College of Natural Resources
Proposed Catalog Changes
Effective Summer 2017

ENVIRONMENTAL SCIENCE
1. Make the following curricular changes to the Environmental Science Major (M.S., non thesis):

   Each student will design a study plan in consultation with an advisor. The study plan is subject to approval by the director and the Graduate College.

   There are five requirements for the M.S. degree in environmental science: (1) Depth requirement: the graduate program is structured around three option areas, biological science, physical science, or social science. A student must complete a minimum of 12 credits (thesis degree) or 15 credits (non-thesis degree) in one of the three option areas; (2) Breadth requirement: A student must complete a minimum of 3 credits at the MS level in each of the other two option areas; (3) A student must complete one course (3 cr) in appropriate research methods or statistics at the 500 level; (4) Three seminar credits, including at least 1 credit in ENVS 501; ENVS 501 (2 cr) (5) ENVS 500 (6 cr., thesis degree) or ENVS 599 (3 cr., non-thesis degree). These requirements may be augmented to compensate for undergraduate deficiencies.

   Available via distance: 100% of curricular requirements can be completed via distance.
   Geographical Area Availability: Globally
   Rationale: We are just bringing recent advising in line with the catalog. No workload changes are anticipated.

FISH AND WILDLIFE SCIENCES
1. Add the following course:

   **Fish 495 Introduction to Aquatic Restoration (1 cr)**
   Fundamental theoretical and practical concepts in aquatic restoration spanning from in-water to the top of the watershed. Major topics include water quality, sources of pollution, restoration techniques (in-water and terrestrial) to restore aquatic ecosystems, and the role of using an adaptive systems approach. Lecture material are delivered online, while a 1-2 day face-to-face hands-on practicum will be based out of UI’s Lakes Social Ecological Systems (LaSES) lab at the Harbor Center in Coeur D’Alene or UI’s McCall Outdoor Science School (MOSS) in McCall.
   Prereq: For 221/REM 221/WLF 220

   Available via distance: Yes
   Geographical Area Availability: Moscow, CDA
   Rationale: This one (1) credit course will be absorbed through rotation of regular teaching assignments in the fisheries curriculum by faculty. The course was identified by NIC, the CDA tribe and UI faculty as a fundamental course in the Tribal Natural Resources Stewardship Certificate approved by UI UCC in response to the Tribal
Education Summit with its 10 MOU tribes. It will also be included in course options in the Undergraduate Certificate in Restoration Ecology which currently does not have an aquatic course option. The course should also be of interest to students in Ecology and Conservation Biology (ECB) and Environmental Science (EnvSci).

2. Add and cross-list the following course:

**WLF 220 Principles of Ecology (3 cr)**
See REM 221.

**Available via distance:** No

**Geographic Area Availability:** Moscow

**Rationale:** No workload changes. We are changing the title and description to better reflect the introductory course content and allow for an upper division course (300-level) to be titled "Ecology". The description is being changed to better reflect the course content as all sections (cross-listed or otherwise) of this course are being taught by different instructors than those who have previously taught it.

3. Make the following curricular changes to the **Aquaculture Minor**:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 250</td>
<td>General Microbiology</td>
<td>3 cr</td>
</tr>
<tr>
<td>BIOL 255</td>
<td>General Microbiology Lab</td>
<td>2 cr</td>
</tr>
<tr>
<td>FISH 422</td>
<td>Concepts in Aquaculture</td>
<td>4 cr</td>
</tr>
<tr>
<td>FISH 424</td>
<td>Fish Health Management</td>
<td>4 cr</td>
</tr>
<tr>
<td>FISH 481</td>
<td>Ichthyology</td>
<td>4 cr</td>
</tr>
</tbody>
</table>

**Three of the following courses:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASM 107</td>
<td>Beginning Welding</td>
<td>2 cr</td>
</tr>
<tr>
<td>AVS 305</td>
<td>Animal Nutrition</td>
<td>3 cr</td>
</tr>
<tr>
<td>BUS 321</td>
<td>Marketing</td>
<td>3 cr</td>
</tr>
<tr>
<td>BUS 414</td>
<td>Entrepreneurship</td>
<td>3 cr</td>
</tr>
<tr>
<td>FISH 498</td>
<td>Internship</td>
<td>1-16 cr</td>
</tr>
</tbody>
</table>

**Courses to total 18 credits for this minor**

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

**Geographic Area Availability:** Moscow

**Rationale:** We have only made one minor change by correcting the number of courses allowed in the bin so it 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 of faculty.
4. Make the following curricular changes to the **Major in Fishery Resources** (B.S.F.R.):

### First and Second Years

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 114</td>
<td>Organisms and Environments</td>
<td>4 cr</td>
</tr>
<tr>
<td>BIOL 115</td>
<td>Cells &amp; the Evolution of Life</td>
<td>3 cr</td>
</tr>
<tr>
<td>BIOL 115L</td>
<td>Cells and the Evolution of Life Laboratory</td>
<td>1 cr</td>
</tr>
<tr>
<td>BIOL 213</td>
<td>Principles of Biological Structure and Function</td>
<td>4 cr</td>
</tr>
<tr>
<td>COMM 101</td>
<td>Fundamentals Public Speaking</td>
<td>2 cr</td>
</tr>
<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics</td>
<td>3 cr</td>
</tr>
<tr>
<td>FISH 102/</td>
<td>The Fish and Wildlife Professions</td>
<td>1 cr</td>
</tr>
<tr>
<td>WLF 102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FISH 202</td>
<td>Fish &amp; Wildlife Applications II</td>
<td>1 cr</td>
</tr>
<tr>
<td>FOR 235/</td>
<td>Society and Natural Resources</td>
<td>3 cr</td>
</tr>
<tr>
<td>NRS 235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOR 375</td>
<td>Introduction to Spatial Analysis for Natural Resource Management</td>
<td>3 cr</td>
</tr>
<tr>
<td>GEOL 101</td>
<td>Physical Geology</td>
<td>3 cr</td>
</tr>
<tr>
<td>GEOL 101L</td>
<td>Physical Geology Lab</td>
<td>1 cr</td>
</tr>
<tr>
<td>NR 101</td>
<td>Exploring Natural Resources</td>
<td>2 cr</td>
</tr>
<tr>
<td>STAT 251</td>
<td>Statistical Methods</td>
<td>3 cr</td>
</tr>
<tr>
<td>WLF 201</td>
<td>Fish and Wildlife Applications I</td>
<td>1 cr</td>
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**One of the following (4 cr):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHEM 101</td>
<td>Introduction to Chemistry I</td>
<td>4 cr</td>
</tr>
<tr>
<td>CHEM 111</td>
<td>Principles of Chemistry I</td>
<td>4 cr</td>
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</table>

