

**College of Natural Resources
Proposed Catalog Changes
Effective Summer 2019**

ENVIRONMENTAL SCIENCE**1. Add the following course:****ENVS 386 Social-Ecological Systems****3 credits**

Cross-listed with NRS 386

Social-ecological systems are comprised of interconnected social, economic, and environmental components. Explore social-ecological systems frameworks and fundamental principles of sustainability in social-ecological systems by examining theory and practice in case studies. Topics may include natural resource scarcity and human conflict, ecosystem service provision, management, and conservation, and land tenure, rights, and justice relating to human access to natural resources.

Available via distance: No

Geographical Area: Moscow

Rationale: Currently, NRS 386 is offered via the Department of Natural Resources & Society. The EnvS Program advocates a cross-listing because the course content is also applicable and relevant within the interdisciplinary EnvS Core curriculum, within the Sustainability and Integration sub-core.

ENVS 475 Local & Regional Environmental Planning**3 credits**

Cross-listed with NRS 475

This course focuses on planning by governments, nonprofit organizations, and collaborative partnerships at the local level and regional level. Students will study a variety of planning approaches, such as community visioning and policy and management tools.

Prereq: Junior or Senior standing or permission

Available via distance: No

Geographical Area: Moscow

Rationale: Currently, NRS 475 is offered via the Department of Natural Resources & Society. The EnvS Program advocates a cross-listing because the course content is also applicable and relevant within the interdisciplinary EnvS curriculum.

FISH AND WILDLIFE SCIENCES

1. Add the following courses:

FISH 411 Fish Physiology**2 credits**

Joint-listed with FISH 511

Physiology of fishes, their implications, and applications. Principles and methods used to study organ systems and physiological mechanisms of homeostatic regulation in fishes.

Prereq or Coreq: FISH 481

Available via distance: Yes

Geographical Area: Moscow

Rationale: This course replaces the fisheries component on WLF 371 in order to better focus and meet the needs of fisheries students. Dr.

Small taught the WLF 371 fisheries component and will now be teaching FISH 411 instead and joint listing it with his graduate fish physiology course FISH 511. No additional workload will be added.

FISH 450 Ecology and Conservation of Freshwater Invertebrates**2 credits**

Joint-listed with FISH 550

The course will survey the evolutionary origins and identification of major groups of invertebrates occurring in freshwaters, examine the key behavioral, morphological, and physiological traits possessed by freshwater invertebrates, identify the key ecological roles and influence of invertebrates in freshwater ecosystems and ecosystem services, and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition.

Cooperative: open to WSU degree-seeking students. (Spring Alt/yrs)

Prereq: Biol 114 or ENT 322 or Permission.

FISH 550 Ecology and Conservation of Freshwater Invertebrates**2 credits**

Joint-listed with FISH 450

The course will survey the evolutionary origins and identification of major groups of invertebrates occurring in freshwaters, examine the key behavioral, morphological, and physiological traits possessed by freshwater invertebrates, identify the key ecological roles and influence of invertebrates in freshwater ecosystems and ecosystem services, and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition.

Cooperative: open to WSU degree-seeking students. (Spring Alt/yrs)

Available via distance: Yes

Geographical Area: Moscow

Rationale: FISH 450/550 will provide instruction in a key area relevant to inland fisheries and freshwater ecology because freshwater invertebrates are a key component of food-webs. The material was previously covered in ENT 472/572 but the course has been abandoned with the retirement of James ("Ding")

Johnson and Entomology does not intend to offer again. This course will increase the teaching workload for this faculty member and the research workload will be reduced.

Request listing as Cooperative Course because course is not offered at WSU.

FISH 451 Freshwater Invertebrate Field Methods

2 credits

Joint-listed with FISH 551

The course will survey the systematics and identification of freshwater invertebrates and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Students will collect and identify freshwater invertebrates from habitats surrounding Moscow, Idaho during an intensive field course. The course will occur on one weekend in February and five days of Spring Break. The course has two required field trips. Cooperative: open to WSU degree-seeking students. (Spring Alt/yrs)

Prereq: Biol 114 or ENT 322 or Permission. **Coreq:** FISH 450

FISH 551 Freshwater Invertebrate Field Methods

2 credits

Joint-listed with FISH 451

The course will survey the systematics and identification of freshwater invertebrates and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Students will collect and identify freshwater invertebrates from habitats surrounding Moscow, Idaho during an intensive field course. The course will occur on one weekend in February and five days of Spring Break. The course has two required field trips. Cooperative: open to WSU degree-seeking students. (Spring Alt/yrs)

Prereq: Biol 114 or ENT 322 or Permission. **Coreq:** FISH 450

Available via distance: No

Geographical Area: Moscow

Rationale: FISH 551 will provide instruction in a key area relevant to inland fisheries and freshwater ecology because freshwater invertebrates are a key component of food-webs. The material was previously covered in ENT 472/572 but the course has been abandoned with the retirement of James ("Ding") Johnson and Entomology does not intend to offer again. This course will increase the teaching workload for this faculty member and the research workload will be reduced.

FISH 526 Climate Change and Ecosystem Management

2 credits

Climate change and the conservation and management of populations and ecosystems. This graduate seminar will examine the current understanding of climate controls on ecosystems, likely scenarios for climate change in coming years, effects on fish and wildlife communities and populations, and policy discussions as they relate to conservation and management using analysis of primary literature, and oral and written assignments.

Cooperative: open to WSU degree-seeking students. (Fall Alt/yrs)

Prereq: Previous coursework in ecology or Permission.

Available via distance: Yes

Geographical Area: Moscow

Rationale: FISH 526 will establish the course as a regularly offered course taught on a biennial rotation. The course was taught as a FISH 504 Special Topics course by Caudill in Fall 2015 (1 credit), by Caudill, K. Vierling, and Svancara in 2017 (1 credit) and by K. Vierling, Caudill, and Svancara in Fall 2018 (2 credit, on-line). The course will be a component of the graduate teaching load of Caudill and Vierling as a regularly offered course rather than a special topics course and will not require adjustment to workload.

Request listing as Cooperative Course because course is not offered at WSU.

WLF 549 Applied Mixed Effects Modeling

2 credits

Analysis of complex ecological data with mixed effects models and their various extensions. After a brief review of generalized linear modeling, students will gain practical experience in the use of linear and generalized linear mixed models to analyze hierarchical datasets (continuous, count, binary, etc.) that include inherent serial or spatial autocorrelation. Cooperative: open to WSU degree-seeking students. (Fall, Alt/yrs)

Prereq: STAT 431

Available via distance: No

Geographical Area: Moscow

Rationale: After two years of teaching this as a special topics course (WLF 504) with sufficient enrollment I would like to convert the course to a regular course listed in the catalog.

