College of Natural Resources

Proposed Catalog Changes

Effective Term (unless otherwise noted) = Summer 2016

ENVIRONMENTAL SCIENCE

1. Change the following courses

   EnvS 400 (s) Seminar (cr arr)
   *Prereq: Senior-Junior standing

   **Available via distance:**
   **Geographical Area Availability:** Moscow, Idaho Falls
   **Rationale:** EnvS 400 had a sr. standing requirement as it was required fall semester with EnvS 497 to follow in the spring. With the expansion of EnvS 497 into two semesters (fall and spring), we need to move the EnvS 400 course to their junior year for completion prior to starting EnvS 497 Senior Research.

   EnvS J483/J583 Water and Energy Systems (3 cr)
   *EnvS 483 same as Geog 453.* The class covers the basic science of water and energy and the applied interrelationships of those two resources in today's society. The broad spectrum coverage of the topic includes the energy linkage to both the supply and demand of water and also the water linkage to the supply of and demand for energy. The class includes development of systems dynamics models for describing the resource interactions. Recommended Preparation: Basic Physical Sciences.
   *Prereq: Math 143

   **Available via distance:** Yes
   **Geographical Area Availability:** Moscow
   **Rationale:**

   FISH AND WILDLIFE SCIENCES

1. Add the following courses

   Fish 473 ECB Senior Presentation (1 cr)
   *Same as For/NRS/REM/RMat/WLF. Reporting and presenting the senior project (thesis or internship); taken after or concurrently with 485 or 497. Serves as the senior capstone course for Ecology and Conservation Biology (ECB).
   *Prereq: Instructor Permission

   **Available via distance:**
   **Geographical Area Availability:**
   **Rationale:** The Ecology and Conservation Biology program (ECB) currently lacks a capstone course. The ECB senior thesis, in its rigor and cross-disciplinary character, serves as an ideal capstone candidate for this degree. However, ECB students currently register for WLF/REM/FOR/CSS/Fish 485- senior project presentation- a college-wide thesis presentation credit. The creation of an ECB-specific thesis presentation course will allow for this course to be submitted as a capstone experience for ECB.

   All ECB students are already required to take one credit of thesis presentation (485) so this addition will not add to faculty workload.
Fish 516 Animal Movement, Dispersal and Migration (3 cr)
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.

Available via distance: No
Geographical Area Availability: Moscow
Rationale: As part of a process to update the Fishery Resources graduate curriculum, this expanded course will enhance graduate course offering as part of Dr. Caudill’s increased teaching appointment. The course was offered in fall 2014 as a 2 credit seminar (Fish 504) and was reviewed positively by students.

WLF 371 Physiological Ecology of Fish and Wildlife (3 cr)
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. (Spring only)
Prereq: Biol 213

Available via distance: No
Geographical Area Availability: Moscow
Rationale: This course will replace AVS 371 as a requirement for Fish and Wildlife majors. The course will be team taught by two new faculty members, one in fisheries and one in wildlife, both of whom specialize in physiological ecology. The addition of this course will allow our majors to gain a fundamental understanding of key topics in physiological ecology as they pertain to fish and wildlife conservation and management, which has long been identified by both students and faculty in our programs as a shortcoming of AVS 371.

WLF 473 ECB Senior Presentation (1 cr)
See Fish 473.

Available via distance: No
Geographical Area Availability: Moscow
Rationale: The Ecology and Conservation Biology program (ECB) currently lacks a capstone course. The ECB senior thesis, in its rigor and cross-disciplinary character, serves as an ideal capstone candidate for this degree. However, ECB students currently register for WLF/REM/FOR/CSS/Fish 485- senior project presentation- a college-wide thesis presentation credit. The creation of an ECB-specific thesis presentation course will allow for this course to be submitted as a capstone experience for ECB.

All ECB students are already required to take one credit of thesis presentation (485) so this addition will not add to faculty workload.

WLF 506 External Speakers (1 cr)
Students will attend seminars of fish and wildlife researchers and managers invited to present in our departmental seminar series. Students will read papers of external speakers, lead discussions of papers and assist with hosting speakers. Graded Pass/Fail.

Available via distance: No
Geographical Area Availability: Moscow
Rationale: This course has been taught for 2 semesters as a special topics course and does not add a substantial additional workload. This course provides networking and professional development opportunities for graduate students and was identified during program assessment as a valued addition to the program.

2. Change the following courses
Fish 422 Concepts in Aquaculture (34 cr)
Concepts and methods of extensive and intensive aquaculture in warm water and cold water systems. Two field trips reqd (a 1-day and a 3-day field trip). Cooperative: open to WSU degree-seeking students. (Spring only)
Prereq or Coreq: Fish 481
Available via distance: No
Geographical Area Availability: Moscow
Rationale: The additional credit will not require significant workload increase and is needed to better cover the field of aquaculture and provide students with a broader understanding of the subject matter. Since career and research opportunities in aquaculture are growing rapidly, there is a need to increase content and provide students more exposure to this subject.

Fish 481 Ichthyology (4 cr)
Anatomy, taxonomy, physiology, 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
Available via distance: No
Geographical Area Availability: Moscow
Rationale: The additional credit will not require significant workload increase and is needed to better cover the field of aquaculture and provide students with a broader understanding of the subject matter. Since career and research opportunities in aquaculture are growing rapidly, there is a need to increase content and provide students more exposure to this subject.

Fish 498 (s) Internship (cr arr)
The internship serves to provide hands on experience for students interested in fisheries and aquaculture.
Prereq: Instructor permission
Available via distance: No
Geographical Area Availability: Moscow
Rationale: This course will replace the previous Fish 398 Renewable Natural Resources Internship as an elective listed under the current Aquaculture Minor (Fish 398 is now being used to fulfill work experience requirement for all Fish and Wildlife students). There is no change in workload.

WLF 105 Hunter Education (21 cr)
The course provides an overview of hunter ethics; wildlife management, conservation, and survival; and wildlife laws and law enforcement. This course also fulfills the state requirement for hunter education for purchase of a hunting license. Course includes in-class instruction and one outdoor field day. Graded Pass/Fail.
Available via distance: No
Geographical Area Availability: Moscow
Rationale: There was an error in the original paperwork. Course is only 16-17 contact hours and 1 credit. There is no change in workload.

