rural Development Economics and Policy	3	W	W			AEC/AREC 300 or AEC/AREC 311	
FOR 460^	Forest Policy	4	F, W, SP					Senior standing, Restricted to COF majors
FOR 462	Natural Resource Policy and Law	3	F					Junior/Senior standing, No INTO/Non-Degree
GEOG 340 (was GEO/SOIL 335)	Intro to Water Science and Policy	3	F, SP	SU, F, W,SP	F			
PS 475	Environmental Politics and Policy	4	F	Su, F, W, SP	SP			
PS 477	International Environmental Politics & Policy	4	F	SU, F, W, SP				

RESOURCE ECONOMICS (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
AEC 351*	Natural Resources Economics & Policy	3	W	SU, F, SP			AEC 250 or ECON 201 AND MTH 111	
AEC/ECON 352*	Environmental Economics and Policy	3	F, SP	F, SP	W		AEC 250 or ECON 201	
AEC 454*	Rural Development Economics and Policy	3	W	W			AEC/AREC 300 or AEC/AREC 311	
FOR 330	Forest Resource Economics I	4	W				AEC 250 or ECON 201 AND MTH241 or MTH245 or MTH251 or MTH252	Restricted to COF majors only

SOCIETY AND NATURAL RESOURCES (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
ANTH 110*	Introduction to Anthropology	3	F, W, SP	SU, F, W, SP				
FES 251	Recreation Resource Management	4	F	SP				
FES 354 NEW!	Communities, Natural Areas and Tourism	3	W					
FES 355	Management for Multiple Resource Values	3		F, SP				
GEOG 240* (was GEO 204)	Climate Change, Water and Society	3		SP				

SOIL SCIENCE (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
CSS 205*	Soil Science	4		SU, F, W, SP				
CSS 305	Principles of Soil Science	4				F	Two quarters college chemistry or equivalent. CSS 306 recommended co-requisite	
SOIL 205*	Soil Science	3	SU, F, W, SP				Co-requisite SOIL 206 or FOR 206	
and FOR 206	Forest Soils Lab for SOIL 205	1	SP				Co-requisite SOIL 205	
or SOIL 206*	Soil Science Lab for SOIL 205	1	SU, F, W, SP				Co-requisite SOIL 205	

STATISTICS (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
ST 201	Principles of Statistics	4	SU, F, W, SP	SU, F, W, SP			High school algebra	
ST 351	Intro to Statistical Methods	4	SU, F, W, SP	SU, F, W, SP	SU,F		High school algebra with statistics	

VEGETATION ID (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
BOT 321	Plant Systematics	4	SP				BI 213	
BOT 414	Agroforestry	4	W				BOT 321	
BOT 425	Flora of the Pacific Northwest	3	SP				BOT 321 or equivalent	
FES 241	Dendrology	3	F, SP	SP				
HORT 226	Landscape Plant Materials I: Deciduous & Coniferous	4	F	F				
HORT 228	Landscape Plant Materials II: Shrubs	4	SP	SP				
RNG 353	Wildland Plant Identification	4	F	SU		SP		

WATER SCIENCE (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
FE 430	Watershed Processes	4		F				Junior/Senior Standing
FW 326	Integrated Watershed Management	3		F, W, SP			FW 251	
OC 201*	Oceanography	4	F, W	SP				
OC 332	Coastal Oceanography	3	W				Offered at Hatfield Marine Science Center	No freshmen
RNG 355	Desert Watershed Management	3	F	W	W	W		

Note: Particular option programs may specify additional core courses to assure that students meet prerequisites for option courses or develop the background in career fields applicable to the option. Students should not assume that the core courses listed above include all of the necessary background in science or math for every option.

NATURAL RESOURCES BREADTH (21 credits minimum) Minimum GPA 2.0

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

*=Baccalaureate Core / ^ =WIC (Writing Intensive Course

COR= CORVALLIS CAMPUS, CAS= CASCADES CAMPUS, DSC = ECAMPUS, EOU = EASTERN OREGON UNIVERSITY

F= FALL TERM, W = WINTER TERM, SP = SPRING TERM, SU = SUMMER TERM

FISHERIES AND WILDLIFE (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
FES 440	Wildland Fire Ecology	3	W	W,SP	W		Coursework in ecology and NR Mgmt	Junior or Senior Standing.
FES/FW 445	Ecological Restoration	4	SP	SU, F, SP	SP		BI 370 or equivalent or instructor approval	
FES/FW 452	Biodiversity Conservation in Managed Forests	3	SP	F			FES 240 or FES 341 or BI 370	No Freshmen or Sophomore
FOR 346	Topics in Wildland Fire	3	SP	F, SP			Coursework in forest bio or ecology such as FES 240 or FES 341	No INTO/Non-Degree
~~FOR 446~~	~~Wildland Fire Ecology~~	~~3~~	~~W~~	~~W, SP~~	~~W~~	-	~~Coursework in ecology and NR mgmt.~~	This course is being replaced by FES 440
FW 311	Ornithology	3	SP	SU, F, W, SP			One yr. intro biology	No freshman on CORV
FW 315	Ichthyology	3	F	SU, W, SP			One yr. intro biology	CORV = No Freshman, Restricted to ZOO/FW majors during Phase I registration
FW 317	Mammalogy	3	W	SU, F, W, SP	SP		One yr. intro biology	CORV = Restricted to ZOO/FW majors during Phase I
FW 320	Introductory Population Dynamics	4	W	SU, F, W, SP			BI 370 or BI 371 and recommend MTH245 or higher, introductory statisticss	
FW 321	Applied Community and Ecosystem Ecology	3	SP	F, W, SP			FW 320	CORV = No Freshman, Restricted to ZOO/FW majors during Phase I registration
FW 323	Management Principles of Pacific Salmon in the NW	3		SU, F, W, SP	F			
FW 350*	Endangered Species, Society and Sustainability	3	SP	SU, F, W, SP	W		FW 251	
FW 426	Coastal Ecology and Resource Management	5	F (HMSC)	F (hybrid)				No fresh or sophomore. Taught at HMSC and hybrid

FW 427	Principles of Wildlife Disease	4		SU, SP				Junior standing or instructor approval
FW 435^	Wildlife in Agricultural Ecosystems	3	W	SU, F, W, SP			BI 370 and FW 251	
FW 451	Avian Conservation and Management	3		F, W			FW 311 or equiv coursework	
FW 454^	Fishery Biology	4	F	W			FW 315 and FW 320	Taught at Hatfield Marine Science center or via Ecampus
FW 458	Mammal Conservation and Management	4	SP	F, W			9 credits Upper Division Bio Science	CORV = Phase I restricted to FW majors. Phase II available for NR.
FW 465	Marine Fisheries	4	F				FW 315 or equivalent	Offered Fall term in odd years, Broadcast from HMSC to NASH
FW 473	Fish Ecology	4	W	SP			BI 370 and FW 315	
FW 481	Wildlife Ecology	4		SU, SP	W		BI 370 or BI 371 or equivalent	CORV = Senior standing
NR 325 NEW!	Scientific Methods for Analyzing Natural Resource Problems	3	SP				MTH111 and NR 201 and ST201 or ST351	We will override the STATS requirement. Upper Class Standing recommended.

FORESTRY (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
FES 412	Forest Entomology	3					BI 204 or BI 211 or BI 212 or equivalent	(coming soon) FES 412 and FOR 413 will replace BOT/FES 415
FOR 413	Forest Pathology	3	W				BI 204 or BI 212 or BI 213 and/ or equivalent	FES 412 and FOR 413 will replace BOT/FES 415
~~BOT/FES 415~~	~~Forest Insect and Disease Management~~	~~5~~	~~W~~	-	-	-	~~BI 213~~	Replaced by FES 412 and FOR 413 above
FE 370	Harvesting Operations	4	F					No Freshman or Sophomore. COF majors only
FE/FOR 456*	International Forestry	3	SP				Introductory biology course	No Freshmen or Sophomore
FES 341	Forest Ecology	3	F	F, SP	F			COF majors
FES 342	Forest Types of the Northwest	3		W				

FES/HORT 350	Urban Forestry	3		F, W			Foundational forestry and horticulture courses recommended	
FES/FW 445	Ecological Restoration	4	SP	SU,F, SP	SP		BI 370 or equivalent or instructor approval	
FES/FW 452	Biodiversity Conservation in Managed Forests	3	SP	F			FES 240 or FES 341 or BI 370	No Freshman or Sophomore
FES/NR/RNG 477/577*	Agroforestry	3	W				Basic Ecology course	
FOR 346	Topics in Wildland Fire	3	SP	F, SP			Course work in forest biology or ecology	
FOR 436	Wildland Fire Science and Management	4	SP	W, SP				Restricted to COF majors. No INTO/Non-Degree
FOR 441	Silviculture Principals	4	SP				(FES 240 or FOR 240) AND (FES 141 or FES 241)	Restricted to COF majors. No INTO/Non-Degree
FOR 460^	Forest Policy	4	F, W, SP					Senior Standing
NR 325 NEW!	Scientific Methods for Analyzing Natural Resource Problems	3	SP				MTH111 and NR 201 and ST201 or ST351	We will override the STATS requirement. Upper Class Standing recommended.
WSE 470*	Forest, Wood and Civilization	3		SP				

LAND AND WATER (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
FE 430	Watershed Processes	4	SP	F				Junior/Senior Standing.
FW 456	Limnology	5	SP	W, SP				Senior standing
FW 479	Wetlands and Riparian Ecology	3		SU, F, W, SP			BI 370 or BI 371	
GEO 306*	Minerals, Energy, Water and the Environment	3	SP	SU, F, W	W			
GEO 307*	National Park Geology and Preservation	3	F	SU, SP				
GEO 308*	Global Change and Earth Sciences	3	W, SU	SU, F, W,SP				