**One of the following (3 cr):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 275</td>
<td>Carbon Compounds</td>
<td>3 cr</td>
</tr>
<tr>
<td>CHEM 277</td>
<td>Organic Chemistry I</td>
<td>3 cr</td>
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</tbody>
</table>

**One of the following (3 cr):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 221</td>
<td>Ecology</td>
<td>3 cr</td>
</tr>
<tr>
<td>REM 221</td>
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**One of the following (4 cr):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 160</td>
<td>Survey of Calculus</td>
<td>4 cr</td>
</tr>
<tr>
<td>MATH 170</td>
<td>Analytic Geometry and Calculus I</td>
<td>4 cr</td>
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**One of the following (4 cr):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 100</td>
<td>Physical Geography</td>
<td>3 cr</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
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<tr>
<td>-------------</td>
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<td>---------</td>
</tr>
<tr>
<td>GEOG 100L</td>
<td>Physical Geography Lab</td>
<td>1 cr</td>
</tr>
<tr>
<td><strong>GEOL 101</strong></td>
<td><strong>Physical Geology</strong></td>
<td><strong>3 cr</strong></td>
</tr>
<tr>
<td>GEOL 101L</td>
<td>Physical Geology Lab</td>
<td>1 cr</td>
</tr>
<tr>
<td>PHYS 100</td>
<td>Fundamentals of Physics</td>
<td>3 cr</td>
</tr>
<tr>
<td>PHYS 100L</td>
<td>Fundamentals of Physics Lab</td>
<td>1 cr</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>General Physics I</td>
<td>3 cr</td>
</tr>
<tr>
<td>PHYS 111L</td>
<td>General Physics I Lab</td>
<td>1 cr</td>
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</table>

**Third and Fourth Years**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 250</td>
<td>General Microbiology</td>
<td>3 cr</td>
</tr>
<tr>
<td>BIOL 255</td>
<td>General Microbiology Lab</td>
<td>2 cr</td>
</tr>
<tr>
<td>NRS 383</td>
<td>Natural Resource and Ecosystem Service Economics</td>
<td>3 cr</td>
</tr>
<tr>
<td>FISH 314</td>
<td>Fish Ecology</td>
<td>3 cr</td>
</tr>
<tr>
<td>FISH 315</td>
<td>Fish Ecology Lab</td>
<td>1 cr</td>
</tr>
<tr>
<td>FISH 415</td>
<td>Limnology</td>
<td>4 cr</td>
</tr>
<tr>
<td>FISH 418</td>
<td>Fisheries Management</td>
<td>4 cr</td>
</tr>
<tr>
<td>FISH 481</td>
<td>Ichthyology</td>
<td>4 cr</td>
</tr>
<tr>
<td>FISH 495</td>
<td>Fisheries Seminar</td>
<td>1 cr</td>
</tr>
<tr>
<td>WLF 371</td>
<td>Physiological Ecology of Fish and Wildlife</td>
<td>3 cr</td>
</tr>
<tr>
<td>WLF 448</td>
<td>Fish and Wildlife Population Ecology</td>
<td>4 cr</td>
</tr>
</tbody>
</table>

**One of the following (2 cr):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FISH 398</td>
<td>Renewable Natural Resources Internship</td>
<td>1-16 cr</td>
</tr>
<tr>
<td>WLF 398</td>
<td>Renewable Natural Resources Internship</td>
<td>1-16 cr</td>
</tr>
</tbody>
</table>

**One of the following (3 cr):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 313</td>
<td>Business Writing</td>
<td>3 cr</td>
</tr>
<tr>
<td><strong>ENGL 316</strong></td>
<td><strong>Environmental Writing</strong></td>
<td><strong>3 cr</strong></td>
</tr>
<tr>
<td>ENGL 317</td>
<td>Technical Writing</td>
<td>3 cr</td>
</tr>
<tr>
<td><strong>ENGL 318</strong></td>
<td><strong>Science Writing</strong></td>
<td><strong>3 cr</strong></td>
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**One of the following (3-4 cr):**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>FISH 422</td>
<td>Concepts in Aquaculture</td>
<td>4 cr</td>
</tr>
<tr>
<td>FISH 424</td>
<td>Fish Health Management</td>
<td>4 cr</td>
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</table>
One of the following (3 cr):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 310</td>
<td>Genetics</td>
<td>3 cr</td>
</tr>
<tr>
<td>GENE 314</td>
<td>General Genetics</td>
<td>3 cr</td>
</tr>
</tbody>
</table>

Courses to total 120 credits for this degree

**Available via distance:** 50% or more of requirements cannot be completed via distance.

**Geographical Area Availability:** Moscow

**Rationale:** We moved Geol101 into a bin with other physical sciences to allow students more electives or time to pursue a minor. We added additional options to the writing bin. With the changes, the number of required credits in the major has decreased by 4 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.

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

**First and Second Years**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BIOL 114</td>
<td>Organisms and Environments</td>
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<td>Cells &amp; the Evolution of Life</td>
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<td>BIOL 115L</td>
<td>Cells and the Evolution of Life Laboratory</td>
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<td>BIOL 213</td>
<td>Principles of Biological Structure and Function</td>
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<td>CHEM 101</td>
<td>Introduction to Chemistry I</td>
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<td>COMM 101</td>
<td>Fundamentals Public Speaking</td>
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<td>ECON 202</td>
<td>Principles of Microeconomics</td>
<td>3 cr</td>
</tr>
<tr>
<td>FISH 202</td>
<td>Fish &amp; Wildlife Applications II</td>
<td>1 cr</td>
</tr>
<tr>
<td>FOR 235</td>
<td>Society and Natural Resources</td>
<td>3 cr</td>
</tr>
<tr>
<td>NRS 235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NR 101</td>
<td>Exploring Natural Resources</td>
<td>2 cr</td>
</tr>
<tr>
<td>STAT 251</td>
<td>Statistical Methods</td>
<td>3 cr</td>
</tr>
<tr>
<td>WLF 102</td>
<td>The Fish and Wildlife Professions</td>
<td>1 cr</td>
</tr>
<tr>
<td>WLF 201</td>
<td>Fish and Wildlife Applications I</td>
<td>1 cr</td>
</tr>
</tbody>
</table>