WLF 550 Quantitative Analysis of Fish and Wildlife Populations

2 credits

Contemporary mathematical and statistical models central to fish and wildlife research and management, including capture-recapture, occupancy, resource selection, movement, population growth, hierarchical models.

Prereq: MATH 160 or equivalent, STAT 431

Available via distance: Yes

Geographical Area: Moscow

Rationale: Department is consolidating into this course a core set of quantitative methods that have proliferated and dissipated among many low-enrollment graduate courses. One or more of the existing quantitative graduate courses will be retired.

2. Change the following courses:

FISH 315 Fish Ecology Lab Field Techniques and Methods

12 credits

Laboratory and field experience in fish ecology with emphasis on field techniques, laboratory experimentation, and habitat assessment. One weekend field trip and several day trips required. (Fall only)

Prereq: FOR 221, REM 221, [NR 321](#), or BIOL 314

Coreq: FISH 314

Available via distance: No

Geographical Area: Moscow

Rationale: The laboratory is currently scheduled as a one-credit course but with weekly meetings of two-hour duration. In reality, several field trips, independent research, lab write ups and weekly meetings make this a significant commitment for one credit. Additionally, we are trying to parallel tracks in the Fish and Wildlife majors at this level, with the WLF315 recently becoming a 2-credit course that focuses on a techniques-based experience that is related to but separate from WLF314.

FISH 481 Ichthyology

4 credits

Anatomy, ~~taxonomy~~[systematics](#), physiology, [behavior](#), genetics and zoogeography of fishes. Three lectures and one 3-hr lab per week. (Spring only).

Prereq: BIOL 114 and BIOL 115, and BIOL 213 or instructor permission. [Course has 2 required field trips.](#)

Available via distance: No

Geographical Area: Moscow

Rationale: We are making this change to update the description and clarify the field trip requirement for students. There is no workload increase.

FISH 511 Fish Physiology

2 credits

[Joint-listed with FISH 411](#)

~~Principles and methods used to study vital organs, organ systems, growth, and reproduction of fishes; emphasis on osmoregulation, metabolism, endocrinology, and respiration.~~ [Physiology of fishes, their implications, and applications. Principles and methods used to study organ systems and physiological mechanisms of homeostatic regulation in fishes.](#) Cooperative: open to WSU degree-seeking students. (~~Fall~~[Spring](#), Alt/yrs)

Prereq: Permission.

Available via distance: Yes

Geographical Area: Moscow

Rationale: FISH 511 will now be joint listed with the undergraduate fish physiology course FISH 411, a new 2 credit course. FISH 511 will now be 3 credits and include an extra hour of journal paper discussion per week with additional writing assignments, beyond that of FISH 411. No additional faculty workload will be added.

FISH 516 Animal Movement, Dispersal and Migration

3 credits

Key theories and approaches for studying animal movement and dispersal in aquatic, marine and terrestrial environments, with critical analysis of empirical examples. Students are expected to develop an independent research project. [The course includes a 3-day field trip touring important bird and fish migration locations in the Columbia Basin. Cooperative: open to WSU degree-seeking students](#)

Available via distance: No

Geographical Area: Moscow

Rationale: Addition of a field trip will provide experiential learning opportunities to students. The field trip will substitute for some lecture activities and thus the change will not affect workload.

Request listing as Cooperative Course because course is not offered at WSU.

REM 411 Ecological Monitoring and Analysis

2 credits

[Cross-listed with WLF 411](#)

This course integrates field sampling with quantitative and theoretical concepts related to scientific research, wildlife habitat, and land management practices. Students collect, analyze, and report on ecological data in various formats, and learn specific protocols used by professionals to assess wildlife habitat. Class field trips required. Recommended preparation: REM 252 and REM 253, REM 341, or other plant identification class; ability to use excel. Co-enrollment in REM 410 is recommended.

Prereq: STAT 251 or Permission.

Available via distance: Yes

Geographical Area: Online

Rationale: Course is currently being taught by faculty in the Fish and Wildlife Sciences Department, and course material has been updated. There is no change to the workload.

WLF 201 Fish and Wildlife Applications †

12 credits

This ~~two semester sequence (WLF 201, FISH 202) of courses~~ will introduce students to ~~research questions and methods in fish and wildlife sciences~~ [research and monitoring methods, data analysis and report writing in fish and wildlife sciences](#), ~~the culture and organization of~~ potential

state, federal and tribal employers, and management challenges for fish and wildlife populations and habitats. The course will include an [off campus experiential learning field trip and activities with professional mentors](#).

Prereq: NR 101 or Permission

Available via distance: No

Geographical Area: Moscow

Rationale: Description is updated to better reflect current content. Department is removing the 1 credit Fish202 companion course and changing this course to a 2 credit course.

WLF 370 Management and Communication of Scientific Data

23 credits

~~Students will learn skills for managing and presenting scientific data. Spreadsheets and basic data management software, summary, and graphical representation.~~ [Students will learn skills to analyze, manage and present scientific data. Analyses will be conducted in R, spreadsheets and basic data management software. Data summaries will include graphical and tabular presentation.](#) Written presentation of scientific information will include organization, grammar, and citation formats appropriate for scientific reports.

Available via distance: No

Geographical Area: Moscow

Rationale: Data analysis and scientific writing are key skills for fish and wildlife professionals and recent department assessments have indicated that we need to enhance this component of our curriculum. Faculty will co-develop and team teach this course to minimize the added workload.

WLF 371 Physiological Ecology of ~~Fish and~~ Wildlife

32 credits

Study of how biotic and abiotic components of the environment influence animal physiology, and how the physiology of animals influences their ecology (e.g., behavior, distribution, etc.). Major topics include energetics, thermal ecology, nutritional ecology, reproductive physiology, ~~osmoregulation, and endocrinology~~ [locomotion and movement, and adaptations to extreme environments](#). (Spring only)

Prereq: BIOL 213

Available via distance: Yes

Geographical Area: Moscow

Rationale: This course removes the fisheries component of WLF 371, which was previously team-taught by fisheries and wildlife professors, in order to better meet the needs of students in the wildlife program. The course will be taught by Dr. Long, who previously taught the wildlife component of the joint fish/wildlife version of the course. No additional workload will be added.