GEOG 340 (was GEO/SOIL 335)	Introduction to Water Science and Policy	3	SU, SP, F	SU, F, W, SP	F	-		
GEOG 441 (was GEO 424)	International Water Resource Management	3	W				9 credits U.D. geography and any course dealing with the hydrolic cycle.	
GEOG 440 (was GEO 425)	Water Resources Management in the U.S.	3	SP				9 credits U.D. geography and any course dealing with the hydrolic cycle.	
HORT 318^ NEW!	Applied Ecology of Managed Ecosystems	3	W	F, SP				CORV restricted to CSS and HORT majors in Phase I
RNG 355	Desert Watershed Management	3	F	W	W	W		
NR 325 NEW!	Scientific Methods for Analyzing Natural Resource Problems	3	SP				MTH111 and NR 201 and ST201 or ST351	We will override the STATS requirement. Upper Class Standing recommended.
RNG 455	Riparian Ecology and Management	3		SP			RNG 355	
SOIL 395*	World Soil Resources	3		F, W,SP			CH 121 or equivalent	
SOIL 466	Soil Morphology and Classification	4	SP			SP	SOIL 205 or CSS 205/305	

POLITICAL DIMENSIONS (CHOOSE ONE)

Course Number	Course Name	Credit	COR	DSC	CAS	EOU	Prerequisites	Restrictions
AEC 432	Environmental Law	4	SP	SP				Junior/Senior standing
ANS/FES/ FW/SOC 485*	Consensus and Natural Resources	3	w	F,W, SP				
BI 301*	Human Impacts on Ecosystems	3	W				One yr. bio or chemistry	Junior/Senior standing
FES 351	Outdoor Recreation Management on Public Lands	4	W				FES 251 C- or better	No Freshman/Sophomore
FES 352	Wilderness Management	3		SU,F,W,SP				
FES 365*	Issues in Natural Resource Management	3		SU, W~, SP	SP			~hybrid w/international program in Costa Rica
FES 454	Managing at the Wildland Urban Interface	3		F			FOR 111 - but not required of Ecampus students.	
FOR 462	Natural Resource Policy and Law	3	F					No Freshman/Sophomore, NO INTO/Non-Degree
FW 325*	Global Crisis in Resource Ecology	3		SU, F, W, SP				
FW 350*	Endangered Species, Society and Sustainability	3	SP	SU, F, W, (W~) SP	W		FW 251	W~ = International Sites
GEOG 300* (was GEO 300)	Sustainability for the Common Good	3	SU, F, W,SP	SU, F, W,SP				Upper division standing
GEOG 340	Intro to Water Science and Policy	3	F,SP, SU	SU,F,W, SP	F			

(was GEO/SOIL 335)								
GEOG 450 (was GEO 423)	Land Use in the American West	3	F					
HST 481*	Environmental History of the U.S.	4	W	SU, F, W, SP			HST 201, 202, 203 recommended	CORV=Junior/Senior Standing
NR 351 NEW!	When Science Escapes the Lab	3	SP				NR 312 recommended	
PS 449^	Topics in Comparative Politics	4		SU, W				
PS 455*	Politics of Climate Change	4		W				
PS 473 NEW!	U.S. Energy Policy	4	SP	W				
PS 475	Environmental Politics and Policy	4	F	SU, F, W, SP	SP			
PS 476*	Science and Politics	4	SP	SU,W				
PS 477	International Environmental Politics and Policy	4	W	SU, F, W, SP				

RANGE (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
FES/FW 445	Ecological Restoration	4	SP	SU, F, SP	SP		BI 370 or equivalent or instructor approval	
FES/NR/RNG 477/577*	Agroforestry	3	W				Basic Ecology course	
FOR 346	Topics in Wildland Fire	3	SP	F, SP			Course work in forest biology or ecology	
FOR 436	Wildland Fire Science and Management	4	SP	W, SP				No INTO/Non-degree
~~FOR 446~~	~~Wildland Fire Ecology~~	~~3~~	~~W~~	~~W, SP~~	~~W~~	-	~~Coursework in ecology and NR mgmt.~~	This course is being replaced by FES440
RNG 341	Rangeland Ecology and Management	3	F, W, SP	SU,F,W,SP	W	F		
RNG 351	Range Ecology I - Grasslands	3	F	SU,SP			BOT 313 and RNG 341	
RNG 352	Range Ecology II – Shrub lands	3	W	SP		F	BOT 313 and RNG 341	
RNG 421	Wildland Restoration and Ecology	4		F		W	Coursework in Soils and Ecology	
RNG 441	Rangeland Analysis	4	F	SP		SP	ST 351	DSC = No freshman
RNG 442	Rangeland-Animal Relations	4	SP	W				No freshmen allowed in Ecampus version
RNG 490	Rangeland Management and Planning	4	W	W		SP		

RESOURCE VALUES AND PHILOSOPHY (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
AG 301*	Ecosystems of the Pacific NW Indians	3	F, W	SU, W		F		
ANTH 477	Ecological Anthropology	3	SP				3 credits social science	Junior/Senior Standing
ANTH 481*	Natural Resources and Community Values	3	F (hybrid)	F, W			3 credits social science	Junior/Senior Standing
ANTH 482*	*Anthropology on International Development	4	F					Senior standing
FW 340*	*Multicultural Perspective in Natural Resources	3	SP	SU, F, W, SP	SP			
GEO 309*	Environmental Justice	3	W	SP			WR 121	Sophomore standing
GEOG 430 (was GEO 420)	Resilience-Based Natural Resource Management	3	SP					
HST 481*	Environmental History of the United States	4	W	SU, F, W,SP			HST 201, 202, 203 recommended	Junior/Senior Standing
PHL 440	Environmental Ethics	3	W	SU			PHL 205 and PHL 342 and PHL 365 or 6 PHL credits	Sophomore standing.
NR 312 NEW!	Critical Thinking for Natural Resource Challenges	3	W					
PHL 443	World Views and Environmental Values	3	SU, F, W, SP	SU, F, W, SP			One intro science course	Sophomore standing

SOCIAL ISSUES (CHOOSE ONE)								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
ANS/FES/FW/SOC 485*	Consensus and Natural Resources	3	w	F,SP,W				Upper class standing
ANTH 330*	Evolution of People, Tech and Society	3	SU, F	SU, F, W, SP				Sophomore standing.
FES 351	Outdoor Recreation on Public Lands	4	W				FES 251	No Freshman/Sophomore
FES 352	Wilderness Management	3		SU,F,W,SP				
FES 353	Nature, Eco and Adventure Tourism	3			F			
FES 354 NEW!	Communities, Natural Areas and Tourism	3	W					

FES 493	Environmental Interpretation	3	W	F, SP				CORV=No Freshman/Sophomore, No INTO/Non-Degree, No Pre-Forestry
PS 473 NEW!	US Energy Policy	4	SP	W				
SOC 360*	Population Trends and Policy	4		F, W, SP			SOC 204	
SOC 381	Social Dimensions of Sustainability	4		F, SP			SOC 204	
SOC 424	Social Psychology	4	W				SOC 204	No Freshman/Sophomore
SOC 454*	Leisure and Culture	4		SU, F, W			SOC 204	
SOC 456*	Science and Technology in Social Context	4	W	SP			SOC 204	Junior/Senior standing
SOC 475	Rural Sociology	4	W				SOC 204	
SOC 480*	Environmental Sociology	4	F	SU	SU		SOC 204	Junior/Senior standing
SOC 481*	Society and Natural Resources	4	SP	S, SP, W			SOC 204	CORV = Junior/Senior standing required
WGSS 440*	Women and Natural Resources	3		F, SP				

Specializations: Choosing an Option

Incorporated in a student's course of study is the specialty option. It is in the Option that the student develops depth and a particular focus within the broader field of natural resources. A 40+ credit Option is required for the B.S. in Natural Resources and is different from a minor or a second degree that a student may choose to pursue although some courses may be able to double count.

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 6 terms before you plan to graduate. Talk to your Academic Advisor about your goals and for assistance with declaring the Specialty Option.

Frequently Asked Questions

How do I know when I will graduate?

Take the number of requirements in the Baccalaureate Core, NR Core, NR Breadth and NR Option (typically 10-11 courses) that need to be completed and divide by how many courses you plan to take each term. This should give you the approximate number of terms it will take to complete the degree.

How do I declare my Option?

Your advisor will assist you in completing the Change of Academic Program form which is submitted to the Head Advisor for approval. Once approved by the College the form is sent to the OSU Registrar's Office so that the Option can be officially added to your academic program and the Option block will appear in MyDegrees. The option choices can be found in this Advising Guide and in the OSU Catalog.

How do I create an Individualized (student designed) Option?

The Individualized Specialty Option (ISO) is a student designed Option that allows a student to tailor his or her academic program to specific goals or interests. The requirements are the same as the other options; minimum of 40 credits, a minimum of 20 credits must be upper division and no more than 24 credits with the same departmental course designator (FOR, FES, NR, etc..). This option is often a good choice for transfer students who have great Natural Resources related coursework from other institutions that does not fit into the NR Core or Breadth.

The student must submit an ISO Petition that includes a program of study listing the courses that are going to be used in the option. Part 2 of the petition is a brief essay that describes the goals and employment opportunities provided by this option. The student will work closely with an advisor to choose courses and to develop a professional proposal that is then submitted to the Program Director for approval. Students should **complete** this approval process no less than 6 terms before graduation.