**Ecology (3 cr):**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 221</td>
<td>Ecology</td>
<td>3 cr</td>
</tr>
<tr>
<td>REM 221</td>
<td></td>
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</table>

**One of the following (3 cr):**

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<tbody>
<tr>
<td>CHEM 275</td>
<td>Carbon Compounds</td>
<td>3 cr</td>
</tr>
<tr>
<td>CHEM 277</td>
<td>Organic Chemistry I</td>
<td>3 cr</td>
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</table>
One of the following (3-4 cr):

FOR 320  Dendrology  4 cr
REM 341  Systematic Botany  3 cr
REM 252  Wildland Plant Identification  2 cr
AND
REM 253  Wildland Plant Identification Field Studies  1 cr

One of the following (4 cr):

GEOL 101  Physical Geology  3 cr
AND
GEOL 101L  Physical Geology Lab  1 cr

PHYS 100  Fundamentals of Physics  3 cr
AND
PHYS 100L  Fundamentals of Physics Lab  1 cr

PHYS 111  General Physics I  3 cr
AND
PHYS 111L  General Physics I Lab  1 cr

SOIL 205  The Soil Ecosystem  3 cr
AND
SOIL 206  The Soil Ecosystem Lab  1 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

FOR 375  Introduction to Spatial Analysis for Natural Resource Management  3 cr
NRS 383  Natural Resource and Ecosystem Service Economics  3 cr
REM 411  Wildland Habitat Ecology and Assessment  2 cr
WLF 314  Ecology of Terrestrial Vertebrates  3 cr
WLF 315  Techniques Laboratory  2 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
One of the following (3 cr):
BIOL 310 Genetics  3 cr
GENE 314 General Genetics  3 cr

One of the following (3 cr):
COMM 431 Applied Business and Professional Communication  3 cr
ENGL 208 Personal & Exploratory Writing  3 cr
ENGL 316 Environmental Writing  3 cr
ENGL 317 Technical Writing  3 cr
ENGL 318 Science Writing  3 cr

One of the following (2-3 cr):
COMM 410 Conflict Management  3 cr
FOR 484 Forest Policy and Administration  2 cr
NRS 387 Environmental Communication Skills  3 cr
NRS 486 Public Involvement in Natural Resource Management  3 cr
WLF 205 Wildlife Law Enforcement  2 cr
NRS 250 Environmental Problem Solving  3 cr
NRS 462 Natural Resource Policy  3 cr

One of the following (2 cr):
FISH 398 Renewable Natural Resources Internship  1-16 cr
WLF 398 Renewable Natural Resources Internship  1-16 cr

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

Courses to total 120 credits for this degree

Available via distance: 50% or more of requirements cannot be completed via distance.
Geographical Area Availability: Moscow
Rationale: We have only made minor changes by adding or changing courses allowed in bins so will not change the workload of the department or students. Writing bin changes were made after reviewing the course syllabi to determine the courses that best met our learning objectives. Assessment of the changes will be incorporated into the standard assessment metrics in the department and will not change workloads of faculty.
4. Make the following curricular changes to the Tribal Natural Resources Stewardship Undergraduate Certificate:

AIST 404 Special Topics 1-16 cr

Course Topic required: Tribal Sovereignty (3 cr)

AIST 478/LAW 928 Tribal Nation Economics and Law 3 cr
LARC 480 The Resilient Landscape 3 cr
REM 221/ FOR 221 Ecology 3 cr
REM 280 Introduction to Wildland Restoration 2 cr
SOIL 205 The Soil Ecosystem 3 cr
FISH 405 Introduction to Aquatic Restoration 1 cr
FOR 310 Indigenous Culture and Ecology 3 cr
AIST 314 Tribal Sovereignty and Federal Policy 3 cr
AIST 498 American Indian Studies Internship 1 cr
FISH 398 Renewable Natural Resources Internship 1-16 cr
OR
WLF 398 Renewable Natural Resources Internship 1-16 cr

One of the following (3 cr):

FOR 375 Introduction to Spatial Analysis for Natural Resource Management 3 cr
GEOG 385 GIS Primer 3 cr

One of the following (3-4 cr):

BE 433 Bioremediation 3 cr
BE 450 Environmental Hydrology 3 cr
BE 452 Environmental Water Quality 3 cr
CE 433 Water Quality Management 3 cr
FISH 314 Fish Ecology 3 cr
FISH 415 Limnology 4 cr
FISH 430 Riparian Ecology 3 cr
FOR 310 Indigenous Culture and Ecology 3 cr–Max 9 cr
FOR 326 Fire Ecology and Management 3 cr
FOR 462 Watershed Science and Management 3 cr
GEOG 424 Hydrologic Applications of GIS and Remote Sensing 3 cr
LARC 480 The Resilient Landscape 3 cr
REM 440 Wildland Restoration Ecology 3 cr
REM 456 Integrated Rangeland Management 3 cr
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>REM 459</td>
<td>Rangeland Ecology</td>
<td>2 cr</td>
</tr>
<tr>
<td>WLF 314</td>
<td>Ecology of Terrestrial Vertebrates</td>
<td>3 cr</td>
</tr>
<tr>
<td>WLF 440</td>
<td>Conservation Biology</td>
<td>3 cr</td>
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</table>

One of the following (3-4 cr):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FISH 481</td>
<td>Ichthyology</td>
<td>4 cr</td>
</tr>
<tr>
<td>FOR 320</td>
<td>Dendrology</td>
<td>4 cr</td>
</tr>
<tr>
<td>PLSC 205</td>
<td>General Botany</td>
<td>4 cr</td>
</tr>
<tr>
<td>REM 252</td>
<td>Wildland Plant Identification Field Studies</td>
<td>2 cr</td>
</tr>
<tr>
<td>REM 341</td>
<td>Systematic Botany</td>
<td>3 cr</td>
</tr>
</tbody>
</table>

Courses to total **26** credits for this certificate

**Available via distance:** 50% or more of requirements cannot be completed via distance.

**Geographical Area Availability:** Moscow

**Rationale:** After consultation with our Tribal partners, we have changed the required core courses focusing on courses that can be or are offered online. The fish and wildlife internship was replaced with American Indian studies internship to clarify that the internship will be focused on natural resource internship conducted with Tribal partners on Tribal Lands. We added some courses to the bins to increase flexibility and removed a few that had too many pre-requisites. Some courses were moved between the Core Bin and the The breadth bin. Total credits required were decreased from 26 to 25.