WLF 314 Wildlife Ecology IEcology of Terrestrial Vertebrates (3 cr)
Short title: Terrestrial Vertabrate Ecology
Ecology and natural history of birds, mammals, reptiles, and amphibians. (Fall only)
Prereq: For 221, REM 221, or Biol 314
Available via distance: No
Geographical Area Availability: Moscow
Rationale: The current title for Wlf314 identified this course as the first in a 2-course sequence (Wlf314 Wildlife Ecology I and Wlf316 Wildlife Ecology II). As part of a process updating the Wildlife Resources curriculum, Wlf316 will no longer be offered, and consequently, the course title for Wlf314 is be changed to reflect the course content. Note that the focus and content of the course are not changing.

WLF 315 Wildlife Ecology I Techniques Laboratory (12 cr)
Techniques associated with wildlife research and local habitats and areas where wildlife species are present. Three hours of lab a week. One weekend field trip required. Two additional animal trapping sessions also required. (Fall only)
Prereq or Coreq: WLF 314
Available via distance: No
Geographical Area Availability: Moscow
Rationale: As part of a process to update the Wildlife Resources curriculum, this course will be expanded to include a greater number of field and lab exercises to provide students with enhanced hands-on experiences in techniques used in the wildlife profession. The current instructor will be responsible for the expanded course. Other courses taught by the faculty member will be picked up by faculty teaching courses that are being dropped from the Wildlife Resources curriculum, so that faculty teaching responsibilities will remain relatively consistent.

WLF 448 Fish and Wildlife Population Ecology (4 cr)
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. (Fall only)
Prereq: Stat 251; and Fish 316, WLF 316, or course in vertebrate ecology, Math 160, WLF 314 or Fish 314
Available via distance: No
Geographical Area Availability: Moscow
Rationale: As part of a process to update the Wildlife Resources curriculum, we are changing prerequisites for some courses to allow more flexibility in the order in which students complete courses, when appropriate. Formerly, Wlf316 or Fish316 were prereq.s for Wlf448, but those courses are being dropped from the curriculum. In addition, Math160 is a required course for the degree programs that require Wlf448 (Wildlife Resources, Fishery Resources, Ecology and Conservation Biology), and those math skills are needed to succeed in Wlf448, which is a strongly quantitative course. Hence, we are adding Math160 as a prereq. to be sure that students have completed calculus prior to taking Wlf448.

WLF 482 Ornithology (4 cr)
Evolution, systematics, distribution, identification, and biology of birds, including current conservation efforts. Requires two days of field trips. (Spring only)
Prereq: Biol 243114 and 115
Available via distance: No
Geographical Area Availability: Moscow
Rationale: We are requesting to drop the BIOL 213 pre-requisite and to add BIOL 114 and BIOL 115 as the pre-requisites. The focus of the class has shifted such that the BIOL 213 pre-req is not necessary.

WLF 540 Conservation Genetics (1-3 cr, max 3)
Basic principles of population genetics and phylogenetics and their applications to the field of conservation and natural resource management. Taught in three 1-credit modules, and students can register for 1-3 credits. Module 1 includes introduction to conservation genetics and phylogenetics, module 2 includes population genetic theory and methods, and module 3 includes applications in
conservation genetics and genomics. **Cooperative: open to WSU degree-seeking students.** (Spring, Alt/yr)

**Available via distance:** No  
**Geographical Area Availability:** Moscow  
**Rationale:** There is no added workload. This semester 3 WSU students took the course by distance education since it was not yet cooperatively listed.

3. Drop the following courses

**Fish 316 Principles of Population Dynamics (2 cr)**  
Basic principles of population ecology of animals. Taught first half of semester. (Spring only)  
**Prereq:** Fish 314 and Fish 315 with a grade of ‘C’ or better and For 221, REM 221, or Biol 314; or Permission

**Available via distance:** No  
**Geographical Area Availability:** Moscow  
**Rationale:** As part of a process to update the Fishery Resources curriculum, this course will no longer be offered because of overlap with course material in 2 existing courses (Fish314 and Wlf448).

**WLF 316 Wildlife Ecology II (4 cr)**  
Application of principles of ecology to conservation and management of wildlife in natural and altered habitats. Three lec and one lab a wk; three days of field trips. (Spring only)  
**Prereq:** WLF 314 and 315 with a grade of ‘C’ or better; or Permission

**Available via distance:** No  
**Geographical Area Availability:** Moscow  
**Rationale:** As part of a process to update the Wildlife Resources curriculum, this course will no longer be offered because of overlap with course material in 2 existing courses (Wlf314 and Wlf448) and topics that will be covered in a new course in Wildlife Habitat Ecology (proposal and form for adding this course are being submitted concurrently with this drop course form).

**WLF 495 (s) Wildlife Seminar (1-2 cr)**  
Discuss integrating biological, social, political, economic, and philosophic aspects of wildlife problems. (Fall only)  
**Prereq:** Senior standing

**Available via distance:** No  
**Geographical Area Availability:** Moscow  
**Rationale:** As part of a process to update the Wildlife Resources curriculum, this course will no longer be offered. The focus of this course was presentation of scientific information, which is already included in several junior and senior-level wildlife courses (e.g., Wlf314, Wlf44, and Wlf492).