ARID LAND ECOLOGY

Goal of 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 government

ARID LAND ECOLOGY								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Rangeland Resources (17 Credits)								
RNG 341	Rangeland Ecology and Management	3	F, SP	F, W,SP, SU	W	F		
RNG 352	Range Ecology II - Shrublands	3	W	SP		F	BOT 313 and RNG 341	
RNG 353	Wildland Plant Identification	4	F	SU		SP		
RNG 421	Wildland Restoration and Ecology	4		F		W	Coursework in soils and ecology	
RNG 442	Rangeland-Animal Relations	4	SP	W				No freshmen in DSC course

Animals, Plant, Soils and Ecology (23 Credits)								
BOT 313	Plant Structure	4	W				BI 213 or 213H	
BOT 321	Plant Systematics	4	SP				BI 213 or 213H	
BOT 414	Agrostology	4	W				BOT 321	
FES 440	Wildland Fire Ecology	3	W	W, SP	W		Coursework in ecology and NR Mgmt	Junior or Senior Standing.
FOR 436	Wildland Fire Science and Management	4	SP	W, SP				COF majors, F&W, Range only
~~FOR 446~~	~~Wildland Fire Ecology~~	~~3~~	~~W~~	~~W, SP~~	~~W~~	-	~~Coursework in ecology and NR Mgmt.~~	This course is being replace by FES 440 above
SOIL 466	Soil Morphology and Classification	4		SP			SOIL/CSS 205	

The following courses can be taken in the NR Core and Breadth and are required prerequisites for courses in this option. They are also recommended for career preparation for the Arid Land Ecology:								
BI 211, BI 212, BI 213 (On Campus Only) **OR** BI 204, BI 205, BI 206 (Ecampus students only)	It is required for students in this option take a "biology for science majors" series in the NR Core. BI 211/BI 204 are offered Fall term, BI 212/BI 204 are offered Winter term and BI 213/BI 205 are offered in the Spring term. The courses do not need to be taken in order. BI 212/BI 204 and BI 213/BI 205 have a prerequisite of CH 121 or an equivalent Chemistry course. You may need to petition the biology department for transfer chemistry courses to be accepted as the prerequisite. Allow time for petitions to be approved and plan accordingly. Contact your Academic Advisor for more information.							
RNG 441	Rangeland Analysis *(for Range or Measurements)*	4	F	SP		SP	ST 351	
RNG 490	Rangeland Management and Planning *(for Range or Environmental Assessment &Planning)*	4	W	W		SP		
ST 351	Statistics *(for Statistics)*	4	SU,F,W, SP,	SU,F,W, SP	SU,F		High School Algebra w/statistics	

Total Credits: 41 Option Code: 669

Conservation and Technology

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. The courses in the lists below are only available at Central Oregon Community College (COCC): FW 251, FOR 220A, FOR 230A, FOR 230B, FOR 240B.

COCC Course Catalog: http://www.cocc.edu/admissions/catalog/

Goal of Option:
To develop the skills necessary to apply natural resources techniques on the ground and to acquire the knowledge necessary to assist management within both the ecosystem and socio-political components of natural resource management.

Knowledge Gained:

- Background in basic biological, physical, and social sciences which underlie natural resource management.
- Understanding of why and how humans manage natural resources to accomplish a variety of important objectives.
- Understanding of ecological, social, and political principles and relationships relevant to natural resource management.

Skills Learned:

- Ability to apply specific natural resources techniques and technologies toward accomplishing objectives of ecosystem management and socio-economic sustainability.
- Ability to integrate biological, technical, social, and economic aspects of natural resource management.
- Ability to communicate clearly and to work cooperatively with others.

Employment Opportunities

- The unique combination of technical skills and practical field experience, knowledge of the variety of natural resources, and understanding of the social aspects of natural resource management will make graduates highly competitive for entry level positions in private industry and public resources management agencies while providing the basis for future professional development.
- May meet minimum qualifications for US government positions in the following series: general biological science, park ranger, and agricultural extension.
- Graduates will also be qualified to work with environmental consulting firms and environmental groups concerned with natural resource management issues.

CONSERVATON AND TECHNOLOGY								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Conservation Courses (Choose 3 courses, 9 credits)								
FES 365*	Issues in Natural Resources Conservation	3		SU, W, W~, SP	SP			W~= International Sites
FW 251	Wildlife Conservation [COCC]	3	W	SU F, W, SP	F	SP	Recommend one course in Biology	
FW 325*	Global Crises in Resource Ecology	3		SU, F, W, SP				
FW 350*	Endangered Species, Society and Sustainability	3	SP	SU, F, W, SP	W		FW 251	
Technology Courses (Choose 3 courses, 8-9 credits)								
BI 371^	Ecological Methods	3	SP		SP		BI 370	
FOR 199	Special Studies: Datasets in Natural Resources	3					**Offered at COCC**	
FOR 220A	Aerial Photo [COCC]	3					**Offered at COCC**	
FOR 230A	Map, Compass and GPS [COCC]	3					**Offered Fall term at COCC**	
FOR 230B	Forest Surveying [COCC]	3					**Offered Winter term at COCC**	
SOIL 408	Workshop: Soil Judging	2	F,W,SP		SU			
and NR 499	Special Topics: Field Instruments	3						Not currently offered
Sustainability (4 credits)								
SUS350*	Sustainable Communities	3	F, W, SP	SU, F, W, SP	F			
Ecology and Ecosystems (Choose 18-19 Credits from the following or electives approved by petition by OSU-Cascades)								
ENSC 479^	Environmental Case Studies	3	F	SU, W, SP	W		One year college bio OR Chemistry	Junior Standing
FES 342	Forest Types of the Northwest	3		W				
FES/TOL 444	Ecological Aspects of Park Management	3			F		FES/FOR 251 and an ecology course	
FES/FW 445	Ecological Restoration	4	SP	SU, F, SP	SP		BI 370 or equivalent or instructor approval	

FOR 240B	Wildlife Ecology [COCC]	3					**Offered Fall term at COCC**	
FW 311	Ornithology	3	SP	SU, F, W,SP			One yr. introductory Biology	
FW 317	Mammalogy	3	W	SU, F, W, SP			One yr. introductory Biology	No Freshman in CORV section
FW 320	Introductory Population Dynamics	4	W	SU, F, W, SP	W		BI 370 or BI 371, MTH245 and Intro Stats recommended	
FW 326	Integrated Watershed Management	3		F,W,SP,			FW 251	
FW 479	Wetlands and Riparian Ecology	3		SU, W, SP			BI 370 or BI 371	
FW 481	Wildlife Ecology	3		SU	SP		BI 370 and FW 311 and FW320 and ST 351	
GEO 322	Surface Processes		F		F		GEO102 or GEO202 and MTH251 and PH201 or PH211	
PS 475	Environmental Politics and Policy	4	F	SU, F, W, pp	SP			
RNG 351	Range Ecology I - Grasslands	3	F	SP, SU			BOT 313 and RNG 341	
SOIL 366	Ecosystems of Wildland Soils	3		W			SOIL 205 or CSS205 and recommend environmental chemistry, biology, ecology and physics	
Z 349 *	Biodiversity: Causes, Consequences and Conservation	3	F	F,W, SP,SU	SP			
Z 477	Aquatic Entomology	4			F		BI 21X series or BI20X series	
[COCC] course at Central Oregon Community College ~ Option may be modified to allow appropriate transfer courses from other community colleges with forest technology degrees.								

Total Credits: 40 Option Code: 688

Ecological Restoration COMING SOON TO Ecampus!

Goal of 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 wildland 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 specialization 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), and Soil Conservation.
- Graduates will also be prepared for involvement with research, graduate school opportunities, and the development and evaluation of public policy.

ECOLOGICAL RESTORATION								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Required Courses (29-30 Credits)								
BI 345*	Introduction to Evolution	3		F, W, SU				
or PBG 430	Plant Genetics	3	W			W	One yr. Bio and Chemistry	
BOT 321	Plant Systematics	4	SP				BI 213 or 213H	

CH 122*	General Chemistry	5	W, SP	SU, F, W, SP,			CH 121 and appropriate lab	
or CH232*	General Chemistry	5	SU, W, SP	SU, W, SP	W		CH 231 and labs	
and CH 262*	Laboratory for CH262	1	SU, W, SP				Co-requisite for CH232	
FES/FW 445	Ecological Restoration	4	SP	SU, F, SP	SP		BI 370 or equivalent or instructor approval	
FOR 436	Wildland Fire Science and Management	4	SP	W, SP				COF majors, F&W, RNG NF only
~~**or** FOR 446~~	~~Wildland Fire Ecology~~	~~3~~	~~W~~	~~W, SP~~	~~W~~	-	~~Coursework in ecology and NR Mgmt.~~	This course is being replaced by FES 440
or FES 440	Wildland Fire Ecology	3	W	W, SP	W		Coursework in ecology and NR Mgmt	Junior or Senior Standing.
FW 479	Wetlands and Riparian Ecology	3		SU, F, W, SP,			BI 370 or BI 371	
or RNG 455	Riparian Ecology and Management	4		SP			RNG 355	Becoming a 4 credit class in SP 17
GEOG 450 (was GEO 423)	Land Use in the American West	3	F	??				
SOIL 466	Soil Morphology and Classification	4	SP				SOIL 205 **or** CSS 205 **or** CSS305	
or SOIL 366	Ecosystems of Wildland Soils	3		W			SOIL 205 **or** CSS 205 **or** CSS305. Recommend environmental chemistry, biology, ecology and physics	
or SOIL 388 NEW!	Soil Systems and Plant Growth	4		F			SOIL 205 **and** SOIL /FOR206 or CSS205 **and** CH121 *or* CH231 **and** BOT220 **or** BI204 **or** BI 205 **or** BI206 **or** BI211 **or** BI2121 **or** Bi213	