WLF 448 Fish and Wildlife Population Ecology**4 credits**

Dynamics of animal populations resulting from balance between birth, death, and movement processes; quantitative methods for measuring distribution, abundance, survival and population growth; competition, predation, and self-regulation; viability and management of fish and wildlife populations. Three lec and one lab a wk. [One weekend field trip required.](#) (Spring only)

Prereq: STAT 251; MATH 160 or 170.

Available via distance: No

Geographical Area: Moscow

Rationale: The course has included a field trip to Farragut Wildlife Management area since Dr. Long began teaching it in 2016. The field trip stemmed from a collaboration between UI and the Idaho Department of Fish and Game, and involves the collection of real wildlife monitoring data by students that are subsequently used by IDFG to evaluate wildlife responses to fuels management in the WMA. The proposed change to the description makes the field trip an explicit requirement of the course.

WLF 575 Behavioral Ecology**2 credits**

Behavioral Ecology is the study of evolutionary causes and fitness consequences of behavioral decisions by animals. This course will explore theoretical and empirical approaches to understanding behavioral ecology across a diversity of species, with an emphasis on vertebrates. The format will include short lectures and facilitated discussions of primary literature. The course is open to graduate students and seniors with instructor permission. [Cooperative: Available to WSU degree-seeking students.](#)

Available via distance: Yes

Geographical Area: Moscow

Rationale: An equivalent course is not offered at WSU, and inclusion of WSU students will increase enrollment in UI courses and strengthen collaborations between the two Universities. No additional workload is anticipated as the course is already offered in alternate years at UI.

3. Make the following curricular changes to the **Fishery Resources Major** (B.S.Fish.Res.):

Students pursuing a B.S. degree in fishery resources (management or aquaculture emphasis) must have received a grade of C or better in each of the following four indicator courses to register for fish- and wildlife-prefixed upper-division courses and to graduate with a B.S.Fish.Res.: BIOL 114 and BIOL 213, STAT 251, and FOR 221.

To graduate, students must achieve a grade of C or better in ~~FISH 481~~, and each fish- and wildlife-prefixed upper-division course listed in the requirements for the B.S. degree in fishery resources.

Required course work includes the university requirements (see regulation J-3) and:

First and Second Years		
BIOL 114	Organisms and Environments	4
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 213	Principles of Biological Structure and Function	4
COMM 101	Fundamentals of Public Speaking	2
CHEM 275 or CHEM 277	Carbon Compounds Organic Chemistry I	3
ECON 202	Principles of Microeconomics	3
FISH 102	The Fish and Wildlife Professions	1
FISH 202	Fish & Wildlife Applications II	1
FOR 221	Principles of Ecology	3
FOR 235	Society and Natural Resources	3
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
MATH 160 or MATH 170	Survey of Calculus Analytic Geometry and Calculus I	4
NR 101	Exploring Natural Resources	2
STAT 251	Statistical Methods	3
WLF 201	Fish and Wildlife Applications I	1 ²
WLF 370	Management and Communication of Scientific Data	2
Select one of the following:		<u>4-5</u>
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	Principles of Chemistry I and Principles of Chemistry I Laboratory	
Select one of the following:		4
GEOG 100 & 100L	Physical Geography and Physical Geography Lab	
GEOL 101 & 101L	Physical Geology and Physical Geology Lab	
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	
Third and Fourth Years		
BIOL 250	General Microbiology	3
BIOL 255	General Microbiology Lab	2
BIOL 310 or GENE 314	Genetics General Genetics	3
FISH 314	Fish Ecology	3
FISH 315	Fish Ecology Lab Field Techniques and Methods	2 ¹
FISH 398	Renewable Natural Resources Internship	2

or WLF 398	Renewable Natural Resources Internship	
FISH 411	Fish Physiology	<u>2</u>
FISH 415	Limnology	4
FISH 418	Fisheries Management	4
FISH 422	Concepts in Aquaculture	4
or FISH 424	Fish Health Management	
FISH 481	Ichthyology	4
FISH 495	Fisheries Seminar	1
NRS 383	Natural Resource and Ecosystem Service Economics	3
WLF 371	Physiological Ecology of Fish and Wildlife	3
WLF 448	Fish and Wildlife Population Ecology	4
Select one of the following fish electives:¹		<u>3-4</u>
FISH 422	Concepts in Aquaculture	
FISH 424	Fish Health Management	
FISH 430	Riparian Ecology	
FISH 450	Freshwater invertebrates	
& FISH 451	Freshwater invertebrates Field Methods	
Total Hours		88 <u>95-97</u>
Courses to total 120 credits for this degree		

¹Note: if choosing Fish 422 or 424 it must be a different course than selected above

Available via distance: 50% of curricular requirements cannot be completed via distance

Geographical Area: Moscow

Rationale: We are removing fish physiology material from WLF371 based on feedback from student assessment. We are removing Fish202 course and placing that material in the WLF201 course which we are changing to 2 credits. We are increasing the WLF370 course to 3 credits to ensure that we can meet the learning goals for that course and to meet AFS certification guidelines.

4. **Make the following curricular changes to the Wildlife Resources Major (B.S.Wildl.Res.):**

Students pursuing a B.S. in wildlife resources must have received a grade of C or better in each of the following four indicator courses to register in fish- and wildlife-prefixed upper-division courses and to graduate with a B.S. in wildlife resources: BIOL 114 and BIOL 213, STAT 251, and one of FOR 221, [WLF 220](#), [NRS 321](#).

To graduate, a student must receive a grade of C or better in each fish- and wildlife-prefixed upper-division course listed in the requirements for the B.S. in wildlife resources.