4. Change the curricular requirements of **Fishery Resources** (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 & Environments (4 cr)
- **Biol 115** Cells and the Evolution of Life (4 cr)
- **Biol 213** Principles of Biological Structure and Function (4 cr)
- **Chem 101** Introduction to Chemistry I (4 cr)
- **Comm 101** Fundamentals of Public Speaking (2 cr)
- **Econ 202** Principles of Microeconomics (3 cr)
- **Fish 102** The Fish and Wildlife Professions (1 cr)
- **Fish 202** Fish & Wildlife Applications II (1 cr)
- **For 235** or **CSS 235** Society and Natural Resources (3 cr)
- **For 375** Introduction to Spatial Analysis for Natural Resource Management (3 cr)
- **Geol 101** Physical Geology (3 cr)
- **Geol 101L** Physical Geology Lab (1 cr)
- **Math 160** Survey of Calculus (4 cr)
- **NR 101** Exploring Natural Resources (1 cr)
- **Stat 251** Statistical Methods (3 cr)
- **WLF 201** Fish and Wildlife Applications I (1 cr)

**One of the following (4 cr):**
- **Chem 101** Introduction to Chemistry I (4 cr)
- **Chem 111** Principles of Chemistry I (4 cr)

**One of the following (3 cr):**
- **Chem 275** Carbon Compounds (3 cr)
- **Chem 277** Organic Chemistry (3 cr)

**One of the following (3 cr):**
- **For 221** Ecology (3 cr)
- **REM 221** Ecology (3 cr)

**One of the following (4 cr):**
- **Geol 101**, **Geol 101L** Physical Geology and Lab (4 cr)
- **Soil 205**, **Soil 206** The Soil Ecosystem and Lab (4 cr)

**One of the following (4 cr):**
- **Math 160** Survey of Calculus (4 cr)
- **Math 170** Analytic Geometry and Calculus I (4 cr)

**One of the following (4 cr):**
- **Geog 100**, **Geog 100L** Physical Geography and Lab (4 cr)
- **Phys 100**, **Phys 100L** Fundamentals of Physics and Lab (4 cr)
- **Phys 111**, **Phys 111L** General Physics I and Lab (4 cr)

## Third and Fourth Years

- **Biol 250**, **Biol 255** General Microbiology and Lab (5 cr)
- **CSS 383** Natural Resource and Ecosystem Service Economics (3 cr)
- **Fish 314** Fish Ecology (3 cr)
- **Fish 315** Fish Ecology Lab (1 cr)
- **Fish 316** Principles of Population Dynamics (2 cr)
- **Fish 415** Limnology (4 cr)
- **Fish 418** Fisheries Management (4 cr)
- **Fish 481** Ichthyology (4 cr)
- **Fish 495** Seminar (1 cr)
For 375  Introduction to Spatial Analysis for Natural Resource Management (3 cr)
WLF 371  Physiological Ecology of Fish and Wildlife (3 cr)
WLF 448  Fish and Wildlife Population Ecology (4 cr)

Approved work experience in major field required

One of the following (3 cr):
AVS 371  Anatomy and Physiology (3 cr)
Biol 423  Comparative Vertebrate Physiology (3 cr)

One of the following (2 cr):
Fish 398  Renewable Natural Resources Internship (cr arr)
WLF 398  Renewable Natural Resources Internship (cr arr)

One of the following (3 cr):
Engl 313  Business Writing (3 cr)
Engl 317  Technical Writing (3 cr)

One of the following (3-4 cr):
Fish 422  Concepts in Aquaculture (3 cr)
Fish 424  Fish Health Management (4 cr)

One of the following (3-4 cr):
Biol 310, Biol 315  Genetics and Lab (43 cr)
Gene 314  General Genetics (3 cr)

Courses to total 120 credits for this degree

**Distance Education Availability:** More than 50% of the curricular requirements cannot be completed via distance.

**Geographical Area Availability:** Moscow

**Rationale:** These requested changes are being brought about by updates to individual courses in the Fish and Wildlife Department and desires to maintain a relevant curriculum aligned with university learning outcomes and professional requirements of graduates. As a result, i) courses are being combined to achieve efficiencies thereby making some courses obsolete (e.g., FISH 316); ii) adding internship credits (FISH/WLF 398) to formalize previous requirements of major-related work experience; iii) combining and/or formalizing additional suitable electives (CHEM, MATH, and GEOG), iii) moving course to earlier in the curriculum (FOR); and iv) substituting more relevant courses (WLF for AVS). With the changes, the number of credits in the major has not changed, the number of courses dropped and added are equivalent, so will not change the workload of the department. Assessment of the changes will be incorporated into the standard assessment metrics in the department and will not change workloads either.

5. Change the curricular requirements of **Wildlife Resources** (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 For 221.

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 & Environments (4 cr)
Biol 115  Cells and the Evolution of Life (4 cr)
Biol 213  Principles of Biological Structure and Function (4 cr)
Chem 101  Introduction to Chemistry I (4 cr)
Comm 101  Fundamentals of Public Speaking (2 cr)
Econ 202  Principles of Microeconomics (3 cr)
Fish 202  Fish & Wildlife Applications II (1 cr)
For 235 or CSS 235  Society and Natural Resources (3 cr)
NR 101  Exploring Natural Resources (1 cr)
Stat 251  Statistical Methods (3 cr)
WLF 102  The Fish and Wildlife Professions (1 cr)
WLF 201  Fish and Wildlife Applications I (1 cr)

One of the following (3 cr):
Chem 275  Carbon Compounds (3 cr)
Chem 277  Organic Chemistry I (3 cr)

One of the following (3 cr):
For 221  Ecology (3 cr)
REM 221  Ecology (3 cr)

One of the following (3-4 cr):
For 320  Dendrology (4 cr)
REM 341  Systematic Botany (3 cr)

One of the following (4 cr):
Geol 101, Geol 101L  Physical Geology and Lab (4 cr)
Soil 205, Soil 206  The Soil Ecosystem and Lab (4 cr)
Phys 100, Phys 100L  Fundamentals of Physics and Lab (4 cr)
Phys 111, Phys 111L  General Physics I and Lab (4 cr)

One of the following (4 cr):
Math 160  Survey of Calculus (4 cr)
Math 170  Analytic Geometry and Calculus I (4 cr)