Social and Ethical Considerations (Choose one course from the following)								
NR 312 NEW!	Critical Thinking for Natural Resource Challenges	3	W					Sophomore standing desirable.
PHL 440*	Environmental Ethics	3	W	SU			PHL 205 and PHL 342 and PHL 365 or 6 credits of philosophy	Sophomore standing
PHL/REL 443*	World Views and Environmental Values	3	SU, F, W, SP	SU, F, W, SP,			One intro-level science course	Sophomore standing.
SOC 480*	Environmental Sociology	4	F	SU	SU		SOC 204	No freshmen or sophomores
SOC 481*	Society and Natural Resources	4	SP	F, W, SP			SOC 204	CORV = No freshmen or sophomores
Ecological and Natural Resource Electives (Choose a minimum of 9 Credits)								
BI 351	Marine Ecology	3	W	F			BI 211,212,213 or BI 204, 205, 206 (C- or better)	
BOT 488	Environmental Physiology of Plants	3	W				One course in plant physiology or ecology	
FES/FW 452	Biodiversity Conservation in Managed Forests	3	SP	F			FES 240 or FES 342 or BI 370	No freshmen or sophomores.
FOR 441	Silviculture Principles	4	SP				FES 240 and FES 141 or FES 241, (C or better)	COF majors. No INTO or Non Degree
FW 320	Introductory Population Dynamics	4	SP	F, W, SP			BI 370 or BI 371. Recommend a MTH equiv to MTH 245 or higher and an Intro Stats Course.	
FW 321	Applied Community and Ecosystem Ecology	3	SP	F, W, SP			FW 320	CORV = No Freshmen or Sophomores
FW 426	Coastal Ecology and Resource Management[1]	5	F (HMSC)	F (Hybrid)			Recommend FW320	No freshmen or sophomores
FW 451	Avian Conservation and Management	3		F, W			FW 311 or equiv course work.	
FW 454^	Fishery Biology	4	F	W			FW 315 and FW 320	
FW 456	Limnology	5	SP	W, SP				Senior standing only

FW 458	Mammal Conservation and Management	4	SP	F, W			9-credits upper-div. Bio Sci.	9-credits upper-div. Bio Sci.
FW 473	Fish Ecology	4	W	SP			BI 370 and FW 315	
FW 481	Wildlife Ecology	4		SP	W		BI 370 and FW 311	CORV = No Freshmen or Sophomores
NR 202 NEW!	Natural Resource Problems and Solutions	2	SP				NR 201 is recommended but not required	
RNG 421	Wildland Restoration and Ecology[2]	4		F	W		Coursework in Soils and Ecology	
SOIL 468	Soil Landscape Analysis	4	W				SOIL 466 or CSS 466	

HMSC = Hatfield Marine Science Center in Newport, Oregon

The following courses can be taken in the NR Core and are required prerequisites for some courses in this option. They are also recommended for career preparation for the Ecological Restoration:	
BI 211, BI 212, BI 213 (On Campus Only) **OR** BI 204, BI 205, BI 206 (Ecampus students only)	It is preferred that students in this option take a "biology for science majors" series in the NR Core. BI 211/BI 204 are offered Fall term, BI 212/BI 204 are offered Winter term and BI 213/BI 205 are offered in the Spring term. The courses do not need to be taken in order. BI 212/BI 204 and BI 213/BI 205 have a prerequisite of CH 121 or an equivalent Chemistry course. You may need to petition the biology department for transfer chemistry courses to be accepted as the prerequisite. Allow time for petitions to be approved and plan accordingly. Contact your Academic Advisor for more information.

Total Credits= 40-42 Option Code= 663

Fish and Wildlife Conservation ecampus

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Goal of 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.

FISH AND WILDLIFE CONSERVATION								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Required Courses (22 credits)								
FES/FW 445	Ecological Restoration	4	SP	SU, F, SP	SP		BI 370 or equivalent or instructor approval	
FOR 111	Introduction to Forestry	3	F	SU, W		F		
or FES 342	Forest Types of the Northwest	3		W				

FOR 346	Topics in Wildland Fire	3	SP	F, SP			Course work in forest biology or ecology	
or FOR 436	Wildland Fire Science and Management	4	SP	F, SP				COF majors, F&W, RNG majors only
~~or FOR 446~~	~~Wildland Fire Ecology~~	~~3~~	~~W~~	~~W, SP~~	~~W~~	-	~~Coursework in ecology and NR Mgmt.~~	This course is being replaced by FES 440
or FES 440	Wildland Fire Ecology	3	W	W, SP	W		Coursework in ecology and NR Mgmt	Junior or Senior Standing.
FW 251	Principles of Fish and Wildlife Conservation	3	SU, W	SU, F, W, SP	F		Recommend one course in Biology	
FW 323	Management Principles of Pacific Salmon in Northwest	3		SU, F, W, SP	F			
or FW/HSTS 470*	Ecology and History: Landscapes of Columbia Basin	3		W			HST 201, 202 and 203 **or** BI 370 **or** equiv	
or FW 360*	Origins of Fish and Wildlife Management	3		F,W,SP			Two terms of coursework at OSU or equivalent	
RNG 341	Rangeland Ecology and Management	3	SP,F,W	SU, F, W, SP	W	F		
RNG 455	Riparian Ecology and Management	3		SP			RNG 355	
Fish and Wildlife Biology (Choose three of the following)								
FW 311	Ornithology	3	SP	SU, F, W, SP	SP		One yr. introductory Biology	
FW 315	Ichthyology	3	F	SU, W, SP			One yr. introductory Biology	CORV only=Phase I restriction – open Phase II
FW 317	Mammalogy	3	W	SU, F, W, SP			One yr. introductory Biology	CORV only = Phase I restriction – open Phase II for NR
FW 320	Introductory Population Dynamics	4	W	SU, F, W, SP			BI 370 or BI 371. MTH 245 and intro stats recommended	
FW 321	Applied Community and Ecosystems Ecology	3	SP	F, W, SP			FW 320	CORV only = Phase 1restriction – open Phase II for NR

Habitat Management (Choose two of the following)								
FW 326	Integrated Watershed Management	3		F, W, SP			FW 251	
FW 435^	Wildlife in Agricultural Ecosystems	3	W	SU, F, W, SP			BI 370 and FW 251 or equivalent course	
FW 479	Wetlands and Riparian Ecology	3		SU, F, W, SP			BI 370 or BI 371	
Natural Resource Policy (Choose one of the following)								
PS 475	Environmental Politics and Policy	4	F	SU, F, W, SP	SP			
SOC 481*	Society and Natural Resources	4	SP	F, W, SP			SOC 204. No freshmen sophomores	

The following courses can be taken in the NR Core and are required prerequisites for some courses in this option. They are also recommended for career preparation for the Fish and Wildlife Conservation Option.	
BI 211, BI 212, BI 213 (On Campus Only) **OR** BI 204, BI 205, BI 206 (Ecampus students only)	It is preferred that students in this option take a "biology for science majors" series in the NR Core. BI 211/BI 204 are offered Fall term, BI 212/BI 204 are offered Winter term and BI 213/BI 205 are offered in the Spring term. The courses do not need to be taken in order. BI 212/BI 204 and BI 213/BI 205 have a prerequisite of CH 121 or an equivalent Chemistry course. You may need to petition the biology department for transfer chemistry courses to be accepted as the prerequisite. Allow time for petitions to be approved and plan accordingly. Contact your Academic Advisor for more information.

Total Credits = 41 Option Code = 672

Forest Ecosystems

Goal of 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.

FOREST ECOSYSTEMS								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Ecological Foundations (~~22~~ 23 Credits)								
FES 412	Forest Entomology	3						(coming soon) FES 412 and FOR 413 will replace BOT/FES 415
FOR 413	Forest Pathology	3	W				BI 204 or BI 212 or BI 213 and/ or equivalent	FES 412 and FOR 413 will replace BOT/FES 415

~~BOT/FES 415~~	~~Forest Insect and Disease Management~~	~~5~~	~~W~~	~~-~~	~~-~~	~~-~~	~~BI 213~~	Replaced by FES 412 and FOR 413 above
FES 341	Forest Ecology	3	F	F, SP	F			COF majors only. NO INTO/non degree
FES/FW 452	Biodiversity Conservation in Managed Forests	3	SP	F			FES 240 or FES 341 or BI 370.	No freshmen or sophomores.
FOR 346	Topics in Wildland Fire	3	SP	F, SP			Coursework in forest biology or ecology	
FOR 441	Silviculture Principles	4	SP				FES 240 and FES 141 or 241.	COF majors only. NO INTO/non degree
FW 251	Principles of Fish and Wildlife Conservation	3	W	SU, F, W, SP	F	SP	Recommended one course in intro bio.	
Ecology Breadth Courses (Choose at least 8 credits from the following)								
BOT 321	Plant Systematics	4	SP				BI 213	
BOT 442	Plant Population Ecology	3	F				BOT 341 or EQUIV	
FES/FW 445	Ecological Restoration	4	SP	SU, F, SP	SP		BI 370 or equivalent or instructor approval	
FES/NR/RNG 477*	Agroforestry	3	W				Any basic ecology course.	
FOR 436	Wildland Fire Science and Management	4	SP	W, SP				COF, F&W, RNG majors only, No INTO or Non degree
~~or FOR 446~~	~~Wildland Fire Ecology~~	~~3~~	~~W~~	~~W, SP~~	~~W~~	-	~~Coursework in ecology and NR Mgmt.~~	This course is being replaced by FES440
or FES 440	Wildland Fire Ecology	3	W	W, SP	W		Coursework in ecology and NR Mgmt	Junior or Senior Standing.
FW 458	Mammal Conservation and Management	4	SP	F, W			9 credits U.D. Bio Sciences.	
RNG 351	Range Ecology I – Grasslands	3	F	SU, SP			BOT 313 and RNG 341 (BOT 313 requires BI 213)	
RNG 352	Range Ecology II – Shrublands	3	W	SP		F	BOT 313 and RNG 341 (BOT 313 requires BI 213)	
RNG 455	Riparian Ecology and Management	4		SP	SP		RNG 355	Becomes 4 credits in SP17