Required course work includes the university requirements (see regulation J-3) and:

First and Second Years		
BIOL 114	Organisms and Environments	4
BIOL 115	Cells & the Evolution of Life	3

BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 213	Principles of Biological Structure and Function	4
CHEM 101	Introduction to Chemistry	3
CHEM 101L	Introduction to Chemistry Laboratory	1
CHEM 275 or CHEM 277	Carbon Compounds Organic Chemistry I	3
COMM 101	Fundamentals of Public Speaking	2
ECON 202	Principles of Microeconomics	3
FISH 202	Fish & Wildlife Applications II	1
FOR 221	Principles of Ecology	3
FOR 235	Society and Natural Resources	3
MATH 160 or MATH 170	Survey of Calculus Analytic Geometry and Calculus I	4
NR 101	Exploring Natural Resources	2
STAT 251	Statistical Methods	3
WLF 102	The Fish and Wildlife Professions	1
WLF 201	Fish and Wildlife Applications †	1 <u>2</u>
WLF 370	Management and Communication of Scientific Data	2
Select one of the following:		3-4
FOR 320 <u>220</u>	Dendrology	
REM 341	Systematic Botany	
REM 252 & REM 253	Wildland Plant Identification and Wildland Plant Identification Field Studies	
Select one of the following:		4
GEOL 101 & 101L	Physical Geology and Physical Geology Lab	
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	
SOIL 205 & SOIL 206	The Soil Ecosystem and The Soil Ecosystem Lab	
Third and Fourth Years		
BIOL 310 or GENE 314	Genetics General Genetics	3
FISH 398 or WLF 398	Renewable Natural Resources Internship Renewable Natural Resources Internship	2
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
REM 411 <u>WLF 411</u>	Ecological Monitoring and Analysis	2
WLF 314	Ecology of Terrestrial Vertebrates	3

WLF 315	Techniques Laboratory	2
WLF 371	Physiological Ecology of Fish and Wildlife	3 <u>2</u>
WLF 440	Conservation Biology	3
WLF 448	Fish and Wildlife Population Ecology	4
WLF 492	Wildlife Management	4
Select one of the following:		2-3
COMM 410	Conflict Management	
FOR 484	Forest Policy and Administration	
NRS 250	Environmental Problem Solving	
NRS 387	Environmental Communication Skills	
NRS 462	Natural Resource Policy	
NRS 311	Public Involvement in Natural Resource Management	
WLF 205	Wildlife Law Enforcement	
Select two Restricted elective courses from the following (must receive a grade of C or better):		7-8
BIOL 483	Mammalogy	
BIOL 489	Herpetology	
FISH 481	Ichthyology	
WLF 482	Ornithology	
Total Hours		92-95 <u>91-94</u>

Courses to total 120 credits for this degree

Available via distance: 50% of more of curricular requirements cannot be completed via distance

Geographical Area: Moscow

Rationale: We are removing fish physiology material from WLF371 based on feedback from student assessment. We are removing Fish202 course and placing that material in the WLF201 course which we are changing to 2 credits. We are increasing the WLF370 course to 3 credits to ensure that we can meet the learning goals for that course.

5. Make the following curricular changes to the **Tribal Natural Resource Stewardship Undergraduate Certificate:**

AIST 314	Tribal Sovereignty and Federal Policy	3
AIST 298	Internship	1
<u>or AIST 498</u>	<u>Internship</u>	<u>1-16</u>
FISH 495	Fisheries Seminar	1
FOR 310	Indigenous Culture and Ecology	3
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
or GEOG 385	GIS Primer	

REM/ FOR 221 /WLF 220	Principles of Ecology	3
REM 280	Introduction to Wildland Restoration	2
SOIL 205	The Soil Ecosystem	3
Select one of the following:		4
Chem101 & Chem 101L	Introduction of Chemistry and Introduction to Chemistry Lab	
Geol101 & Geol 101L	Physical Geology and Physical Geology Lab	
Phys 101& Phys101L	Fundamentals of Physics and Fundamentals of Physics Lab	
SOIL 205 & SOIL 206	The Soil Ecosystem and The Soil Ecosystem Lab	
Select one of the following:		3-4
BE 433	Bioremediation	
BE 450	Environmental Hydrology	
FISH 314	Fish Ecology	
FISH 415	Limnology	
FISH 430	Riparian Ecology and Management	
FOR 326	Fire Ecology and Management	
FOR 462	Watershed Science and Management	
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	
LARC 480	The Resilient Landscape	
REM 280	Introduction to Wildland Restoration	
REM 440	Wildland Restoration Ecology	
REM 459	Rangeland Ecology	
WLF 314	Ecology of Terrestrial Vertebrates	
WLF 440	Conservation Biology	
Select one of the following:		3-4
FISH 481	Ichthyology	
FOR 320 220	Dendrology	
PLSC 205	General Botany	
REM 252	Wildland Plant Identification	
REM 253	Wildland Plant Identification Field Studies	
REM 341	Systematic Botany	
Total Hours		25-27 25-42

Courses to total 26 credits for this certificate

Available via distance: 50% of curricular requirements cannot be completed via distance

Geographical Area: Moscow

Rationale: We are removing fish physiology material from WLF371 based on feedback from student assessment. We are removing Fish202 course and

placing that material in the WLF201 course which we are changing to 2 credits. We are increasing the WLF370 course to 3 credits to ensure that we can meet the learning goals for that course.

FOREST, RANGELAND AND FIRE SCIENCES

1. Add the following courses:

FOR 495 Business of Forestry

2 credits

Technical assessment of forestry from a business perspective at the stand and landscape levels, including an examination of factors that affect public and private landowner decision making regarding management of timberland. Course integrates concepts from silviculture, forest management, and natural resource policy into decision making framework.

Prereq: Junior or Senior Standing

Available via distance: No

Geographical Area: Moscow

Rationale: Creation of course in the Forestry degree program is in reaction to accreditor recommendation that a business-oriented capstone course be established in the curriculum. Specifically, the Society of American Foresters stated in their accreditation visit report that: "...a course offered in the fall of the senior year - serves as the Capstone Forestry course. It also meets the General Education requirement of a 'Senior Experience' course. However, based on the syllabus and discussions with the faculty and students, the visiting team thinks that this not the appropriate course to serve as the Capstone because it does not include the management, policy, and economic aspects of forest management, and it is offered in the fall and not the spring—which is the logical temporal placement of an integrative Capstone course." Note the use of the term "business" in the course title and description embraces economic aspects of decision making in forestry.

FOR 514 Forest Biometrics

3 credits

This course provides a broad overview of forest biometrics, including forestry-specific sampling approaches, development of allometric relations, and use of remote sensing datasets.

Prereq: STAT 431 or equivalent

Available via distance: Yes

Geographical Area: Online

Rationale: Addition of course to increase College of Natural Resources online graduate courses in support of existing online MS degrees in Natural Resources and Environmental Science. No change in workload.

REM 529 World Savannas**3 credits**

This course provides a broad overview of world savannas including their characteristics and the ecosystem goods and services they provide. The course focuses on the ecological and biogeochemical characteristics of savannas, how humans use these ecosystems, current problems, and strategies land management are applying to solve them.

Available via distance: Yes

Geographical Area: Online

Rationale: Addition of course to increase College of Natural Resources online graduate courses in support of existing online MS degrees in Natural Resources and Environmental Science. No change in workload. Course has been offered as a special topics course.