Third and Fourth Years
AVS 371  Anatomy and Physiology (3 cr)
CSS 383  Natural Resource and Ecosystem Service Economics (3 cr)
For 375  Introduction to Spatial Analysis for Natural Resource Management (3 cr)
REM 411  Ecological Monitoring and Analysis (2 cr)
WLF 314, WLF 315  Wildlife Ecology I and Lab (4 cr)
WLF 314  Ecology of Terrestrial Vertebrates (3 cr)
WLF 315  Wildlife Techniques Laboratory (2 cr)
WLF 316  Wildlife Ecology II (4 cr)
WLF 371  Physiological Ecology of Fish and Wildlife (3 cr)
WLF 440  Conservation Biology (3 cr)
WLF 448  Fish and Wildlife Population Ecology (4 cr)
WLF 492  Wildlife Management (4 cr)
WLF 495  Wildlife Seminar (1 cr)

One of the following (3-4 cr):
Biol 310, Biol 315  Genetics and Lab (4 cr)
Gene 314  General Genetics (3 cr)

One of the following (4 cr):
Phys 100, Phys 100L  Fundamentals of Physics and Lab (4 cr)
**Phys 111, Phys 111L  General Physics I and Lab (4 cr)**

One of the following (3 cr):
Comm 431  Applied Business and Professional Communication (3 cr)
Engl 208  Personal and Exploratory Writing (3 cr)
Engl 317  Technical Writing (3 cr)

One of the following (2-3 cr):
Comm 410  Conflict Management (3 cr)
CSS 387  Environmental Communication Skills (3 cr)
CSS 486  Public Involvement in Natural Resource Management (3 cr)
For 484  Forest Policy and Administration (2 cr)
WLF 205  Wildlife Law Enforcement (2 cr)

One of the following (2 cr):
Fish 398  Renewable Natural Resources Internship (cr arr)
WLF 398  Renewable Natural Resources Internship (cr arr)

Restricted electives, choose two courses from the following (must receive a grade of C or better):
Biol 483  Mammalogy (3 cr)
Biol 489  Herpetology (4 cr)
Fish 481  Ichthyology (4 cr)
WLF 482  Ornithology (4 cr)

**Approved work experience in major field required**

Courses to total 120 credits for this degree

**Distance Education Availability:** More than 50% of the curricular requirements cannot be completed via distance.

**Geographical Area Availability:** Moscow

**Rationale:** These requested changes are being brought about by updates to individual courses in the Fish and Wildlife Department and desires to maintain a relevant curriculum aligned with university learning outcomes and professional requirements of graduates. Departmental assessment of students and discussions with employers drove the current changes. As a result, i) courses are being combined to achieve efficiencies thereby making some courses obsolete (e.g., WLF 316); ii) adding internship credits (FISH/WLF 398) to formalize previous requirements of major-related work experience; iii) combining and/or formalizing additional suitable electives (Soils, Phys and GEOG), iii) adding habitat ecology requirement (REM411) and more social/legal training (2-3 credit bin) and iv) substituting more relevant courses (WLF for AVS). With the changes, the number of required credits in the major has decreased by 2, so will not change the workload of the department or students. Assessment of the changes will be incorporated into the standard assessment metrics in the department and will not change workloads either.

6. Change the curricular requirements of the **Aquaculture** Minor

   Biol 250, Biol 255  General Microbiology and Lab (5 cr)
   Fish 422  Concepts in Aquaculture (3 cr)
   Fish 424  Fish Health Management (4 cr)
   Fish 481  Ichthyology (4 cr)

Three of the following courses:
AgEc 278  Farm and Agribusiness Management (4 cr)
Fish 398  Renewable Natural Resources Internship (cr arr)
ASM 107  Beginning Welding (2 cr)
AVS 305  Animal Nutrition (3 cr)
Bus 321  Marketing (3 cr)
Bus 414  Entrepreneurship (3 cr)
Fish 498 (s) Internship (cr arr)

Courses to total 18 credits for this minor

**Distance Education Availability:** More than 50% of the curricular requirements cannot be completed via distance.

**Geographical Area Availability:** Moscow

**Rationale:** These requested changes are being brought about by updates to individual courses in the Fish and Wildlife Department and desires to maintain a relevant curriculum aligned with university learning outcomes and professional requirements of graduates. As a result, the Aquaculture minor is being updated to i) change from three to two required courses in bottom list because required courses already add to 17 credits and 18 credits are required for a minor, ii) remove AgEc 278 as this course is no longer taught, iii) add Bus 421 (Entrepreneurship) as an additional course to choose from the bottom list. This course provides background on business start-up and business plan development, and iv) add Fish 498 Aquaculture Internship (new course) to replace the previous Fish 398 Renewable Natural Resources Internship (now being used to fulfill work experience requirement for all Fish and Wildlife students).

With the changes, the number of credits in the minor has not changed, the number of courses dropped and added are equivalent, so will not change the workload of the department. Assessment of the changes will be incorporated into the standard assessment metrics in the department and will not change workloads either.

7. Change the curricular requirements of the **Wildlife Resources** Minor

WLF 314, WLF 315  Wildlife Ecology I and Lab (4 cr)
WLF 314  Ecology of Terrestrial Vertebrates (3 cr)
WLF 315  Wildlife Techniques Laboratory (2 cr)
WLF 316  Wildlife Ecology II (4 cr)

One of the following (3-4 cr):
For 221  Ecology (3 cr)
REM 221  Ecology (3 cr)
Biol 314  Ecology and Population Biology (4 cr)

Any combination of the courses below:
Biol 483  Mammalogy (3 cr)
Biol 489  Herpetology (4 cr)

WLF 371  Physiological Ecology of Fish and Wildlife (3 cr)
WLF 440  Conservation Biology (3 cr)
WLF 448  Fish and Wildlife Population Ecology (4 cr)
WLF 482  Ornithology (4 cr)
WLF 492  Wildlife Management (4 cr)

Courses to total 18 credits for this minor

**Distance Education Availability:**

**Geographical Area Availability:**

**Rationale:** The changes to the Wildlife minor reflect changes that have been made to the courses contained in the minor.
FOREST, RANGELAND, AND FIRE SCIENCES

1. Add the following courses

For 473  ECB Senior Presentation (1 cr)
See Fish 473.

Available via distance:
Geographical Area Availability:
Rationale: The Ecology and Conservation Biology program (ECB) currently lacks a capstone course. The ECB senior thesis, in its rigor and cross-disciplinary character, serves as an ideal capstone candidate for this degree. However, ECB students currently register for WLF/REM/FOR/CSS/Fish 485- senior project presentation- a college-wide thesis presentation credit. The creation of an ECB-specific thesis presentation course will allow for this course to be submitted as a capstone experience for ECB.