Assessment of the changes will be incorporated into the standard assessment metrics in the department. The addition of the aquatic restoration class will require additional faculty time and some summer salary from current departmental funds will be used to cover course development.

**FOREST, RANGELAND AND FIRE SCIENCES**

1. Add the following course:

   **For 522 Belowground Processes (3 cr)**
   Belowground Processes considers current advancements in understanding of root growth and development, water and nutrient acquisition, rhizosphere functions, soil microbial community composition and functions, organic matter decomposition, and symbiotic associations between plants and microbes. Examples focus mainly on forest and wildland terrestrial ecosystems. Students learn various techniques for studying belowground processes and apply them in self-directed, hypothesis-driven projects. Offered every other year during fall semester.
   **Prereq:** Graduate standing or instructor permission

   **Available via distance:**
   **Geographical Area Availability:** Moscow
Rationale: Our understanding of soil biological processes has advanced rapidly in recent decades due to focused research and technique development. The unique importance of these processes as keystones of ecosystem productivity is now widely appreciated. This course focuses on the ecology of wildland ecosystem and natural resource management. The course has already been offered twice by the instructor as a special topic course (FOR504) and fills an important need for graduate course offerings in the college.

2. Change the following courses:

For 273275 Forestry Resource Sampling (2 cr)
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
Coreq: FOR 274 and STAT 251

Rationale: In previous years, FOR 273 and FOR 274 were taken concurrently in the same semester. However, students now take FOR 274 in the fall and FOR 273 in the spring. For the sake of numbering logic, we wish to advance FOR 273 to FOR 275 – or some 200 number greater than 274. No added workload is associated with this change.

For 324 Forest Regeneration (3 cr)
Natural and artificial regeneration of forest ecosystems; reproduction methods; selection of seed source and stock type; nursery cultural practices; tree improvement; site preparation methods to establish regeneration. One lecture and one 2-hr lab a week. Two all day field trips. A semester-long project requires time spent weekly in a nursery to regularly monitor plant development under varied environmental conditions (approximately 45 hours over the 18-week spring semester in addition to lectures, labs and out-of-class studying). Cooperative: Open to WSU degree-seeking students.
Prereq: For 274, For 330, Soil 205 and Soil 206
Coreq: For 330

Available via distance: No
Geographic Area Availability: Moscow

Rationale: For 330 and 324 are offered annually during the same semester. Having For 330 as a prerequisite for For 324 has created considerable conflict in class scheduling for students attempting to complete the Forest Resources degree plan. A prior knowledge of materials covered in For 330 is not required for For 324. Instead, if students are learning the materials concurrently it will strengthen their understanding of the concepts presented in For 324.
It is requested for FOR 324 be offered as a cooperative course open to WSU students. WSU has a growing forestry program, but does not provide a course specifically focused on forest regeneration and the practices involved in tree propagation in a forest nursery. WSU students have expressed interest in the past to take this course, especially those students interested in forest nursery careers. Courses are available at WSU in the forestry program that meet the prerequisite requirements of FOR 324. Mixing UI and WSU students will be beneficial to the students, in particular the sharing of knowledge from their respective programs and backgrounds. This is one of the only courses in the USA that introduces students to the principles of forest nursery propagation using the operational Pitkin tree nursery at the University of Idaho. It is anticipated the enrollment from WSU students will not cause the maximum enrollment to be exceeded, therefore additional workload of the instructor is not anticipated.

For 424 Silvicultural Principals and Practices (4 cr)
Gen Ed: Senior Experience
Theory underlying silvicultural practices to control forest composition and growth, including forest stand dynamics, tree growth and quality, and growth-density relationships. Study of intermediate stand treatments and reproduction methods. Final project required involving field data collection and forest modeling to develop and mark silvicultural prescriptions. 3-hrs of lecture and 2-hrs of lab per week.

Prereq: Senior standing and For 274, For 320, or other plant identification course, For 324 and For 330, or instructor’s permission.

Available via distance: No
Geographic Area Availability: Moscow

Rationale: FOR 424 is the capstone course for the Forestry major, but covers content not discussed in any other class on campus: the underlying forest responses to management and the variety of management practices available. The four prerequisite courses required for FOR 424 limit student enrollment to Forestry majors, but the information covered is also of interest to students in other majors that focus on forests, fire, and ecology. Significant changes were made to the scope of the course and materials covered starting in the 2016 academic year, which no longer require prior knowledge of materials discussed in FOR 324. A basic knowledge of plant identification is required.

For 497 (s) Senior Thesis (2-4 cr, max 41 cr)
Independently plan and conduct a thesis project; write and defend the thesis under supervision of an advisor.

Prereq: Senior standing and minimum 3.20 GPA or Permission

Available via distance: No
Geographic Area Availability: Moscow
**Rationale:** There have been many instances where a student needs to register for only one credit of Senior Thesis during a semester. We simply would like to change the current variable credit of 2 - 4 credits to 1 - 4 credits for added versatility.

**For 529 Forest Ecosystem Analysis Ecosystem Analysis and Modeling (3 cr)**
Forest ecosystem processes and analysis from the leaf to the landscape scale; techniques for measuring forest ecosystem attributes; integration with forest management. Field trip required. (Fall only)
Terrestrial ecosystem processes, analysis, and modeling from the leaf to the landscape scale; techniques for measuring and modeling ecosystem attributes; integration with land management and climate change impacts. Field trip required. (Fall only)

**Geographic Area Availability:** Moscow

**Rationale:** The current instructor teaches this course based on all terrestrial ecosystems (not just forests) and has added a significant computer-based modeling component.

**REM 151 Rangeland Principles (23 cr)**
Rangelands are vast landscapes that cover most of western North America and the earth. Students will examine the ecological principles that cause these grasslands, shrublands, woodlands and deserts to change or stay the same. How humans use and manage these ecosystems will also be explored. The modern challenges of rangeland management must be met with broad thinking and new, sustainable practices to maintain and restore rangelands and the human communities that rely on them. Course includes/requires in-class projects and field experience(s).

**Available via distance:** Yes
**Geographic Area Availability:** Moscow, As dual credit through Idaho high schools, and globally online as a distance class.

**Rationale:** This course has been a 2-credit class. We want to add experiences and projects to merit 3 credits.
Further, students in the Rangeland program historically took REM 151 (Range Principles; 2 cr), plus REM 152 (Rangeland Ecosystem Exploration; 1 cr). The proposed course combines the classwork and skills of these two classes into one course. The REM curriculum will remove REM 152 from the degree requirements so credits required for the degree are not increased.