REM 570 Presentation Skills for Scientists**2 credits**

A practical course to master the skills required for oral presentations for research, teaching, and outreach. A detailed examination of all elements that must be integrated and mastered for an effective and engaging oral presentation

Available via distance: No

Geographical Area: Moscow

Rationale: This course has been offered as a special topics course (504) for three semesters, with enrollments averaging about eight students, and thus must be adopted as a permanent course in order for it to be offered in future semesters.

2. Change the following courses:

FOR 102 Introduction to Forest Management**~~1~~ 2 credits**

Intro to forestry, current management issues, timber and non-timber resources, educational and professional opportunities. Includes regional field trips ranging in length from one afternoon to one weekend. [Cooperative: open to WSU degree-seeking students.](#)

Available via distance: No

Geographical Area: Moscow

Rationale: Course evaluations have consistently mentioned this class would be better offered as a 2 or 3 credit course so more time could be spent outdoors. A two hour time block will allow for field trips to Pitkin Nursery, UI Arboretum and more hands-on outdoors lessons at the old arboretum within the allotted 2 hour time block. Additionally, more interaction with freshman will help with retention rates as this is the only forestry course offered in their freshman year.

FOR 274 Forest Measurement and Inventory**3 credits**

Practical techniques for the design and execution of vegetation measurements for the inventory of forests, [understory shrublands](#), and fire-fuels. ~~Three one-hour lectures and one three-hour lab per week. (Fall only)~~ [Course offered in fall and summer. Summer offering is an intensive three-week course held at the University of Idaho McCall Field Campus in McCall, Idaho. Field trips occur frequently to provide hands-on training in forest measurement techniques.](#)

Prereq: MATH 143; or SAT math score of 610 or above, or ACT math score of 27 or above.

Prereq or Coreq: MATH 144

Available via distance: No

Geographical Area: Moscow, McCall

Rationale: The fall offering of FOR 274 is now offered in a single time block, one day a week. FOR 274 is also now offered in the summer session as an intensive three-week course at the UofI McCall Field Campus. The course requires numerous field trips and outdoor class exercises.

FOR 275 Forestry Resource Sampling**2 credits**

Principles and practice of natural resource inventory, forest sampling and data analysis techniques, LIDAR, forest growth, and quantitative decision support. Lab analysis examples and use of Excel and statistical packages are integrated into lectures. [Field trips required.](#)

Coreq: FOR 274 and STAT 251

Available via distance: No

Geographical Area: Moscow

Rationale: FOR 275 requires several field trips and outdoor class exercises on the UI Experimental Forest to support a forest inventory term project.

FOR ~~320~~220 Dendrology**43 credits**

Phylogenetic approach to understanding the systematics, morphology, geography, and ecology of the major species of North American woody plants. Includes identification and classification of important tree species of North American and other important woody plants of the Pacific Northwest and northern Rocky Mountains. Three lectures and two 1.5-hour labs a week; two 1-day field trips.

Prereq or Coreq: BIOL 114 ~~or PLSC 205~~

Available via distance: No

Geographical Area: Moscow

Rationale: The proposed changes are made for several reasons. First, the change in course title is proposed to more accurately reflect the content delivered in the course. Specifically, the course focuses on the basic biological principles of taxonomy, ecology and physiology of trees, shrubs and vines, and

this basic understanding is important to develop good tree identification skills (e.g., helps understand not only systematics but also silvics) . Second, as these basic biological principles are the foundation of many forestry courses, and tree identification is a critical skill for many upper level forestry courses, it is important that students be exposed to this material early in their degree program. Thus, the switch from a 300- to 200-level course. Finally, the change from a 4-credit hour to a 3-credit hour course reflects a more accurate representation of the time needed to deliver the material to achieve the learning outcomes of the course. As such, the course will include two 50-minute lecture sessions and one 170-minute laboratory session (as opposed to current configuration of two 75-minute lecture sessions and one 170-minute laboratory session).

FOR 430 Forest Operations

3 credits

Overview of the primary equipment and harvesting systems used in modern forest operations, including field design, layout, and administration of timber sales, logging production and cost estimation, laws, and certification. A brief introduction to quantitative forest planning methods is also provided. There are 2-3 early morning trips and one Saturday field lab (Fall only).

[Cooperative: open to WSU degree-seeking students.](#)

Prereq: [FOR 102](#), PHYS 100/PHYS 100L or PHYS 111/PHYS 111L

Prereq or Coreq: MATH 144.

Available via distance: No

Geographical Area: Moscow

Rationale: The addition of FOR 102 (Introduction to Forest Management) as a prerequisite for FOR 430 (Forest Operations) is important as FOR 102 provides background information on current forest management issues related to both timber and non-timber resources. Understanding these issues is important to applying appropriate forest harvesting systems and techniques (covered in FOR 430) that are compatible and appropriate for forest planning efforts. Additionally, as WSU has no equivalent to UI's FOR 102, it is important that WSU students that take FOR 430 as a cooperative course have the necessary understanding of forest management issues. Requiring FOR 102 as a prerequisite for FOR 430 will provide that these students have the necessary background and understanding to succeed in FOR 430.

REM 411 ~~Ecological Monitoring and Analysis~~ Wildland Habitat Ecology and Assessment

2 credits

[Cross-listed with WLF 411](#)

This course integrates field sampling with quantitative and theoretical concepts related to scientific research, wildlife habitat, and land management practices. Students collect, analyze, and report on ecological data in various formats, and learn specific protocols used by

professionals to assess wildlife habitat. Class field trips required. Recommended preparation: REM 252 and REM 253, REM 341, or other plant identification class; ability to use excel. Co-enrollment in REM 410 is recommended.

Prereq: STAT 251 or Permission.

Available via distance: Yes

Geographical Area: Online

Rationale: Course is currently being taught by faculty in the Fish and Wildlife Sciences Department, and course material has been updated. There is no change to the workload.

REM 440 ~~Wildland~~-Restoration Ecology

3 credits

Cross-listed with NRS 440

~~Ecological principles and management practices involved in restoring and rehabilitating wildland ecosystems after disturbance or alteration to return damaged ecosystems to a productive and stable state. (Spring only)~~ The ecological restoration of disturbed ecosystems. Fundamental principles from ecology, ecophysiology, and community ecology are used in a systems ecology approach to examine how the structure and function of damaged ecosystems can be restored – with the goal of establishing a stable and self-sustaining ecosystem.

Prereq: ~~FOR 221, or REM 221, or equivalent~~ general ecology ~~course~~ (e.g., NR 321, FOR 221, REM 221, WLF 220, BIOL 314), or permission.