All ECB students are already required to take one credit of thesis presentation (485) so this addition will not add to faculty workload.

REM 253 Wildland Plant Identification Field Studies (1 cr)
Short title: Plant Id Field Studies
Develop skills to identify rangeland plants in the field. Focus is on identification of grasses, forbs, and shrubs. Exploration will include ecosystem roles of wildland plants and developing ecological site descriptions. This course includes a 6-day field trip at the beginning of the summer semester.
Required for REM majors.
Prereq: REM 252

Available via distance: No
Geographical Area Availability: Field trip will occur at sites throughout in Idaho, Washington, and Oregon
Rationale: In the past, REM 252 was a 3-credit course that required a 7-day field trip that occurred after the semester ended. The Registrar requested a change to the course because it required that students receive an incomplete for the course and because a late end date cannot be issued to this class.

The instructor and the CNR Associate Dean have proposed that REM 252 be offered as a 2-credit course during the spring semester with a 1-credit field trip (REM 253-proposed) in the first week of the summer session. This solution addressed the Registrar’s concern over the course.

REM 473  ECB Senior Presentation (1 cr)
See Fish 473.

Available via distance:
Geographical Area Availability:
Rationale: The Ecology and Conservation Biology program (ECB) currently lacks a capstone course. The ECB senior thesis, in its rigor and cross-disciplinary character, serves as an ideal capstone candidate for this degree. However, ECB students currently register for WLF/REM/FOR/CSS/Fish 485- senior project presentation- a college-wide thesis presentation credit. The creation of an ECB-specific thesis presentation course will allow for this course to be submitted as a capstone experience for ECB.

All ECB students are already required to take one credit of thesis presentation (485) so this addition will not add to faculty workload.

RMat 473  ECB Senior Presentation (1 cr)
See Fish 473.
Available via distance:
Geographical Area Availability:
Rationale: The Ecology and Conservation Biology program (ECB) currently lacks a capstone course. The ECB senior thesis, in its rigor and cross-disciplinary character, serves as an ideal capstone candidate for this degree. However, ECB students currently register for WLF/REM/For/CSS/Fish 485- senior project presentation- a college-wide thesis presentation credit. The creation of an ECB-specific thesis presentation course will allow for this course to be submitted as a capstone experience for ECB.

All ECB students are already required to take one credit of thesis presentation (485) so this addition will not add to faculty workload.

2. Change the following courses

**REM 252 Wildland Plant Identification Field Studies (32 cr)**
Develop skills to identify, and classify, and collect major rangeland plants in the field. Focus is on identification of grasses, forbs, and shrubs. Discussions will also encompass the ecological roles of wildland plants and the ecosystem classification. This course includes a 7- to 91-day field trip.
Required for REM majors. (Spring only)

Available via distance: Yes
Geographical Area Availability: Moscow, through world wide web modules
Rationale: In the past, this course was a 3-credit course that required a 7-day field trip that occurred after the semester ended. The Registrar requested a change to the course because it required that students receive an incomplete for the course and because a late end date cannot be issued to this class.

The instructor and the CNR Associate Dean have proposed that the course be offered as a 2-credit course during the spring semester with a 1-credit field trip in the first week of the summer session. This solution addressed the Registrar’s concern over the course.

**RMat 100 Introduction to Renewable Materials (2 cr)**
Overview of renewable building materials and bio-energy industries. Discovery laboratory in the use of renewable and recycled waste stream materials to create useful products. One lec and one three-hour lab a wk. (Fall/Spring only)

Available via distance: No
Geographical Area Availability:
Rationale: This is to change the course description to reflect our move from a fall to a spring offering. This change accommodates the request to change NR 101 from a first-half of the fall semester to a full, fall semester class, since RMAT 100 currently follows NR 101 during the second half of the fall semester.

3. Drop the following course

**RMat 365 Wood Building Technology (3 cr)**
Basic structural design including elementary statics and principles and technology of wood structural design. Role of sustainably-produced wood components in green building design. Recommended Preparation: Phys 100, Phys 111. (Fall only)

Available via distance: No
Geographical Area Availability:
Rationale: RMAT 365 has been a required course in the BArch degree program, delivered by faculty in the College of Natural Resources, but was replaced this fall semester with a new course
delivered by faculty in the Architecture department. RMAT 365 has been listed as a restricted elective in the BS Renewable Materials curriculum, but is no longer needed.

NATURAL RESOURCES

1. Add the following courses

NR 300 Ecology and Conservation Biology Thesis Seminar (1 cr)
Short title: ECB Thesis Seminar
Prereq: Instructor Permission

Available via distance:
Geographical Area Availability:
Rationale: The assessment process for the Ecology and Conservation Biology program (ECB) has identified several pressing needs for our students. 1) Nurturing degree cohesion and facilitating networking for students at the sophomore to junior level, 2) Assisting with the process of developing a thesis question (connecting with a mentor, developing a hypothesis-based research plan, etc.), 3) Helping students strategically plan for graduate school.
This new course will address these topics in seminar format, in combination with a weekend retreat.

This course will be taught by the ECB program lead. The extra teaching load will be integrated into a modified position description for the lead.

NR 321 Ecology in the Wilderness (3 cr)
Fundamental principles of the science of ecology. Major topics covered by the course include the physical environment, how organisms interact with each other and their environment, evolutionary processes, population dynamics, communities, energy flow and ecosystems, human influences on ecosystems, and the integration and scaling of ecological processes through systems ecology. This course is only offered in a wilderness setting and is complementary to the re-required co-requisite course, Field Ecology (NR 322). Computer-based materials are used extensively for guided independent learning of ecology. Course information: EcologyOnline.net. Recommended Preparation: Introductory botany and zoology.
Prereq: Biol 102 and 102L, Biol 114, Biol 115, or permission
Coreq: NR 322

Available via distance: Yes
Geographical Area Availability:
Rationale: This is to add an upper-division, general ecology course to the fall Semester in the Wild program. Such a class has been identified as important for providing fundamental ecological principles to a wide range of student backgrounds, and is intended to transfer to meet several curriculum requirements, including those needed by non-University of Idaho students participating in the fall Semester in the Wild program at the Taylor Wilderness Research Station.