**REM 252 Wildland Plant Identification Field Studies (2 cr)**
Develop skills to identify and classify major rangeland plants. 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 1-day field trip. Required for REM majors. (Spring only)

**Available via distance:** No
**Geographic Area Availability:** Moscow
**Rationale:** Change in this course title is designed to more accurately describe the course and avoid confusion between REM 252 & REM 253 which currently have the same name:

1) REM 252 does not have a significant field component. Therefore, removal of “Field Studies” from the course title will more accurately describe the course.

2) REM 253 currently has the same name as REM 252 (i.e., Wildland Plant Identification Field Studies). REM 253 includes a significant field component. Therefore, “Field Studies” will remain in the name of REM 253.

**REM 410 Principles of Vegetation Measurement (2 cr)**

On-line course designed to give an overview of vegetation measurement techniques for grasslands, shrublands, woodlands, and forests. Students will gain a solid understanding of how to evaluate and monitor vegetation attributes relative to wildlife habitat, livestock forage, fire fuel characteristics, watershed function, and many other wildland values. Recommended Preparation: A basic statistics course and understanding of how to use computer spreadsheets such as Excel. (Fall only) Students who desire a hands-on and interactive experience with vegetation measurement are encouraged to also enroll in REM 411 which is a course the builds on the principles delivered in REM410 and includes field experiences.

**Prereq:** STAT 251 or permission

**Available via distance:** Yes

**Geographic Area Availability:** Moscow and globally online as distance course.

**Rationale:** After changes to the course, and based on student feedback, it is apparent that this course requires a stronger background in statistics. This change will require no addition to teaching workload. In fact, this change in prerequisite may decrease teaching workload as students will be more prepared for the course. The change is designed to give students better advice on needed preparation for the course.

**REM 411 Ecological Monitoring and Analysis (2 cr)**

This course integrates field sampling with quantitative and theoretical concepts related to scientific research, wildlife habitat, and land management practices. Field and data analysis course where students collect, analyze, and report on ecological data in various formats, and learn specific protocols used by professionals to assess wildlife habitat related to scientific research, wildlife habitat, fire, grazing, and land management practices. Class field trips required. Recommended preparation: REM 252 & 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:** No
**REM 411 Wildlife Resources Management (2 cr)**
Application of ecological and management principles to practical wildlife resource use; stressing response of wildlife resources to various kinds and intensity of disturbance and management practices. Recommended preparation: courses in general ecology (e.g., REM 221), technical writing (e.g., Engl 317), and vegetation assessment (e.g., REM 410, 411, or For 274) or Permission (Fall only).

Available via distance: Yes
Geographic Area Availability: Moscow and globally as a distance class.
**Rationale:** The specific content of REM 411 were recently revised to increase relevance to students majoring in Wildlife Resources and this course was added to the Wildlife Resources curriculum. These changes will also facilitate interactions among rangeland ecology and wildlife resources students. The proposed changes to the description are designed to more clearly reflect course content of this newly revised course.

**REM 459 Rangeland Ecology (2 cr)**
Application of ecological principles in rangeland management; stressing response and behavior of range ecosystems to various kinds and intensity of disturbance and management practice. [Web only](http://www.cnr.uidaho.edu/range459bunting/). Recommended Preparation: courses in general ecology (e.g., REM 221), technical writing (e.g., Engl 317), and vegetation assessment (e.g., REM 410, 411, or For 274) or Permission (Fall only).

Available via distance: Yes
Geographic Area Availability: Moscow and globally as a distance class.
**Rationale:** This change will not require additional teaching workload. The changes are designed to give students better advice on needed preparation for the course (i.e., REM 410 rather than REM 411) and remove out of date information from the course description.

3. Change and cross-list the following courses:

**For 552 Current Literature in Environmental Remote Sensing (1 cr, max arr).**
Same as NRS 552. Review, present, and discuss recent articles related to in remote sensing of the environment journals. Students choose, critically review, and discuss the articles to develop critical-thinking skills, remote sensing research strategies, and confidence in their knowledge of the literature. Graded P/F.

Available via distance: No
Geographic Area Availability: Moscow and globally as a distance class.
**Rationale:** The College of Natural Resources was recently reorganized, and this course has been taught by a faculty member that was formerly in FRFS (and now in NRS) for the past 5 years. Therefore a cross listing is requested between FOR and NRS.

**RMat 495 Product Development and Brand Management (3 cr)**
See Bus 495. Principles of product planning, development and commercialization; concept testing; product-life cycle management; portfolio analysis; targeting and positioning; team management; and implementing product decisions. (Fall only)

Available via distance: Yes
Geographical Area: Moscow
Rationale: Rationale for the course description:
The course description is being revised to bring it in line with how the course has been
delivered for the past six years. The focus of the change is to streamline the description
to assist students as they review the catalog description to determine what concepts are
covered in the course.

Rationale for the change in the prerequisites and co-requisites:
Understanding markets is critical to the development of products and managing brands.
Customer demand, macro environmental factors, competitor dynamics, etc., may
influence the type of products that firms introduce into the marketplace. Bus 321,
Marketing, is an introductory course on marketing that is suitable as a prerequisite or
co-requisite to Bus/RMat 495 as students will then be exposed to the broader role of
customers within the context of markets. This understanding will help students be
better prepared for success in the Bus/RMat 495 course, and help them be better
prepared as they perform a market feasibility analysis. The “Fall only” language is being
removed to allow for flexibility in delivering the course in Fall and Spring.

Workload for the delivery of this course will not increase as the course will continue to
be delivered as it currently is offered.

(Editor’s note: See UCC-17-023.)

4. Change the following cross-listed courses:

For 221 Principles of Ecology (3 cr)
See REM 221.

REM 221 Principles of Ecology (3 cr)
Same as For 221 and WLF 220. Fundamental principles 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. Computer-based materials are used extensively for guided
independent learning of ecology; a good working knowledge of Windows-based computer systems
is recommended. An online version of this course is offered as a separate section. Course
information: EcologyOnline.net. Recommended Preparation: Introductory botany and zoology.
Principles of ecology and their relevance to management of natural resources. Major topics include
plant and wildlife population, community, ecosystem, and landscape level processes and how these
processes interact with the environment. Exploration of how ecosystems are affected by humans
and global change. Introduction to the types of questions asked by ecologists, the principal concepts
and theories that guide ecological inquiry, and the methods that are used to answer ecological
questions. Both terrestrial and aquatic systems are considered.
Prereq: Biol 102/Biol 102L or Biol 114 or Biol 115 or PlSc 205; or Permission
Available via distance: No
Geographic Area Availability: Moscow
Rationale: No workload changes. We are changing the title and description to better reflect the introductory course content and allow for an upper division course (300-level) to be titled "Ecology". The description is being changed to better reflect the course content as all sections (cross-listed or otherwise) of this course are being taught by different instructors than those who have previously taught it.