Technical Electives (Choose at least 10 Credits)								
BOT 425	Flora of the Pacific Northwest	3	SP				BOT 321 or equivalent	
FE 208	Forest Surveying	4	F	SP			MTH 112 or 241 or 245 or 251	COF majors only. No INTO/Non Degree
FE 209	Forest Photogrammetry and Remote Sensing	4	W	W, SP			MTH 112 or 241 or 245 or 251	COF majors only. No INTO/Non Degree
FE 370	Harvesting Operations	4	F					Junior Standing. COF majors only. No INTO/Non Degree.
FOR 321	Forest Mensuration	5	F				FOR 241 or FES 141 or FES 241 **and** FE 208 **and** FE 209 **and** MTH 241 or MTH 245 or MTH 251 **and** ST 201 or ST 351. C or better in all.	
ST 352	Introduction to Statistical Methods	4	SU, F, W, SP	SU, F, W, SP	SU, W		ST 351	
The following courses can be taken in the NR Core and are required prerequisites for courses in this option. They are also recommended for career preparation for Forest Ecosystems.								
BI 211, BI 212, BI 213 (On Campus Only) **OR** BI 204, BI 205, BI 206 (Ecampus students only)	It is preferred that students in this option take a "biology for science majors" series in the NR Core. BI 211/BI 204 are offered Fall term, BI 212/BI 204 are offered Winter term and BI 213/BI 205 are offered in the Spring term. The courses do not need to be taken in order. BI 212/BI 204 and BI 213/BI 205 have a prerequisite of CH 121 or an equivalent Chemistry course. You may need to petition the biology department for transfer chemistry courses to be accepted as the prerequisite. Allow time for petitions to be approved and plan accordingly. Contact your Academic Advisor for more information.							
FES 241	Dendrology *(for Veg ID)*	3	F, SP	SP				
FES 240	Forest Biology *(for Gen Ecology)*	4	F, SP	F, SP				
FE 430	Watershed Processes *(for Water Science)*	4		F				Junior standing
FOR 460^	Forest Policy *(for NR Policy or Forestr and also counts as a WIC requirement)*	4	F, W, SP					COF majors. Senior standing

Total Credits= 40 Option Code= 673

Human Dimensions in Natural Resources ecampus

Goal of 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 organization.

Human Dimensions of Natural Resources								
Course Number	Course Name	Credit	COR	DSC	CAS	EOU	Prerequisites	Restrictions
Ethical Issues (Select 6 credits from the following)								
ANTH 110*	Introduction to Cultural Anthropology	3	F,W,SP	F,W,SP,SU				
BI/FES/TOX 435*	Genes and Chemicals in Agriculture: Value and Risk	3	SP	F,W,SU			Recommend one quarter each of biology and chemistry	
PHL 201*	Introduction to Philosophy	4		F,W,SP,SU				
PH205*	Ethics	4	F,W,SP, SU	F, W, SP, SU				
PHL 439*	Philosophy of Nature	3						Not currently offered
PHL 440*	Environmental Ethics	3	W	SU			PHL205 and PHL342 nd PHL 365 or 6 credits of philosophy	Sophomore standing
PHL 443*	World Views and Environmental Values	3	F,W,SP, SU	F,W,SP,SU			One Intro Science course	Sophomore standing
PHL 470*	Philosophy of Science	3	W				6 credits of philosophy	Sophomore standing

Management and Communication Issues (Select 13 from the following):								
AEC 253	Environmental Law, Policy and Economics	4	W, SU	W, SU				
AEC351*	Natural Resource Economics and Policy	3	W	SU, F, SP			MTH 111 and AEC 250 or ECON 201	
AEC/ECON 352*	Environmental Economics and Policy	3	F,SP	F,SP	W		AEC 250 or ECON 201	
ANS/SOC/FES/FW 485*	Consensus and Natural Resources	3	W	F,W, SP				
FES 351	Recreation Behavior and Management	4	W				FES 251 with C- or better	Junior standing
FES 352	Wilderness Management	3		SU, F, W, SP				
FES 355	Management for Multiple Resource Values			F, SP				
FES 365*	Issues in Natural Resource Conservation	3		SU,W,SP	SP			
~~FOR 446~~	~~Wildland Fire Ecology~~	~~3~~	~~W~~	~~W, SP~~	~~W~~	-	~~Coursework in Ecology and NR Mgmt.~~	This course is being replaced by FES 440
FES 440	Wildland Fire Ecology	3	W	W, SP	W		Coursework in ecology and NR Mgmt	Junior or Senior Standing.
FW 251	Principles of Fish and Wildlife Conservation	3	W	SU, F, W, SP	F	SP	Recommend one course in introductory Biology	
FW 326	Integrated Watershed Management	3		F, W, SP	F		FW 251	
Social Issues (21 Credits)								
Required Background Course (SOC204 is the required prerequisite for the other SOC classes in this option).								
SOC 204*	Introduction to Sociology	3	SU, F, W, SP	SU, F, W, SP				
AND Choose 18 Credits from the following:								
AEC 432	Environmental Law	4	SP	SP				Junior standing
ANTH 477	Ecological Anthropology	3					Junior standing; 3 credits Social Science	Not currently offered
ANTH 481*	Natural Resources and Community Values	3	F	F, W			3 credits Social Science. Junior standing	

FW 340*	Multicultural Perspectives in Natural Resources	3	SP	SU, F, W, SP	W			
FW 350*	Endangered Species, Society and Sustainability	3	SP	SU, F, W, SP	W		FW 251	FW 251
GEOG 300 (was GEO 300)	Sustainability for the Common Good	3	F,W,SP, SU	F,W, SP, SU				Upper Division Standing
HST 481*	Environmental History of the U.S.	4	W	SU, F, SP			HST 201, 202, 203 are recommended	Junior standing
NR 202 NEW!	Natural Resource Problems and Solutions	2	SP				NR 201 is recommended but not required	
NR 312 NEW!	Critical Thinking for Natural Resources Challenges	3	W					Sophomore standing desirable.
PS 475	Environmental Politics and Policy	4	F	SU, F, W, SP	SP			
SOC 360*	Population Trends and Policy	4		F, W, SP			SOC 204	
SOC 454*	Leisure and Culture	4		SU, F, W			SOC 204	
SOC 456*	Science and Technology in Social Context	4	W	SP			SOC 204	Junior Standing
SOC 480*	Environmental Science	4	F,	SU	SU		SOC 204	CORV section = Junior Standing
SOC 481*	Society and Natural Resources	4	SP	F, W, SP			SOC 204	DSC section= Junior Standing
WGSS 440*	Women and Natural Resources	3		F, SP				

Total Credits= 40 Option Code= 675

Individualized Specialty Option (Student Designed) ecampus

The Individualized Specialty Option is a student designed option that allows a student to tailor his or her academic program to specific goals or interests. The requirements are the same as the other options; minimum of 40 credits, a minimum of 20 upper division credits, and no more than 24 credits with the same departmental course designator (FOR, FES, NR, etc..). This option is often a good choice for transfer students who have great coursework that doesn't fit into the core and breadth.

The student must submit a Petition that includes a program of study listing the courses that are going to be used in the option. Part 2 of the petition is a brief essay that describes the goals and employment opportunities provided by this option. The student will work closely with an advisor to choose courses and to develop a professional proposal that is then submitted to the Program Director for approval. Students should complete this approval process no less than 6 terms before graduation.

INDIVIDUALIZED SPECIALTY OPTION								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Requirements for an ISO								
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 24 credits from one department Has course work that reflects stated area of specialization and desired goals								

Total Credits= 40 minimum Option Code= 676

Landscape Analysis ecampus

This option prepares students to work with Geographic Information Science technology in a natural resource field such as wildfire ecology, land use planning, ecological restoration, and more. The pairing of the technical skills of GIScience with a disciplinary knowledge in a natural resource area will prepare students for the practical application of technical skills in the real world. In addition, this specialization option will allow students to earn the GIScience Undergraduate Certificate through the College of Earth, Ocean, and Atmospheric Sciences concurrently with their BS degree through the College of Forestry. The student will apply to the GIS Certificate Program as well as the Natural Resources Program. Students should contact **Kuuipo Walsh**, *GIScience Certificate Program Director*, to enroll in the GIScience Certificate Program. (kuuipo.walsh@oregonstate.edu) More information about the certificate program is available here at http://ceoas.oregonstate.edu/giscience/.

-No S/U grades are accepted for the GEO courses that are counted for the GIS Certificate.
-No more than 24 credits from one department; no more than 20 lower-division credits.
-Available through Ecampus and the Corvallis Campus.
- See Important Note below about courses that should be taken in the NR Core that are required for the GIS Certificate

Goal of Option:
To develop skills and knowledge necessary to apply Geographic Information Science to the analysis, management and conservation of natural resources.