This course will be developed by Dr. Ronald Robberecht, who currently offers ecology courses in the College of Natural Resources. The new course will be structured to allow students to access and learn the course material at the remote Taylor Wilderness Research Station. Course development compensation will be paid by donor funds (GDN700) intended to develop the Semester in the Wild program. Dr. Robberecht will also add this course to his fall course offerings in his position description.
NR 322 Fiedl Ecology (2 cr)
Introduction to field methods in the science of ecology. This field course, offered in the Frank Church River of No Return Wilderness, emphasizes a unique outdoor experience for ecological observations and understanding. Methods for monitoring and ecological assessment will include experimental design, use of instruments for data collection, and data analysis.
Prereq: Biol 102 and 102L, Biol 114, Biol 115, or permission
Coreq: NR 321

Available via distance: No
Geographical Area Availability:
Rationale: This is to add an upper-division, field methodology course to the fall Semester in the Wild program. Such a class has been identified as important for providing hands-on training to teach fundamental ecological principles and monitoring skills to a wide range of student backgrounds, and is intended as a transfer course to meet several curriculum requirements, including those needed by non-University of Idaho students participating in the fall Semester in the Wild program at the Taylor Wilderness Research Station.

This course will be developed and taught by Peter Gag, co-manager of the Taylor Wilderness Research Station. Mr. Gag will add this course to his position description.

2. Change the following course

NR 101 Exploring Natural Resources (42 cr)
Introduction to the interdisciplinary fields and professions in natural resources. Includes field trips. (Fall only)

Available via distance: No
Geographical Area Availability:
Rationale: The instructors of this team-taught course would like to offer course material over the full semester, as opposed to the first half, as currently taught. This change will allow more time for field trip preparation, discussion, and review of course material. Consequently, the credits need to be increased from 1 to 2 credits.

The course instructors will add one credit hour of additional instruction to their position descriptions. No new faculty or resources are required to accommodate this change.


Improving global environmental conditions requires researchers and other citizens who can understand ecological principles, who can analyze and interpret ecological conditions, and who can predict the consequences of alternative natural resource management decisions. Understanding the importance of social values and policy for ecology and management of rare, threatened, and endangered species and their habitat is necessary to reverse the order of their decline. In the ecology and conservation biology program, students learn to apply biological, ecological, social, and political understanding to solve problems related to long-term conservation of biological diversity and to sustainable management of ecosystems.

This degree combines the biological, ecological, and social sciences to provide (1) an interdisciplinary understanding of the composition, structure, and processes of ecosystems, and (2) the skills necessary to provide long-term planning for the conservation and sustainable management of populations, species, and ecosystems.

Students will examine topics from molecular to landscape scales and integrate the social and biophysical worlds. Graduates will be equipped to address the issues and problems of sustainable resource use, conservation of rare, threatened, or endangered biota, management of ecosystems,
and long-term conservation of biological diversity. This program is flexible enough to adapt to the interests of individual students, while remaining firmly grounded in ecological principles applicable to species, populations, communities, landscapes, and ecosystems. It is distinctly different from the emphasis on management in the other forestry, wildlife, fisheries, range, and conservation social sciences programs, or the more general environmental science programs. Graduates of the program often continue advanced studies at national and international universities. This natural resources "liberal science" degree can also serve as pre-professional training for law school, or for professional positions in federal, state, and private environmental organizations including local and regional planning groups and consulting firms.

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 CSS/Fish/For/REM/WLF and to graduate with a B.S. in either option: Biol 114, Biol 213, Stat 251, For 221 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 cr)
Biol 115  Cells and the Evolution of Life (4 cr)
Biol 213  Principles of Biological Structure and Function (4 cr)
Comm 101  Fundamentals of Public Speaking (2 cr)
CSS 383  Natural Resource and Ecosystem Service Economics (3 cr)
Engl 317  Technical Writing (3 cr)
For 235 or CSS 235  Society and Natural Resources (3 cr)
For 375  Introduction to Spatial Analysis for Natural Resource Management (3 cr)
NR 101  Exploring Natural Resources (1 cr)
NR 200  (s) Seminar (1 cr)
NR 300  Ecology and Conservation Biology Thesis Seminar (1 cr)
Stat 251  Statistical Methods (3 cr)

One of the following (4 cr):
Chem 101  Introduction to Chemistry I (4 cr)
Chem 111  Principles of Chemistry I (4 cr)

One of the following (3-4 cr):
Econ 202  Principles of Microeconomics (3 cr)
Econ 272  Foundations of Economic Analysis (3-4 cr)

One of the following (3-4 cr):
Biol 314  Ecology and Population Biology (4 cr)
For 221  Ecology (3 cr)
REM 221  Ecology (3 cr)

One of the following (4 cr):
Math 160  Survey of Calculus (4 cr)
Math 170  Analytic Geometry and Calculus I (4 cr)

One of the following (3-4 cr):
For 320  Dendrology (4 cr)
REM 341  Systematic Botany (3 cr)

Choose one of the following (1 cr):
CSS 483  Senior Project Presentation (1 cr)
Fish 483  Senior Project Presentation (1 cr)
Choose one of the following (3 cr):
- **CSS 485** Ecology and Conservation Biology Internship (3 cr)
- **Fish 485** Ecology and Conservation Biology Internship (3 cr)
- **Fish 497** Senior Thesis (3 cr)
- **For 485** Ecology and Conservation Biology Internship (3 cr)
- **For 497** Senior Thesis (3 cr)
- **NR 497** Senior Thesis (3 cr)
- **REM 485** Ecology and Conservation Biology Internship (3 cr)
- **REM 497** Senior Thesis (3 cr)
- **WLF 485** Ecology and Conservation Biology Internship (3 cr)
- **WLF 497** Senior Thesis (3 cr)

And one of the following options:

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 205/206, and WLF 448316 or Fish 316.