For 472 Remote Sensing of the Environment (3-4 cr)
Same as REM 472, NRS 472. Current airborne and satellite systems, data acquisition on ground and from remote locations, instrumentation, imagery interpretation and digital analysis, applications for natural resource science and management. Two 75-minute lectures and one two-hour lab per week. Recommended Preparation: Math 143, Phys 100 or Phys 112. Cooperative: open to WSU degree-seeking students.

Available via distance: No
Geographic Area Availability: Moscow
Rationale: The College of Natural Resources was recently reorganized, and this course has been taught by a faculty member that was formerly in FRFS (and now in NRS) for the past 10 years. Therefore a cross listing is requested between FOR and NRS.

5. Drop the following course:

REM 472 Remote Sensing of the Environment (4 cr)
See For 472. Cooperative: open to WSU degree-seeking students.

Rationale: The instructor moved to the NRS department in CNR and the course will be added with an NRS prefix and cross-listed with FOR472

6. Make the following curricular changes to the Major in Fire Ecology and Management (B.S.Fire.Ecol.Mgmt.):

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

- ECON 202 Principles of Microeconomics 3 cr
- FOR 235/NRS 235 Society and Natural Resources 3 cr
- FOR 274 Forest Measurement and Inventory 3 cr
- FOR 326 Fire Ecology and Management 3 cr
- FOR 330 Forest Soil and Canopy Processes 4 cr
- OR
- FOR 424 Silvicultural Principles and Practices 4 cr
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>REM 456</td>
<td>OR Integrated Rangeland Management</td>
<td>3 cr</td>
</tr>
<tr>
<td>FOR 375</td>
<td>Introduction to Spatial Analysis for Natural Resource Management</td>
<td>3 cr</td>
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<tr>
<td>FOR 427</td>
<td>Prescribed Burning Lab</td>
<td>3 cr</td>
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<tr>
<td>FOR 433</td>
<td>Fire and Fuel Modeling</td>
<td>2 cr</td>
</tr>
<tr>
<td>FOR 450</td>
<td>Fire Behavior</td>
<td>2 cr</td>
</tr>
<tr>
<td>FOR 484</td>
<td>Forest Policy and Administration</td>
<td>2 cr</td>
</tr>
<tr>
<td>NR 101</td>
<td>Exploring Natural Resources</td>
<td>2 cr</td>
</tr>
<tr>
<td>NRS 125</td>
<td>Introduction to Conservation and Natural Resources</td>
<td>3 cr</td>
</tr>
<tr>
<td>NRS 383</td>
<td>Natural Resource and Ecosystem Service Economics</td>
<td>3 cr</td>
</tr>
<tr>
<td>PHYS 100</td>
<td>Fundamentals of Physics</td>
<td>3 cr</td>
</tr>
<tr>
<td>PHYS 100L</td>
<td>Fundamentals of Physics Lab</td>
<td>1 cr</td>
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<tr>
<td>PLSC 205</td>
<td>General Botany</td>
<td>4 cr</td>
</tr>
<tr>
<td>REM 144</td>
<td>Wildland Fire Management</td>
<td>2 cr</td>
</tr>
<tr>
<td>REM 407</td>
<td>GIS Application in Fire Ecology and Management</td>
<td>2 cr</td>
</tr>
<tr>
<td>REM 459</td>
<td>Rangeland Ecology</td>
<td>2 cr</td>
</tr>
<tr>
<td>REM 429</td>
<td>Landscape Ecology</td>
<td>3 cr</td>
</tr>
<tr>
<td>FOR 435</td>
<td>OR Remote Sensing of Fire</td>
<td>3 cr</td>
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<tr>
<td>SOIL 205</td>
<td>The Soil Ecosystem</td>
<td>3 cr</td>
</tr>
<tr>
<td>SOIL 206</td>
<td>The Soil Ecosystem Lab</td>
<td>1 cr</td>
</tr>
<tr>
<td>STAT 251</td>
<td>Statistical Methods</td>
<td>3 cr</td>
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</tbody>
</table>

**One of the following (4 cr):**

- BIOL 114 Organisms and Environments 4 cr
- BIOL 115 Cells & the Evolution of Life 3 cr
- BIOL 115L Cells and the Evolution of Life Laboratory 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):**

- ENGL 313 Business Writing 3 cr
- ENGL 317 Technical Writing 3 cr

**Ecology (3 cr):**

- FOR 221/REM 221 Ecology 3 cr

**One of the following courses (3 cr):**

- GEOG 301 Meteorology 3 cr
GEOG 313  Global Climate Change  3 cr
FOR 454  Air Quality, Pollution, and Smoke  3 cr

One of the following (3-4 cr):
MATH 143  Pre-calculus Algebra and Analytic Geometry  3 cr
MATH 160  Survey of Calculus  4 cr

One of the following courses (3-4 cr):
FOR 320  Dendrology  4 cr
REM 252  Wildland Plant Identification Field Studies  2 cr
REM 341  Systematic Botany  3 cr

Advisor Approved Electives or Approved Minor

Complete 13 credits of Advisor Approved Electives OR one of the following Minors:
   Rangeland Ecology and Management
   Forest Resources
   Natural Resource Conservation
   Natural Resources Economics
   Fishery Resources
   Wildlife Resources
   Ecology
   Forest Operations
   Renewable Materials

Courses to total 120 credits for this degree

Available via distance: 50% or more of requirements cannot be completed via distance.
Geographical Area Availability: Moscow
Rationale: Following comments we received during our recent external program review, we propose several minor edits to the B.S. in Fire Ecology and Management.

Reviewers expressed the need for silviculture in the curriculum we propose modifying the requirement for FOR 330 (Forest Soil and Canopy Processes) into being this course OR the forestry/range silviculture courses; i.e. FOR 424 Silvicultural Principals and Practices OR REM 456 Integrated Rangeland Management, respectively.