Knowledge Gained:

- An understanding of the principles and use of GIScience technology in analysis.
- Background in basic biological, physical and social sciences which underlie sound management and conservation of natural resources.
- Understanding of ecological, social, and political principles, relationships and perspectives relevant to the conservation of natural resources

Skills Learned:

- Ability to use digital technology to manage information about places, activities, and phenomena on and near the surface of the earth.
- Ability to integrate biological, social, and political aspects of natural resources in the analysis of landscapes.
- Ability to apply knowledge of resource policy, law and planning to the scientific and social components of natural resource conservation approaches.

Employment Opportunities:

- Prepares students to work for state and local government agencies such as the Department of Environmental Quality, watershed councils, parks and recreation.
- Prepares students to work for private industries such as environmental consulting firms, logging companies, and others.
- 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

LANDSCAPE ANALYSIS								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
GIScience Required Courses (16 credits)								
GEOG 201 (was GEO 301)	Foundations of Geospatial Science and GIS	4	F, SP	F				
GEOG 370 (was GEO 360)	Geo-visualization: Cartography	4	F	F				
GEOG 480 (was GEO 444)	Remote Sensing I: Principles and Applications	4	F	W,SP			GEOG 201 or GEO 301 with C- or better	
ST 202	Principles of Statistics	4	SU,F,W, SP	SU,F,W, SP			ST 201	
or ST 352	Introduction to Statistical Methods	4	SU, F, W, SP	SU,F,W, SP	SU,W		ST 351	
GIScience Electives (Choose 7-8 credits)								
CE 413	GIS In Water Resources	3	SU (odd years)					Senior or Graduate Standing or a previous introductory GIS course
CROP/HORT 414	Precision Agriculture	4	SP	W				Junior Standing
ECE 468	Digital Image Processing	3	F				ECE 351 and ECE 352 with C or better	
ENSC 410	Internship	4	SU, F, W, SP	SU, F, W, SP				Instructor and Departmental Approval Required
or FOR 410	Internship	4	SU, SP		F		FES 251 and FES 351 and FES 456 and FOR 407.	Departmental Approval Required
or GEO 410	Internship	4	SU, F, W, SP	F			12 credits of upper division Geoscience	Departmental Approval Required
or GEOG 410 NEW!	Internship	4	F,W,SP	F,W,SP			12 credits of upper division Geography	Departmental Approval Required
FE 209	Forest Photogrammetry and Remote Sensing	4	W	W,SP			MTH 112 or MTH 241 or MTH251 or MTH252 with C or better	

FE 310	Forest Route Surveying	4	SP				FE 208 and FE 308 or CE 361 or CEM 263 (all with C or better)	
FE 423 NEW!	Unmanned Aircraft Systems Remote Sensing	3	F				FE 309 or GEO 444 or GEO 466 (all with C or better)	Seniors only
FW 303	Survey of Geographic Information Systems in NR		SU,F,W,SP					Not a lab/skills class
GEOG 361 NEW! (was GEO 480)	GIScience II: Analysis and Applications	4	W	W			GEOG 360 and MTH 112 and ST 352 (C- or better in all)	
GEOG 371 NEW!	Geovisualization: Web Mapping	4	W				GEOG 201 or GEO 301	
GEOG 451 NEW! (was GEO 452)	Planning Principles and Practices for Resilient Communities	4	W				GEOG 360 or GEOG 560 C- or better)	
GEOG 462 NEW!	GIScience III: Programming for Geospatial Analysis	4	SP				GEOG 361 or GEOG 561 (C- or better)	
GEO 463 NEW!	GIScience IV: Spatial Modeling	4	F				GEOG 462 or GEOG 562 (C- or better)	
GEOG 464 NEW!	Geospatial Perspectives on Intelligence, Security and Ethics	3	SP	SP			GEOG 360 or GEOG 560 (C- or better)	Senior Standing
GEOG 472 (was GEO 445)	Geo-visualization: Geo-visual Analytics	3	SP				GEOG 370 or GEOG 371 with C- or better	
GEOG 481	Remote Sensing II: Digital Image Processing	4					GEOG 480 or GEO 580 with C- or better and ST 202 or ST 352 with a D- or better	Not currently scheduled
RNG 430 NEW!	Applied GIS in Rangeland Science	4					GEO 365 or GEOG 360	Not currently scheduled
SOIL 468	Soil Landscape Analysis	4	W				SOIL 466 or CSS 466	Alternate, even years

Natural Resource Electives (16-17 credits minimum)
Choose a minimum of 16-17 credits in disciplinary area related to GIScience to reach a minimum of 40 credits in the option. Students will be required to submit an academic plan for completion of the option which will be approved by the Natural Resources Program Director. Ask you Academic Advisor for more information.

IMPORTANT NOTE: The following courses should be taken in the NR Core and are required for the GIS Certificate.								
MTH 112	Elementary Functions *(for Mathematics/NR Core)*	4	SU, F, W, SP	SU, F, W, SP			MTH 111 or Placement Test ALEKS score of 60%	
FE 208	Forest Surveying *(for Measurements/NR Core)*	4	F	SP			MTH 112 or MTH251 or MTH252 with C or better	
GEOG 360 (was GEO 465 and GEO 365)	GIScience I: Geographic Information Systems and Theory *(for GIS/NR Core)*	4	F, SP	F, SP				
or FE 257	GIS and Forest Engineering Applications *(for GIS/NR Core)*	3	W	F				COF majors. No INTO/non degree.

Total Credits= 40 Option Code= 689

Law Enforcement and Natural Resources

Goal of 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.

LAW ENFORCEMENT AND NATURAL RESOURCES									
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS	COURSE NUMBER
Required Courses									
COMM 440	Theories of Conflict and Conflict Management	3	F					COMM 321 or instructor approval	COMM 321 or instructor approval
FES 251	Recreation Resource Management	4	F	SP					
FES/FW 452	Biodiversity Conservation in Managed Forests	3	SP	F				FES 240 or FES 341 or BI 370.	No freshmen or sophomores.
FW 251	Principles of Fish and Wildlife Conservation	3	W	SU, F, W, SP	F	SP		Recommend one course in Biology	
FW 316	Systematics of Fishes	2	F	SU,W,SP			Pre/Co – requisite is FW315 Ichthyology	BI211/212/213 or BI204/205/206. Recommended	No Freshmen.

FW 318	Systematics of Mammals	2	W	SU, SP	W			One year introductory biology	No Freshman. CORV= Phase I restricted to FW majors. Open to NR in Phase II.
FW 341	Fish and Wildlife Law Enforcement	2	F						
FW 458	Mammal Conservation and Management	4	SP	F, W				9 credits upper division Bio Sciences.	
SOC 204*	Introduction to Sociology	3	SU, F, W, SP	SU, F, W, SP					
Choose four of the following courses:									
SOC 340	Deviant Behavior and Social Control	4	F, SP	SU, F, W				SOC 204	Fall term COR=restricted to SOC majors and no freshmen. All other terms/sections no restrictions
~~SOC 440~~	~~Juvenile Delinquency~~	~~4~~	~~W~~					~~SOC 204~~	Restricted to Sociology majors
SOC 441	Criminology and Penology	4	F, W	SU				SOC 204	Winter term CORV=restricted to SOC majors and no freshmen. All other terms/sections no restrictions.
SOC 442	Sociology of Drug use and Abuse	4	SP hybrid	F				SOC 204	Spring term CORV=restricted to SOC majors and no freshmen. All other terms/sections no restrictions.
SOC 448	Law and Society	3	SP					SOC 204	
The following courses can be taken in the NR Core and Breadth are suggested for career preparation for Natural Resource Law Enforcement:									
FOR 462	NR Policy and Law *(NR Policy or Political Dimensions)*	3	F						No freshmen or sophomores

Total Credits= 41 Option Code=677

Natural Resource Education Coming soon to Ecampus!

Goal of 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. Students interested in becoming K-12 teachers may be interested in the OSU Education Double Degree. http://education.oregonstate.edu/education-double-degree

NATURAL RESOURCE EDUCATION								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Natural Resources Base (17 credits)								
FES 251	Recreation Resources Management	4	F	SP				
FW 251	Principles of Fish and Wildlife Conservation	3	W	SU, F, W, SP	F	SP	Recommend one course in Biology	

RNG 341	Rangeland Ecology and Management	3	F,W, SP	SU, F, W, SP	W	F		
Plus **7** different credits from AG, FE, FOR, FS, FW, GEO. GEOG or another area of natural resources		7						
Education/Communication Processes (23 credits)								
ED 216*	Purpose, Structure and Function of Ed in a Democracy	3	SU, F, W, SP	SU, SP				
ED 219	Civil Rights and Multicultural Issues in Education	3	SU, F, W, SP	F,SU				
ED 253	Learning Across the Lifespan	3	F, W, SP	SU,W				
FES 430 NEW!	Forest as Classroom	4		F,SP				
or FES 493	Environmental Interpretation	4	W	F, SP				COF majors only for the CORV, Junior/Senior standing
SOC 450	Sociology of Education	4	F	F			SOC 204	
WR 327*	Technical Writing	3	SU, F, W, SP	SU, F, W, SP			WR 121 C- or better, or placement test	No freshmen.
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								
The following courses can be taken in the NR Core and Breadth are suggested for career preparation for Natural Resource Education:								
FES 241	Dendrology (Vegetation ID)	3	F, SP	SP				
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. WR327 must be taken in addition to Writing I, Writing II or Speech.								