Available via distance: No

Geographical Area: Moscow

Rationale: Title: The change in course title better reflects the discipline (as per book titles, research, and journals) and broadens the scope of the course to all types of disturbed ecosystems and their restoration, as well as to a broader audience online.

Description: An updated description to emphasize the broader scope of the course and the scientific approach for restoration disturbed ecosystems.

Prerequisites: Updates prerequisite to accommodate previous curricular changes. Prerequisite includes “or permission” since this online course is open to both UI and non-UI students.

3. Make the following curricular changes to the **Forestry Major** (B.S.Forestry):

Students must have a minimum cumulative grade-point average of 2.00 in forestry (FOR) courses to qualify for the B.S. degree in forestry.

Required course work includes the university requirements (see regulation J-3) and:

BIOL 114	Organisms and Environments	4
ECON 202	Principles of Microeconomics	3
ENT 469	Introduction to Forest Insects	2
FOR 102	Introduction to Forest Management	1 2

FOR 220	Forest Biology and Dendrology	3
FOR 221	Principles of Ecology	3
FOR 235	Society and Natural Resources	3
FOR 275	Forestry Resource Sampling	2
FOR 274	Forest Measurement and Inventory	3
FOR 320	Dendrology	4
FOR 324	Forest Regeneration	3
FOR 330	Forest Soil and Canopy Processes	4
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
FOR 424	Silviculture Principles and Practices	4
FOR 430	Forest Operations	3
FOR 462	Watershed Science and Management	3
FOR 468	Forest and Plant Pathology	2
FOR 484	Forest Policy and Administration	2
FOR 495	Business of Forestry	2
MATH 143	Pre-calculus Algebra and Analytic Geometry ¹	3
MATH 144	Analytic Trigonometry ¹	1
NR 101	Exploring Natural Resources	2
NRS 383	Natural Resource and Ecosystem Service Economics	3
PHYS 100	Fundamentals of Physics	3
PLSC 205	General Botany	4
REM 144 or FOR 326	Wildland Fire Management Fire Ecology and Management	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
STAT 251	Statistical Methods	3
Select one of the following:		4
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	Principles of Chemistry I and Principles of Chemistry I Laboratory	
Select one of the following:		4
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics 1 and General Physics 1 Lab	
Advisor Approved Electives or Minor		
Select 13 credits of advisor approved Electives OR one of the following minors:		13-22
Business		
Ecology		

Environmental Communication

Fire Ecology and Management

Fishery Resources

Forest Operations

Horticulture

Natural Resource Conservation

Natural Resources Economics

Renewable Materials

Rangeland Ecology and Management

Soil Science

Wildlife Resources

Total Hour**92-101**102-111**Courses to total 120 credits for this degree**

¹ A SAT math score of 610 or above, or ACT math score of 27 or above can be used to satisfy the MATH 143 and MATH 144 requirements.

Available via distance: 50% of curricular requirements cannot be completed via distance

Geographical Area: Moscow

Rationale: These changes in the FORESTRY curriculum are the result of the addition of FOR 495 (a capstone course focused on the business of forestry) following the recommendations of the Society of American Foresters, the accrediting body of the BS in Forestry. Additionally, we are dropping the requirement of PLSC 205 (Botany) as that competency is covered in the revised FOR 320 that will be renumbered as FOR 220. Finally, we are adding PHYS 111 as an option to PHYS 101 (with accompanying labs).

NATURAL RESOURCES

1. Add the following courses:

NR 210 Undergrad Research Experience I**2 credits**

Introduction to the scientific method in natural resources and environmental sciences, including ethics as it applies to research. Students are selected through an application process and are provided a budget to pursue a research topic of interest. Depending on project, student may participate in field trips and laboratory study.

Available via distance: No

Geographical Area: Moscow

Rationale: The Undergraduate Research Experience is targeted at newly enrolled freshmen and incoming transfer students. Students enroll into a year-

long program (2 credit fall, 1 credit spring) focused on learning the scientific method, describing data, and various approaches to reporting research results. A particular goal of this experience is to increase student enrollment in CNR. See attachment for more details. College has teaching capacity to offer course

NR 211 Undergrad Research Experience II

1 credit

Continuation of NR 210. Focus on describing data and various methods of reporting research results. Depending on project, student may participate in field trips and laboratory study. Participation in UI Undergraduate Research Symposium is expected.

Prereq: NR 210

Available via distance: No

Geographical Area: Moscow

Rationale: The Undergraduate Research Experience is targeted at newly enrolled freshmen and incoming transfer students. Students enroll into a year-long program (2 credit fall, 1 credit spring) focused on learning the scientific method, describing data, and various approaches to reporting research results. A particular goal of this experience is to increase student enrollment in CNR. See attachment for more details. College has teaching capacity to offer course

2. Make the following curricular changes to the **Ecology and Conservation Biology Major** (B.S.Ecol.Cons.Biol.):

The program requires 120 credits, and students must choose either the natural resources ecology or conservation biology option. Students pursuing a B.S. in Ecology & Conservation Biology must receive a grade of 'C' or better in each of the following 4 indicator courses to register in upper division courses in NRS/FISH/FOR/REM/WLF and to graduate with a B.S. in either option: BIOL 114, BIOL 213, STAT 251, FOR 221, WLF 220, or NR 321~~or REM 221~~. Before students are allowed to begin their senior thesis or project (485 or 497), they must attend two evening thesis / project sessions and one senior poster presentation.

Required course work includes the university requirements (see regulation J-3) and:

BIOL 114	Organisms and Environments	4
BIOL 115	Cells & the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 213	Principles of Biological Structure and Function	4
BIOL 314 or FOR 221	Ecology and Population Biology Principles of Ecology	3-4
COMM 101	Fundamentals of Public Speaking	2
ECON 202 or ECON 272	Principles of Microeconomics Foundations of Economic Analysis	3-4
ENGL 317 or WLF 370	Technical Writing Management and Communication of Scientific Data	3
FOR 235	Society and Natural Resources	3