We further request that the requirement of REM 429 Landscape Ecology be edited to be either REM 429 or FOR 435 Remote Sensing of Fires to provide students more options to take this material
We further request that GEOG 313 Global Climate Change be replaced by FOR 454 Air Quality, Pollution, and Smoke. This change is requested as the FEM faculty would like the students to have a strong understanding of meteorology, which is covered in both GEOG 301 and FOR 454, but is not always contained within GEOG 313.

We also request that the following minors be added as pre-approved: Ecology, Forest Operations, and Renewable Materials. The FEM faculty feel that these minors help the students to receive broad experiences during their degree.
Lastly, the FEM faculty observed a catalogue error that we would like fixed. Namely, the last options bin should state “One of the following courses (2-4 cr)” and not “(3-4 cr)” as the credits of the course options vary between 2 and 4 cr.

7. Make the following changes to the Major in Forestry (B.S. Forestry):

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 114</td>
<td>Organisms and Environments</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics</td>
<td>3 cr</td>
</tr>
<tr>
<td>ENT 469</td>
<td>Introduction to Forest Insects</td>
<td>2 cr</td>
</tr>
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<td>FOR 102</td>
<td>Introduction to Forest Management</td>
<td>1 cr</td>
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<td>FOR 235/</td>
<td>Society and Natural Resources</td>
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<tr>
<td>NRS 235</td>
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<tr>
<td>FOR 273</td>
<td>Forestry Sampling Methods</td>
<td>2 cr</td>
</tr>
<tr>
<td>FOR 274</td>
<td>Forest Measurement and Inventory</td>
<td>3 cr</td>
</tr>
<tr>
<td>FOR 320</td>
<td>Dendrology</td>
<td>4 cr</td>
</tr>
<tr>
<td>FOR 324</td>
<td>Forest Regeneration</td>
<td>3 cr</td>
</tr>
<tr>
<td>FOR 330</td>
<td>Forest Soil and Canopy Processes</td>
<td>4 cr</td>
</tr>
<tr>
<td>FOR 375</td>
<td>Introduction to Spatial Analysis for Natural Resource</td>
<td>3 cr</td>
</tr>
<tr>
<td>FOR 424</td>
<td>Silviculture Principles and Practices</td>
<td>4 cr</td>
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<tr>
<td>FOR 430</td>
<td>Forest Operations</td>
<td>3 cr</td>
</tr>
<tr>
<td>FOR 462</td>
<td>Watershed Science and Management</td>
<td>3 cr</td>
</tr>
<tr>
<td>FOR 468</td>
<td>Forest and Plant Pathology</td>
<td>2 cr</td>
</tr>
<tr>
<td>FOR 484</td>
<td>Forest Policy and Administration</td>
<td>2 cr</td>
</tr>
<tr>
<td>MATH 143</td>
<td>Pre-calculus Algebra and Analytic Geometry</td>
<td>3 cr</td>
</tr>
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<td>MATH 144</td>
<td>Analytic Trigonometry</td>
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<td>NR 101</td>
<td>Exploring Natural Resources</td>
<td>2 cr</td>
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<td>NRS 383</td>
<td>Natural Resource and Ecosystem Service Economics</td>
<td>3 cr</td>
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<td>PHYS 100</td>
<td>Fundamentals of Physics</td>
<td>3 cr</td>
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<td>PLSC 205</td>
<td>General Botany</td>
<td>4 cr</td>
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<td>REM 144</td>
<td>Wildland Fire Management</td>
<td>2 cr</td>
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<td>SOIL 205</td>
<td>The Soil Ecosystem</td>
<td>3 cr</td>
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<td>SOIL 206</td>
<td>The Soil Ecosystem Lab</td>
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<td>STAT 251</td>
<td>Statistical Methods</td>
<td>3 cr</td>
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One of the following (4 cr):

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<tr>
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<tbody>
<tr>
<td>CHEM 101</td>
<td>Introduction to Chemistry I</td>
<td>4 cr</td>
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<tr>
<td>CHEM 111</td>
<td>Principles of Chemistry I</td>
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Ecology (3 cr):

<table>
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<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>FOR 221/</td>
<td>Ecology</td>
</tr>
<tr>
<td>REM 221</td>
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</tbody>
</table>
Advisor Approved Electives or Minor
Complete 13 credits of Advisor Approved Electives OR one of the following Minors:
Business
Ecology
Environmental Communication
Fire Ecology and Management
Fishery Resources
Forest Operations
Natural Resource Conservation
Natural Resources Economics
Renewable Materials
Rangeland Ecology and Management
Soil Science
Wildlife Resources
Horticulture

Courses to total 120 credits for this degree

*Note: 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.

**Note: Either Math 160 or Math 170 may be used as a restricted elective, but not both.

Available via distance: No
Geographic Area Availability: Moscow
Rationale: The Horticulture Minor in the College of Agricultural and Life Sciences will be a beneficial set of courses for students interested in pursuing a career in forest nurseries. The College of Natural Resources administers the Franklin Pitkin Forest Nursery which annually employs over 30 undergraduate students. Some of these students are interested in a career in forest nurseries and often take courses in the horticulture program. Forest nursery employers desire students with both an understanding of forestry and horticultural principles and practices, thus adding the Horticulture Minor to the Forestry Major will better prepare students to obtain jobs and succeed in their profession. Since the courses in the Horticulture Minor are mostly in CALS there will be no additional added workload to faculty in the Forestry Program.

8. Make the following changes to the Major in Rangeland Ecology and Management (B.S.Range.Ecol.Mgmt.)

This major prepares students to conserve, restore, and manage the vast landscapes known as rangelands. These ecosystems include deserts, prairies, shrublands, and woodlands. The degree
The program focuses on the scientific study of rangelands and introduces principles for managing and restoring rangelands for maximum benefit and ecosystem sustainability.