For 330  Forest Soil and Canopy Processes (4 cr)
REM 429  Landscape Ecology (3 cr)
Soil 205  The Soil Ecosystem (3 cr)
Soil 206  The Soil Ecosystem Lab (1 cr)
WLF 448  Fish & Wildlife Population Ecology (4 cr)

One of the following (3 cr):
- Phys 100, Phys 100L  Fundamentals of Physics and Lab (4 cr)
- Phys 111, Phys 111L  General Physics I and Lab (4 cr)

One of the following (2-4 cr):
- WLF 316  Wildlife Ecology II (4 cr)
- Fish 316  Principles of Population Dynamics (2 cr)

Quantitative Resource Analysis Restricted Electives (one course from the following):
- CSS 310  Social Research Methods in Conservation (4 cr)
- For 472 or REM 472  Remote Sensing of Environment (4 cr)
- Geog 385  GIS Primer (3 cr)
- REM 410  Principles of Vegetation Measurement and Assessment (2 cr)*
- REM 411  Ecological Monitoring and Analysis (2 cr)*
- Stat 431  Statistical Analysis (3 cr)
- Stat 422  Survey Sampling Methods (3 cr)
WLF 448  Fish & Wildlife Population Ecology (4 cr)

Resource Management Restricted Electives (one course from the following):
CSS 385  Conservation Management and Planning I (4 cr)
CSS 490  Wilderness and Protected Area Management (3 cr)
CSS 496  Monitoring Impacts in Protected Areas and Wilderness (3 cr)
Fish 418  Fisheries Management (4 cr)
For 424  Forest Dynamics and Management (4 cr)
For 462  Watershed Science and Management (3 cr)
REM 456  Integrated Rangeland Management (3 cr)
WLF 492  Wildlife Management (4 cr)

Ecology Restricted Electives (at least 2 credits from Fish 315, Fish 415, Fish 430, REM 460, and/or WLF 315) (10 cr):
Biol 421  Advanced Evolutionary Biology (3 cr)
Biol 478  Animal Behavior (3 cr)
Ent 469  Introduction to Forest Insects (2 cr)
Fish 314  Fish Ecology (3 cr)
Fish 315  Fish Ecology Lab (1 cr)
Fish 415  Limnology (4 cr)
Fish 430  Riparian Ecology and Management (3 cr)
For 326  Fire Ecology and Management (3 cr)
For 468  Forest and Plant Pathology (2 cr)
Geog 410  Biogeography (3 cr)
MMBB 425  Microbial Ecology (3 cr)
PlSc 410  Invasive Plant Biology (3 cr)
REM 440  Wildland Restoration Ecology (3 cr)
REM 450  Global Environmental Change (3 cr)
REM 459  Rangeland Ecology (2 cr)
REM 460  Integrating GIS and Field Studies in Rangelands (2 cr)
WLF 314  Wildlife Ecology I (3 cr)
WLF 315  Wildlife Ecology I Lab (1 cr)
WLF 440  Conservation Biology (3 cr)

Social/Political Restricted Electives (one course from the following):
Comm 410  Conflict Management (3 cr)
CSS 387  Environmental Communication Skills (3 cr)
CSS 486  Public Involvement in Natural Resource Management (3 cr)
CSS 489  Personalities and Philosophies in Conservation (3 cr)
CSS 492  Ecotourism Principles and Issues (3 cr)
CSS 493  International Land Preservation and Conservation Systems (3 cr)
For 484  Forest Policy and Administration (2 cr)
Geog 420  Land, Resources, and Environment (3 cr)
Hist 424  American Environmental History (3 cr)
Phil 452  Environmental Philosophy (3 cr)
PolS 364 or CSS 364  Politics of the Environment (3 cr)

Courses to total 120 credits for this degree

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

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, CSS 492 or CSS 493, Fish or WLF 316, and WLF 440, and WLF 448.

Biol 421  Advanced Evolutionary Biology (3 cr)
Phil 452  Environmental Philosophy (3 cr)
REM 429  Landscape Ecology (3 cr)
WLF 440  Conservation Biology (3 cr)
WLF 448  Fish & Wildlife Population Ecology (4 cr)

One of the following (3 cr):
Biol 310  Genetics (3 cr)
Gene 314  General Genetics (3 cr)

One of the following (3 cr):
CSS 492  Ecotourism Principles and Issues (3 cr)
CSS 493  International Land Preservation and Conservation Systems (3 cr)
REM 450  Global Environmental Change (3 cr)

One of the following (2-4 cr):
WLF 316  Wildlife Ecology II (4 cr)
Fish 316  Principles of Population Dynamics (2 cr)

Quantitative Resource Analysis Restricted Electives (one course from the following):
CSS 310  Social Research Methods in Conservation (4 cr)
For 472 or REM 472  Remote Sensing of Environment (4 cr)
Geog 385  GIS Primer (3 cr)
REM 410  Principles of Vegetation Measurement and Assessment (2 cr)*
REM 411  Ecological Monitoring and Analysis (2 cr)*
Stat 422  Survey Sampling Methods (3 cr)
Stat 431  Statistical Analysis (3 cr)
WLF 448  Fish & Wildlife Population Ecology (4 cr)

Resource Management Restricted Electives (one course from the following):
CSS 385  Conservation Management and Planning I (4 cr)
CSS 490  Wilderness and Protected Area Management (3 cr)
CSS 496  Monitoring Impacts in Protected Areas and Wilderness (3 cr)
Fish 418  Fisheries Management (4 cr)
For 424  Forest Dynamics and Management (4 cr)
For 462  Watershed Science and Management (3 cr)
REM 456  Integrated Rangeland Management (3 cr)
WLF 492  Wildlife Management (4 cr)