FOR 3 220 or REM 341	Dendrology Systematic Botany	3-4
FOR 375	Introduction to Spatial Analysis for Natural Resource Management	3
MATH 160 or MATH 170	Survey of Calculus Analytic Geometry and Calculus I	4
NR 101	Exploring Natural Resources	2
NR 200	Seminar	1-16
NR 300	Ecology and Conservation Biology Thesis Seminar	1
NRS 383	Natural Resource and Ecosystem Service Economics	3
STAT 251	Statistical Methods	3
Select one of the following:		3-4
BIOL 314	Ecology and Population Biology	
FOR/REM 221	Principles of Ecology	
/WLF 220		
NR 321	Ecology	
Select one of the following:		4
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	Principles of Chemistry I and Principles of Chemistry I Laboratory	
Select one of the following:		1
FISH 473	ECB Senior Presentation	
FOR 473	ECB Senior Presentation	
NRS 473	ECB Senior Presentation	
REM 473	ECB Senior Presentation	
RMAT 473	ECB Senior Presentation	
WLF 473	ECB Senior Presentation	
Select one of the following:		3
FISH 485	Ecology and Conservation Biology Senior Project (Max 3 credits)	
FISH 497	Senior Thesis (Max 6 credits)	
FOR 497	Senior Thesis (Max 98 credits)	
NR 497	Senior Thesis (Max 3 credits)	
REM 497	Senior Research and Thesis	
WLF 497	Senior Thesis (Max 6 credits)	
Options		
Select one of the following options:		
Natural Resources Ecology		
Conservation Biology		
Total Hours		54-72 55-76

A. Natural Resources Ecology Option

The natural resources ecology option combines ecological theory, field experience, and quantitative tools to gain an interdisciplinary understanding of the structure and function of ecosystems. This field covers ecological topics from local, regional, and landscape scales while integrating the social and biophysical worlds.

To graduate in this option, students must achieve a "C" or better in the following six core courses: NR 200, FOR 330, REM 429, SOIL 205/SOIL 206, and WLF 448.

FOR 330	Forest Soil and Canopy Processes	4
REM 429	Landscape Ecology	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
WLF 448	Fish and Wildlife Population Ecology	4
Select one of the following:		3
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	
Select one Quantitative Resource Analysis Restricted elective from the following:		2-4
FOR 472	Remote Sensing of the Environment	
GEOG 385	GIS Primer	
NRS 310	Social Science Methods	
REM 410	Principles of Vegetation Measurement and Assessment ¹	
REM 411	Ecological Monitoring and Analysis ¹	
WLF 411	Ecological Monitoring and Analysis	
STAT 431	Statistical Analysis	
STAT 422	Sample Survey Methods	
		3-4
Select one Resource Management Restricted elective from the following:		
FISH 418	Fisheries Management	
FOR 424	Silviculture Principles and Practices	
FOR 462	Watershed Science and Management	
NRS 386	Social-Ecological Systems	
NRS 490	Wilderness and Protected Area Management	
NRS 496	Monitoring Impacts in Protected Areas and Wilderness	
REM 456	Integrated Rangeland Management	
WLF 492	Wildlife Management	
Select 10 credits of Ecology Restricted electives from the following: ²		10
BIOL 421	Advanced Evolution/Population Dynamics	
BIOL 478	Animal Behavior	
ENT 469	Introduction to Forest Insects	
FISH 314	Fish Ecology	
FISH 315	Fish Ecology Lab Field Techniques and Methods	

FISH 415	Limnology	
FISH 430	Riparian Ecology and Management	
FOR 326	Fire Ecology and Management	
FOR 468	Forest and Plant Pathology	
GEOG 410	Biogeography	
PLSC 410	Invasive Plant Biology	
REM 440	Wildland Restoration Ecology	
REM 459	Rangeland Ecology	
REM 460	Integrating GIS and Field Studies in Rangelands	
WLF 314	Ecology of Terrestrial Vertebrates	
WLF 315	Techniques Laboratory	
WLF 440	Conservation Biology	
Select one Social/Political Restricted elective from the following:		2-3
COMM 410	Conflict Management	
FOR 484	Forest Policy and Administration	
GEOG 420	Land, Resources, and Environment	
HIST 424	American Environmental History	
NRS 387	Environmental Communication Skills	
NRS 462	Natural Resource Policy	
NRS 311	Public Involvement in Natural Resource Management	
NRS 493	International Land Preservation and Conservation Systems	
PHIL 452	Environmental Philosophy	
POLS 364	Politics of the Environment	
Total Hours		35-39

Courses to total 120 credits for this degree

¹ Both REM 410 and REM 411 must be completed to satisfy Quantitative Resource Analysis Restricted Elective requirement.

² At least 2 credits from FISH 315, FISH 415, FISH 430, REM 460, and/or WLF 315

B. Conservation Biology Option

The conservation biology option is centered around a multidisciplinary curriculum that provides students with training to work in jobs aimed at conserving the earth's biodiversity. This option provides a broad-based education that covers biological diversity from the genetic level to the landscape level, and provides additional training in social sciences and management. In the words of Hunter (1996), "Conservation biology is cross-disciplinary, reaching far beyond biology into subjects such as philosophy, economics, and sociology; disciplines that are concerned with the social environment in which we practice conservation--as well as into subjects such as law and education that determine the ways we implement conservation."

To graduate in this option, students must achieve a "C" or better in the following seven core courses: BIOL 421, NR 200, REM 429, PHIL 452, WLF 440, and WLF 448.

BIOL 310 or GENE 314	Genetics General Genetics	3
BIOL 421	Advanced Evolution/Population Dynamics	3

NRS 493 or ENVS 225	International Land Preservation and Conservation Systems International Environmental Issues Seminar	3
PHIL 452	Environmental Philosophy	3
REM 429	Landscape Ecology	3
WLF 440	Conservation Biology	3
WLF 448	Fish and Wildlife Population Ecology	4
Select one Quantitative Resource Analysis Restricted elective from the following:		2-4
FOR 472	Remote Sensing of the Environment	
GEOG 385	GIS Primer	
NRS 310	Social Science Methods	
REM 410	Principles of Vegetation Measurement and Assessment ¹	
REM 411	Ecological Monitoring and Analysis ¹	
STAT 422	Sample Survey Methods	
STAT 431	Statistical Analysis	
Select one Resource Management Restricted elective from the following:		3-4
FISH 418	Fisheries Management	
FOR 424	Silviculture Principles and Practices	
FOR 462	Watershed Science and Management	
NRS 386	Social-Ecological Systems	
NRS 490	Wilderness and Protected Area Management	
NRS 496	Monitoring Impacts in Protected Areas and Wilderness	
REM 456	Integrated Rangeland Management	
WLF 492	Wildlife Management	
Select 6 credits of Ecology Restricted electives from the following: ²		6
BIOL 478	Animal Behavior	
ENT 469	Introduction to Forest Insects	
FISH 314	Fish Ecology	
FISH 315	Fish Ecology Lab Field Techniques and Methods	
FISH 415	Limnology	
FISH 430	Riparian Ecology and Management	
FOR 330	Forest Soil and Canopy Processes	
FOR 326	Fire Ecology and Management	
FOR 468	Forest and Plant Pathology	
GEOG 410	Biogeography	
PLSC 410	Invasive Plant Biology	
REM 440	Wildland Restoration Ecology	
REM 459	Rangeland Ecology	
REM 460	Integrating GIS and Field Studies in Rangelands	
WLF 314	Ecology of Terrestrial Vertebrates	
WLF 315	Techniques Laboratory	