Total Credits= 40 Option Code= 679

Natural Resource Policy and Management ecampus

Goal of 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.

NATURAL RESOURCE POLICY AND MANAGEMENT								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Social Science Foundation (Choose at least two of the following)								
PHL 201*	Introduction to Philosophy	4		SU,F, W, SP				
PS201*	Intro to United States Gov & Politics	4	SU, F, W, SP	SU,F, W, SP	F			
PSY 201*	General Psychology	3	SU, F, W, SP	SU,F, W, SP	W			
or PSY202*	General Psychology	3	SU, F, W, SP	SU,F, W, SP	SP			
SOC 204*	Introduction to Sociology	3	SU, F, W, SP	SU, F, W, SP				

Social Science and Natural Resources (Choose at least 3 courses with no more than two from the same department)								
AG 301*	Ecosystems Science of the PNW Indians	3	F, W	SU, W		F		
ANS/FES/FW/SOC 485*	Consensus and Natural Resources	3	W	F, W, SP				Upper class standing
COMM 321	Introduction to Communication Theory	3	F, W, SP		F			Major/minor restriction for CORV
FOR 111	Introduction to Forestry	3	F	SU, W		F		
FW 251	Principles of Fish and Wildlife Conservation	3	W	SU, F, W, SP	F	SP	Recommend one course in Biology	
FW 323	Management Principles of Pacific Salmon	3		SU, F, W, SP	F			
FW 340*	Multicultural Perspectives in NR	3	SP	SU, F, W, SP	SP			
FW/HSTS 470*	Ecology and History: Landscapes of the Columbia Basin	3	F ~Hatfield Marine Science Ctr	W, SP			HST 201, 202 and 203 or BI 370 or equivalent coursework	
GEOG 300 (was GEO 300)	Sustainability for the Common Good	3	SU	SU, F, W,SP				Upper Div Standing
NR 312 NEW!	Critical Thinking for Natural Resources Challenges	3	W					Sophomore standing desirable.
SOC 360*	Population Trends and Policy	4		SU, F, W, SP			SOC 204	
SOC 454*	Leisure and Culture	4		SU, F, W			SOC 204	
SOC 456*	Science and Technology in Social Context	4	W	SP			SOC 204	
SOC 480*	Environmental Sociology	4	F	SU	SU		SOC 204	No freshmen or sophomores
SOC 481*	Society and Natural Resources	4	SP	F,W, SP			SOC 204	VORV=No Freshman or Sophomores
Natural Resources Policy and Management (Choose at least 25 credits from the list below)								
AEC 253	Environmental Law, Policy and Economics	4	SU, W	SU, W				
BOT 440	Field Methods in Plant Ecology	4		SU, SP			Course in ecology and statistics	
ENSC 479*^	Environmental Case Studies	4	F, F~	Su, W, SP	W		One year Biology or Chemistry	Junior standing. F~= International sites
FES 342	Forest Types of the Northwest	3		W				

FES 352	Wilderness Management	3		F,W,SP, SU				
FES 365*	Issues in Natural Resource Conservation	3	W~	SU, W, SP	SP			W`= International Sites
FES 440 NEW! (was FOR 446)	Wildland Fire Ecology	3	W	W, SP	W		Coursework in Ecology and NR Management	Junior or senior standing
FES/FW 445	Ecological Restoration	4	SP	SU, F, SP	SP		BI 370 or equivalent or instructor approval	
FOR 346	Topics in Wildland Fire	3	SP	F, SP			Coursework in forest biology or ecology	
FOR 431 NEW!	Economics and Policy of Forest Wildland Fire	3					AEC 351 or FOR 331 with C or better	
FOR 436	Wildland Fire Science and Management	4	SP	W, SP				COF Majors only
FW 303	Survey of Geographic Information Systems in NR	3		SU, F, W, SP				
FW 311	Ornithology	3	SP	SU, F, W, SP	SP		One yr. introductory Biology	CORV= No Freshmen
FW 315	Ichthyology	3	F	SU,W, SP			One yr. introductory Biology	CORV=Phase I restriction – open Phase II for NR
FW 317	Mammalogy	3	W	SU, F, W, SP	SP		One yr. introductory Biology	CORV=Phase I restriction - open Phase II for NR
FW 320	Introductory Population Dynamics	4	W	SU, F, W, SP			BI 370 or BI 371. MTH 245 and Intro to Stats recommended.	
FW 321	Applied Community and Ecosystem Ecology	3	SP	F, W, SP			FW 320	CORV= Phase I restriction - open Phase II for NR
FW 325*	Global Crises in Resource Ecology	3		SU, F, W, SP				
FW 326	Integrated Watershed Management	3		F, W, SP			FW 251	
FW 350*	Endangered Species, Society and Sustainability	3	SP	SU, F, W, SP	W		FW 251	
FW 427	Principles of Wildlife Diseases	4		SU, SP				Junior standing or instructor approval
FW 435^	Wildlife in Agricultural Ecosystems	3	W	SU, F, W, SP			BI 370 and FW 251 or equivalent course	

FW 479	Wetlands and Riparian Ecology	3	W	SU, F, W, SP			BI 370 or BI 371	
GEO 308*	Global change and Earth Sciences	3	W,SU	SU, F, W, SP				
GEOG 201 (was GEO 301)	Foundations of Geospatial Science and GIS	4	F,SP	F	-	-	-	-
GEOG 360 (was GEO 365)	GIS I: GIS Systems and Theory	4	F, SP	F				
NR 202 NEW!	Natural Resource Problems and Solutions	2	SP				NR 201 is recommended but not required	
PS 449^	Topics in Comparative Politics	4		SU, W				
PS 475	Environmental Politics and Policy	4	F	SU, F, W,SP		SP		
RNG 455	Riparian Ecology and Management	4		SP	SP		RNG 355	
RNG 490	Rangeland Management and Planning	4	W	W		SP		

Total Credits= 40 Option Code=680

Recreation and Tourism Management

Goal of 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.

Total Credits= 40 Option Code=681

RECREATION RESOURCE MANAGEMENT								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Recreation and Tourism Management Foundation (19-20 credits)								
FES 251	Recreation Resource Management	4	F	SP				
FES 351	Recreation Behavior and Management	4	W				FES 251 with C- or better	No freshmen or sophomores
FES 422	Research Methods in Social Science	4	W		SP		ST 351	
FES 352	Wilderness Management	3		F, W, SP,SU				
or FES 353 NEW!	Nature, Eco and Adventure Tourism	3			F			
or FES 493	Environmental Interpretation	4	W	F, SP				CORV=Restricted to COF majors and F&W, No freshman/sophomores
FES 456 NEW!	Planning for Sustainable Recreation	4	SP				FES 251	
FES 457 NEW!	Planning for Sustainable Tourism	4	F,SP				FES 251 with C or better	Coming Soon!
Technical/Field Skills (Choose 10-11 credits)								
CS 195	Website Design	4	F, W					
FE 208	Forest Surveying	4	F	SP			MTH 112 or 241 or 245 or 251 or 252 all with C or better	Restricted to COF majors.
FW 255	Field Sampling of Fish and Wildlife	3	SU, F, W, SP	SU, F, W, SP			WR 121 and computer experience	
FW 341	Fish and Wildlife Law Enforcement	2	F					Weekend class
GEOG 201 (was GEO 301)	Foundations of Geospatial Science and GIS	4	F,SP	F				
GEOG 370 (was GEO 360)	Geovis I: Principles of Cartography	4	F	F			GEOG 201 or GEO 301	
GEOG 472 (was GEO 445)	Geovis III: Geovisual Analytics	3	SP				GEOG 370 or GEOG 371 C- or better	
Applications in Recreation and Social Science (choose 10-11 credits)								
AEC 253*	Environmental Law, Policy and Economics	4	SU, W	SU, W				
ANTH 477	Ecological Anthropology	4					3 credits Social Science	Junior/Senior standing
COMM 324	Communication in Organizations	3	F,W,SP					Spring term = No freshmen
COMM 326	Intercultural Communication	3	F,W	SU	SP			
PS 475	Environmental Politics and Policy	4	F	SU, F, W, SP	SP			

SOC 454*	Leisure and Culture	4		SU, F, W			SOC 204	
SOC 481	Society and Natural Resources	4	SP	F,W,SP			SOc 204	

Total Credits = 40 Option Code: 681

Sustainable Agroforestry

Goal of 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

SUSTAINABLE AGROFORESTRY								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Recreation and Tourism Management Foundation (19-20 credits)								
BOT 488	Environmental Physiology of Plants	3	W				One course in plant physiology or ecology	
CH122*	General Chemistry	5	W, SP	SU, F, W, SP			CH 121 or higher with C- or better	
or CH232*	General Chemistry (lecture)	4	SU, W, SP	SU, W			CH 231 with appropriate labs or higher, C- or better	
and CH262*	Lab for CH232	1	SU, W, SP				CH 261 or higher	