Ecology Restricted Electives (at least 2 credits from Fish 315, Fish 415, Fish 430, REM 460, and/or WLF 315) (6 cr):
Biol 478  Animal Behavior (3 cr)
Ent 469  Introduction to Forest Insects (2 cr)
Fish 314  Fish Ecology (3 cr)
Fish 315  Fish Ecology Lab (1 cr)
Fish 415  Limnology (4 cr)
Fish 430  Riparian Ecology and Management (3 cr)
For 330  Forest Soil and Canopy Processes (4 cr)
For 326  Fire Ecology and Management (3 cr)
For 468  Forest and Plant Pathology (2 cr)
Geog 410  Biogeography (3 cr)
MMBB 425  Microbial Ecology (3 cr)
PISc 410  Invasive Plant Biology (3 cr)
REM 440  Wildland Restoration Ecology (3 cr)
REM 450  Global Environmental Change (3 cr)
REM 459  Rangeland Ecology (2 cr)
REM 460  Integrating GIS and Field Studies in Rangelands (2 cr)
WLF 314  Wildlife Ecology I (3 cr)
WLF 315  Wildlife Ecology I Lab (1 cr)

Organismal Biology Restricted Elective (one course from the following):
Biol 483  Mammalogy (3 cr)
Biol 489  Herpetology (4 cr)
Fish 481  Ichthyology (4 cr)
WLF 482  Ornithology (4 cr)

Social/Political Restricted Electives (one course from the following):
Comm 410  Conflict Management (3 cr)
CSS 387  Environmental Communication Skills (3 cr)
CSS 489  Personalities and Philosophies in Conservation (3 cr)
For 484  Forest Policy and Administration (2 cr)
Geog 420  Land, Resources, and Environment (3 cr)
Hist 424  American Environmental History (3 cr)
PolS 364 or CSS 364  Politics of the Environment (3 cr)

Courses to total 120 credits for this degree

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

**Distance Education Availability:**

**Geographical Area Availability:**

**Rationale:** 1) Addition of WLF/CSS/FISH/RMAT/FOR/REM 4xx level, removal of WLF/CSS/FISH/FOR/REM 485

The Ecology and Conservation Biology program (ECB) currently lacks a capstone course. The ECB senior thesis, in its rigor and cross-disciplinary character, serves as an ideal capstone candidate for this degree. However, ECB students currently register for WLF/REM/FOR/CSS/Fish 485- senior project presentation- a college-wide thesis presentation credit. The creation of an ECB-specific thesis presentation course will allow for this course to be submitted as a capstone experience for ECB.

All ECB students are already required to take one credit of thesis presentation (485) so this substitution will not add to faculty workload.

2) Addition of NR 3xx
This new course will be used to address thesis development for sophomore and transfer students, as well as general overview of issues related to professional development and graduate school preparation. In addition, this course will enhance cohesion and networking among ECB students. These have all been identified as critical needs through program assessment. The course will be taught by the ECB program lead under a revised position description.

3) Removal of Fish and/or WLF 316, addition of WLF 448

Fish/WLF 316 used to be a pre-requisite for WLF 448, but the entry requirements for 448 have been relaxed to make the course accessible to a broader range of students. As a consequence, both Fish and Wildlife 316 will be waived by the spring of 2017. WLF 448 is a comprehensive course that adequately covers the material addressed in Fish/WLF 316. As a consequence, WLF 448 will now be a curriculum requirement for all ECB majors rather than an elective. WLF 448 has been removed from the elective bins for both degree options.

4) Removal of CSS 492 (Ecosystem Principles and Issues) from main curriculum (ECB Conservation Biology Option) and from elective bin (ECB Natural Resources Ecology Option). Moving of REM 450 (Global Environmental Change) from elective bin to main curriculum (ECB Conservation Biology Option). Addition of CSS 462 (Natural Resources Policy) to elective bins for both degree options.

CSS 492 will not be taught in the future. Students in the ECB Conservation Biology option were required to take this course or CSS 493 (International Land Preservation Systems) to include an international socio-ecological dimension in their coursework. REM 450 (Global Environmental Change) has a similar international scope, and will serve as an appropriate replacement for CSS 492 within the Conservation Biology option. CSS 462 (Natural Resource Policy) was added to the elective bin to provide a greater diversity of course choices for students in both degree options.

NATURAL RESOURCES AND SOCIETY

1. Add the following course

   **NRS 473 ECB Senior Presentation (1 cr)**
   See Fish 473.

   **Available via distance:**
   **Geographical Area Availability:**
   **Rationale:** The Ecology and Conservation Biology program (ECB) currently lacks a capstone course. The ECB senior thesis, in its rigor and cross-disciplinary character, serves as an ideal capstone candidate for this degree. However, ECB students currently register for WLF/REM/FOR/CSS/Fish 485- senior project presentation- a college-wide thesis presentation credit. The creation of an ECB-specific thesis presentation course will allow for this course to be submitted as a capstone experience for ECB.

   All ECB students are already required to take one credit of thesis presentation (485) so this addition will not add to faculty workload.

2. Change the curricular requirements of the Environmental Education Graduate Academic Certificate

   CSS 559  Writing Research and Project Proposals (1 cr)
   CSS 560  Community Ecology for Env. Educators (3 cr)
   CSS 562  Field Science Teaching (2 cr)
   CSS 563  Place Based Env. Education (3 cr)
   **CSS 566. Adv. Field Ecology Course Design (5 cr)**
   **NRS 564 Teaching Environmental Education in Winter Environment (2 cr)**
NRS 565  Science Communication and the Environment (3 cr)
CSS 567  Environmental Education Teaching Practicum I (2 cr)
CSS 568  Environmental Education Teaching Practicum II (1 cr)
CSS 569  Environmental Education Teaching Practicum III (2 cr)
CSS 575  Leadership for the Environmental Educator (2 cr)

Courses to total 21 credits for this certificate

**Distance Education Availability:** More than 50% of the curricular requirements cannot be completed via distance.

**Geographical Area Availability:** Moscow

**Rationale:** This Certificate is being updated to offer more flexibility in meeting the curricular needs of our students. This Certificate is part of the academic coursework offered at the McCall Field Campus for students participating in a graduate residency program. Our students come from diverse backgrounds; some are strong in ecology and science courses, others in leadership and education. The proposed changes to the Certificate will allow more student choice in their coursework and make room for the potential of more electives.