Select one Organismal Biology Restricted elective from the following:		3-4
BIOL 483	Mammalogy	
BIOL 489	Herpetology	
FISH 481	Ichthyology	
WLF 482	Ornithology	
Select one Social/Political Restricted elective from the following:		2-3
COMM 410	Conflict Management	
FOR 484	Forest Policy and Administration	
GEOG 420	Land, Resources, and Environment	
HIST 424	American Environmental History	
NRS 387	Environmental Communication Skills	
NRS 462	Natural Resource Policy	
NRS 311	Public Involvement in Natural Resource Management	
POLS 364	Politics of the Environment	
NRS 386	Social-Ecological Systems	
ENVS 225	International Environmental Issues Seminar	
Total Hours		38-43

¹ Both REM 410 and REM 411 must be completed to satisfy Quantitative Resource Analysis Restricted Elective requirement.

² At least 2 credits from FISH 315, FISH 415, FISH 430, REM 460, and/or WLF 315

Courses to total 120 credits for this degree

Available via distance: 50% or more of curricular changes cannot be completed via distance

Geographical Area: Moscow

Rationale: Over the past five years, two of the courses in our 'International Conservation' bin (NRS 493 International Land Preservation and Conservation Systems (3 cr) and REM 450 Global Environmental Change (3 cr)) have not been taught consistently. For student in our Conservation Biology option, it is mandatory to take one of these courses, or to take ENVS 225 (International Environmental Issues Seminar). However, the scheduling for ENVS 225 does not give our students enough flexibility to consistently meet this requirement, and they have been consistently placed in a position where they have to petition out of this mandate. Until there is a suite of international conservation courses taught at the University of Idaho, we propose to drop this requirement. Instead, we will require that students in the Conservation Biology option take two social science courses (instead of one as currently required).

NRS 386 Social-Ecological Systems (3 cr) is a new course in Natural Resources and Society, and does a good job of meeting our programmatic mandate to give ECB students in our Conservation Biology option academic exposure to the intersection between ecology and the social sciences.

3. Make the following curricular changes to the **Natural Resources Major, Environmental Education and Science Communication Option (M.N.R.)**:

NRS 501 Seminar: Contemporary Issues in Society and Natural Resources	<u>2</u>
Ecology and Management	8
NRS 560 Place-based Ecology I	
NRS 566 Place-based Ecology II	
Human Dimensions	6
NRS 565 Science Communication and the Environment	
NRS 575 Leadership for the Environmental Educator	
Policy Planning and Law	6
NRS 563 Place Based Env. Education	
NRS 568 Environmental Education Teaching Practicum II	
Tools and Technology	6
NRS 562 Field Science Teaching	
NRS 564 Teaching Environmental Education in a Winter Environment	
NRS 567 Environmental Education Teaching Practicum I	
Case Study Project	3
NRS 502 Directed Study	
NRS 599 Research	
Select 3 credits from the following:	3
NRS 504 Special Topics	
NRS 569 Environmental Education Teaching Practicum III	
Total Hours	3234
Courses for this option to total 3234 credits	

Available via distance: 50% of curricular requirements cannot be completed via distance

Geographical Area: McCall Field Campus

Rationale: A special topics NRS 504 has been delivered twice and will be offered a third (and final) time fall 2018. This change will allow the course to be permanently offered as part of the MNR curriculum. It is a 1 credit course with four instructors so workload addition is minimal.

NATURAL RESOURCES AND SOCIETY

1. Change the following courses:

NRS 386 Social-Ecological Systems

3 credits

[Cross-listed with ENVS 386](#)

Social-ecological systems are comprised of interconnected social, economic, and environmental components. Explore social-ecological systems frameworks and fundamental principles of

sustainability in social-ecological systems by examining theory and practice in case studies. Topics may include natural resource scarcity and human conflict, ecosystem service provision, management, and conservation, and land tenure, rights, and justice relating to human access to natural resources.

Available via distance: No

Geographical Area: Moscow

Rationale: This course is consistent with fundamental principles to environmental science and environmental systems.

NRS 475 ~~Conservation Planning and Management~~ Local & Regional Environmental Planning
43 credits

~~Gen-Ed: Senior Experience~~

~~Cross-listed with ENV5 475~~

~~Advanced theory, processes and techniques for the management and planning of conservation systems and working landscapes. In-depth focus on conservation planning approaches such as comprehensive, strategic, advocacy and communicative action planning; critical examination of sprawl and the alternatives for managing land use and development on natural sites and larger landscapes at the urban-rural interface. Collaborative group exercises, a community Service-Learning Project and required field trips.~~ This course focuses on planning by governments, nonprofit organizations, and collaborative partnerships at the local level and regional level. Students will study a variety of planning approaches, such as community visioning and policy and management tools.

Prereq: Junior or Senior standing; or Permission

Available via distance: No

Geographical Area: Moscow

Rationale: The proposed change will clarify the differences between two 400-level courses currently offered by the NRS department. This course will be better distinguished from the course NRS 411: Environmental project management and decision-making by a) changing the title to reflect the emphasis of 475 on planning, and b) reducing 475 to 3 credits and taking out the community project component, as the project component is an integral part of the 4-credit 411 course, and not as important for achieving learning outcomes in NRS 475.

NRS ~~411~~476 Environmental Project Management and Decision Making
4 credits

Integrated, interdisciplinary approaches to project and program management and decision making. Emphasis on environmental planning techniques, scenario development, analysis, and application of geospatial tools such as GIS and remote sensing. Direct experience and basic skills for project and program development and evaluation.

Prereq: NRS 311

Available via distance: No

Geographical Area: Moscow

Rationale: While NRS 475 is not a pre-requisite for this course, the course content naturally follows that in NRS 475.

Therefore we request a new number (i.e. NRS 476) that is higher than 475 so that students understand that these two courses have a natural order. NRS 475 will be taught in fall and NRS 476 will be taught in spring.