CROP/HORT 300	Crop Production in Pacific Northwest Agroecosystems	4	F	W		F	One year general bio or equiv	
CROP 440	Weed Management	4	F	W, SP		F	One yr. bio science and one course in organic chemistry	CORV= No freshman or sophomore
or FES/FW 445	Ecological Restoration	4	SP	SU, F, SP	SP		BI 370 or equivalent or instructor approval	
CSS 306	Problem Solving: Soil Science Applications	1				F		Not offered on CORV or Ecampus
CSS315^	Nutrient Management and Cycling	4				W	CSS 305 and CH 122	Not offered on CORV or Ecampus
or HORT 316	Plant Nutrition	4	W	F			SOIL 205 or CSS 205 or CSS 305	
FES 433	Planning Agroforestry Projects	2	SP				BOT 341 and/or equiv. course in ecology	
FES/NR/RNG 477*	Agroforestry	3	W				Any basic ecology course.	
FOR 441	Silviculture Principles	4	SP				FES 240 or FOR 240 and FES 141 or FES 241 with C or better in all	COF majors only
or HORT 301	The Biology of Horticulture	3	F	F, SP			General Bio or Botany sequence	Phase I restrictions. Open to NR in Phase II.
HORT 311	Plant Propagation	4	W	F,W			HORT 301	
RNG 442	Rangeland-Animal Relations	4	SP	W				DSC= No Freshman
Choose one of the following courses:								
ANS 215	Beef/Dairy Industries	3	SP				ANS 121	
ANS 216	Sheep/Swine Industries	3	W				ANS 121	
CROP 310	Forage Production	4	SP	SU, F, W		SP	CSS 300 or CROP/HORT 300 and SOIL 205 or CSS 205/305 or equivalent.	
HORT 451	Tree Fruit Physiology and Culture	4	SP				HOT 301 and BOT 331	
HORT 452	Berry and Grape Physiology and Culture	4					HOT 301	Offered in alternative years.
NR 202 NEW!	Natural Resource Problems and Solutions	2	SP				NR 201 is recommended but not required	
The following courses can be taken in the NR Core and Breadth and are recommended for career preparation for Sustainable Agroforestry:								
RNG 441	Rangeland Analysis (Range/NR Breadth)	4	F	SP		SP	ST 351	DSC= Upper Class Standing

Total Credits= 40-42 Option Code= 684

Urban Forest Landscapes ecampus

Goal of 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.

URBAN FOREST LANDSCAPES								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Urban Forest Foundations (22 - 23 credits)								
FES/HORT 350	Urban Forestry	3		F, W			Foundational Horticulture or Forestry courses recommended.	
FES/FW 445	Ecological Restoration	4	SP	F, SP, SU	SP		BI 370 or equivalent or instructor approval	
FES/HORT447	Arboriculture	4	W				Any basic ecology course	
FES/HORT 455	Urban Forest Planning, Policy and Management	4		F			FES/HORT 350	

HORT 226	Landscape Plant Materials I: Deciduous Hardwoods & Conifers	4	F	F				
HORT 318^	Applied Ecology of Managed Ecosystems	3	F	F				CORV=Phase I restriction. Open to NR in Phase II
or HORT 315	Sustainable Landscapes: Maintenance, Conservation, Restore	4	W	SP			Basic knowledge of plant physiology is recommended.	
Social/Political/Community Integration (19-20 credits)								
ANS/FES/FW/SOC 485*	Consensus and Natural Resources	3	W	SU, F,W				Upper Class Standing
ANTH 481*	Natural Resources and Community Values	3	F	F, W			3 credits Social Science.	CORV=Junior/Senior standing.
FOR 462	Natural Resources Policy and Law	3	F					No freshmen or sophomore. No Non-Degree or INTO
or PS 475	Environmental Politics and Policy	4	F	SU, F, W, SP	SP			
FW 462	Ecosystems Services	3		SP			BI 370 or equivalent course work	
GEOG 450 (was GEO 423)	Land Use in the American West	3	F					
or FW 435^	Wildlife in Agricultural Ecosystems	3	W	SU, F, W, SP			BI 370 and FW 251 or equivalent course	
SOC 481*	Society and Natural Resources	4	SP	F,W,SP			SOC 204	CORV=No freshmen or sophomores

Total Credits=41-43 Option Code=685

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.

WATERSHED MANAGEMENT								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
CH 122*	General Chemistry	5	W, SP	SU,F, W, SP			CH 121 or higher and appropriate labs with a C- or better	
or CH 232*	General Chemistry	4	SU, W, SP	SU, W	W		CH 231 with C- or better and labs	
and CH 262	Lab for CH 232	1	SU, W, SP		W		CH 261 with D- or better.	
FE 430	Watershed Processes	4	SP	F				No Freshmen or Sophomores.
FES/FW 445	Ecological Restoration	4	SP	F,SP,SU	SP		BI 370 or equivalent coursework or instructor approval	

FW 315	Ichthyology	3	F	SU, W, SP			One yr. introductory Biology	
and FW316	Systematics of Fishes	2	F	SU, W,SP			BI 211, 212, 213 or BI 204.205,206	Recommended co-req with FW 315
or just GEO487	Hydrogeology	4	F				MTH 252 and GEO 202	
FW 456	Limnology	5	SP	W, SP				Senior standing
MTH 252*	Integral Calculus	4	SU, F, W, SP	SU, F, W, SP	W		MTH 251 with C- or better	
PH201*	General Physics	5	SU, F				MTH 111 and MTH 112	PH 201, 202, 203 must be taken in order
PH 202*	General Physics	5	SU, W				MTH 111 and MTH 112 and PH 201	
RNG 455	Riparian Ecology and Management	3		SP			RNG 355	
or FW 479	Wetlands and Riparian Ecology	3		SU, F, W, SP			BI 370 or BI 371	
SOIL 466	Soil Morphology and Classification	4	SP				SOIL 205 and labs or CSS 205/305	
The following courses should be taken in the NR Core and are required prerequisites for some courses in this Option. They are also recommended for career preparation in Watershed Management..								
BI 211, BI 212, BI 213 (On Campus Only) **OR** BI 204, BI 205, BI 206 (Ecampus students only)	It is preferred that students in this option take a "biology for science majors" series in the NR Core. BI 211/BI 204 are offered Fall term, BI 212/BI 204 are offered Winter term and BI 213/BI 205 are offered in the Spring term. The courses do not need to be taken in order. BI 212/BI 204 and BI 213/BI 205 have a prerequisite of CH 121 or an equivalent Chemistry course. You may need to petition the biology department for transfer chemistry courses to be accepted as the prerequisite. Allow time for petitions to be approved and plan accordingly. Contact your Academic Advisor for more information.							
BI 370	Ecology *(General Ecology)*	3	F, W, SP	SU, F, W, SP	W		BI 211,212, 213 or BI 204,205,206 with C- or better	
FE 208	Forest Surveying *(Measurements)*	4	F	SP			MTH 112, or 241, or 245 or 251 or 252 with C- or better	
GEO 202	Earth Systems Science *(Earth Science)*	4	W					
MTH251*	Differential Calculus *(Mathematics)*	4	SU, F, W, SP	SU, F, W, SP			MTH 111 or ALEKS placement test score of 75%	
RNG 355	Desert Watershed Management *(Water Science)*	3	F	W	W	W		

Total Credits: 43-44 Option Code: 686

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.
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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.
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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.

WILDLAND FIRE ECOLOGY								
COURSE NUMBER	COURSE NAME	CREDIT	COR	DSC	CAS	EOU	PREREQUISITES	RESTRICTIONS
Foundations in Wildland Fire and Recovery (21 Credits)								
FES 440	Wildland Fire Ecology	3	W	W, SP	W		Course work in ecology and natural resource management	Junior or senior standing
FES/FW 445	Ecological Restoration	4	SP	F, SP, SU	SP		BI 370 or equivalent or instructor approval	
or RNG 421	Wildland Restoration and Ecology	4		F		W	Coursework in Soils and Ecology	
FES 454	Managing at the Wildland-Urban Interface	3		F			FOR 111 (not required of DSC students)	
FOR 346	Topics in Wildland Fire	3	SP	F, SP			Coursework in Forest Bio or Ecology or quivalent such as FES240 or FES 341	

FOR 436	Wildland Fire Science and Management	4	SP	W, SP				COF majors, F&W, RNG only
FOR 441	Silviculture Principals	4	SP				FES 240 or FOR 240 **and** FES 141 or FES 241	Restricted to COF majors
~~FOR 446~~	~~Wildland Fire Ecology~~	~~3~~	~~W~~	~~W, SP~~	~~W~~	-	~~Coursework in ecology and NR Mgmt.~~	This course is being replaced by FES 440
Ecological and Natural Resource Electives (Choose 19 Credits)								
~~BOT/FES 415~~	~~Forest Insect and Disease Management~~	~~5~~	~~W~~	~~-~~	~~-~~	~~-~~	~~BI 213~~	Replaced by FES 412 and FOR 413
FES 412	Forest Entomology	3						(coming soon) FES 412 and FOR 413 will replace BOT/FES 415
FOR 413	Forest Pathology	3	W				BI 204 or BI 212 or BI 213 and/ or equivalent with C or better	FES 412 and FOR 413 will replace BOT/FES 415
BOT 442	Plant Population Ecology	3	F				BOT 341 or equivalent	
CROP 440	Weed Management	4	F	W, SP			One yr. Bio Sci and one course in organic chemistry	Hybrid options offered as well
FES 342	Forest Types of the Midwest	3		W				
FES/FW 452	Biodiversity Conservation in Managed Forests	3	SP	F			FES 240 or FES 341 or BI 370.	No freshmen or sophomores.
FOR 431 NEW!	Economics and Policy of Forest Wildland Fire	3					AEC 351 or FOR 331 with C or better	
FW 458	Mammal Conservation and Management	4	SP	F, W			9-credits upper division biological science	
SOIL 466	Soil Morphology and Classification	4	SP				SOIL 205 or CSS 205/305	
SOIL 468	Soil Landscape Analysis	4	W				SOIL/CSS 466	

Total Credits= 40 **Option Code= 687**