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

**First and Second Years**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AVS 109</td>
<td>The Science of Animals that Serve Humanity</td>
<td>4 cr</td>
</tr>
<tr>
<td>BIOL 115</td>
<td>Cells &amp; the Evolution of Life</td>
<td>3 cr</td>
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<td>BIOL 115L</td>
<td>Cells and the Evolution of Life Laboratory</td>
<td>1 cr</td>
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<tr>
<td>CHEM 275</td>
<td>Carbon Compounds</td>
<td>3 cr</td>
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<td>BIOL 114</td>
<td>Organisms and Environments</td>
<td>4 cr</td>
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<tr>
<td>COMM 101</td>
<td>Fundamentals Public Speaking</td>
<td>2 cr</td>
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<td>ECON 202</td>
<td>Principles of Microeconomics</td>
<td>3 cr</td>
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<td>FOR 235/NRS</td>
<td>Society and Natural Resources</td>
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<td>235</td>
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<td>NR 101</td>
<td>Exploring Natural Resources</td>
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<tr>
<td>REM 151</td>
<td>Rangeland Principles</td>
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<tr>
<td>REM 152</td>
<td>Rangeland-Ecosystem-Exploration</td>
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<tr>
<td>SOIL 205</td>
<td>The Soil Ecosystem</td>
<td>3 cr</td>
</tr>
<tr>
<td>SOIL 206</td>
<td>The Soil Ecosystem Lab</td>
<td>1 cr</td>
</tr>
<tr>
<td>STAT 251</td>
<td>Statistical Methods</td>
<td>3 cr</td>
</tr>
<tr>
<td>REM 252</td>
<td>Wildland Plant Identification</td>
<td>2 cr</td>
</tr>
<tr>
<td>REM 253</td>
<td>Wildland Plant Identification Field Studies</td>
<td>1 cr</td>
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</table>

One of the following (4 cr):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 213</td>
<td>Principles of Biological Structure and Function</td>
<td>4 cr</td>
</tr>
<tr>
<td>PLSC 205</td>
<td>General Botany</td>
<td>4 cr</td>
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</table>

One of the following (4 cr):

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHEM 101</td>
<td>Introduction to Chemistry I</td>
<td>4 cr</td>
</tr>
<tr>
<td>CHEM 111</td>
<td>Principles of Chemistry I</td>
<td>4 cr</td>
</tr>
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</table>

One of the following (3-4 cr):

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 143</td>
<td>Pre-calculus Algebra and Analytic Geometry</td>
<td>3 cr</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Survey of Calculus</td>
<td>4 cr</td>
</tr>
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</table>

Ecology (3 cr):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 221/REM 221</td>
<td>Ecology</td>
<td>3 cr</td>
</tr>
</tbody>
</table>

Third and Fourth Years

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 375</td>
<td>Introduction to Spatial Analysis for Natural Resource</td>
<td>3 cr</td>
</tr>
</tbody>
</table>
Management

NRS 383 Natural Resource and Ecosystem Service Economics 3 cr
REM 252 Wildland Plant Identification Field Studies 2 cr
REM 341 Systematic Botany 3 cr
REM 410 Principles of Vegetation Measurement 2 cr
REM 411 Wildland Habitat Ecology and Assessment 2 cr
REM 440 Wildland Restoration Ecology 3 cr
REM 456 Integrated Rangeland Management 3 cr
REM 459 Rangeland Ecology 2 cr
REM 460 Integrating GIS and Field Studies in Rangelands 2 cr
SOIL 454 Pedology 3 cr

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

One of the following (3 cr):
FISH 430 Riparian Ecology and Management 3 cr
FOR 462 Watershed Science and Management 3 cr

**Career Tracks with Advisor Input and Approval** Approved Emphasis Areas (1215 cr):

Students must also complete 1215 credits of advisor approved electives in emphasis areas that contributing to a specific career track that may include: Restoration Ecology, Field Botany, Spatial Ecology, Watershed Science, Wildland Fire Management, Invasive Plant Management, Wildlife Habitat Management, Tribal Land Management, Rangeland Economics, Natural Resource Communication, and Environmental Consulting.

RESTORATION ECOLOGY – Millions of acres of rangeland and forests have been disturbed by fire, invasive plants, and overgrazing. Academic advisors in rangeland conservation have developed a set of electives for students interested in a career in wildland restoration. Completing these career track electives will fulfill requirements for the Restoration Ecology Undergraduate Academic Certificate. Careful selection of courses can also highlight expertise in botany and plant materials to qualify for professions as a botanist.

WILDLIFE HABITAT - Many species of wildlife live on rangelands and the management of wildlife habitat is an important and sought after skill. With help from their Academic Advisor, rangeland students can complete a career track that will show expertise in wildlife habitat management and fulfill the requirements for a Minor in Wildlife Resources.

LAND AND LIVESTOCK - This career track is for students interested in “hands-on” management of rangelands. Academic Advisors work with students to select courses that provide the knowledge and skills needed to manage rangelands with grazing and fire to enhance livestock production while
sustaining communities of native plants and animals. Completion of these courses can also satisfy the requirements for a Minor in Animal Science or Soil Science.

WILDLAND FIRE - Wildfire is one of the major forces causing change on rangeland ecosystems. Completing a specific set of advisor approved electives, will enable students to show knowledge of land management related to wildland fire and fulfill the requirements for a Minor in Fire Ecology and Management.

INDIVIDUAL INTEREST – Students can work with their advisor to select specific courses to show expertise in a career track of specific interest that may include Watershed or Riparian Ecologist, Natural Resource GIS Specialist, Environmental Consultant, Tribal Land Manager, Resource Economist, or many other interests related to rangelands.

Courses to total 122 credits for this degree

Available via distance: More than half of the REM courses can be completed from a distance, but most other courses in the degree are not accessible in a distance format.

Geographical Availability: Moscow

Rationale: None of the proposed changes will increase teaching or advising effort. The following changes are requested to increase clarity of options and emphasize use of electives to create strong Career Tracks in the degree:

1. Add the following statement to the beginning of the catalog description in an effort to increase student understanding of the Rangeland degree: “This major prepares students to conserve, restore, and manage the vast landscapes known as rangelands. These ecosystems include deserts, prairies, shrublands, and woodlands. The degree program focuses on the scientific study of rangelands and introduces principles for managing and restoring rangelands for maximum benefit and ecosystem sustainability.”

2. REMOVE BIOL 115 Cells & the Evolution of Life (3 cr) & BIOL 115L Cells and the Evolution of Life Laboratory (1 cr) and ADD BIOL 114 Organisms and Environments (4 cr) as it is believed this is a more appropriate requirement for the degree.

3. REMOVE CHEM 275 Carbon Compounds (3 cr) from degree requirements to and ADD 3 additional credits in “Career Track Electives” to improve student opportunity to specialize in specific aspects of rangeland conservation.

4. ADD REM 253 Wildland Plant Identification Field Studies (1 cr) back into degree to correct an error in last year’s catalog.

5. MOVE REM 252 from “Third and Fourth Years” to “First and Second Years” section of course list to as it is more appropriate for students to take this course earlier in their academic career.

6. CHANGE “Advisor Approved Emphasis Area” to “Career Tracks” and ADD significant detail for students to select one of 5 Career Tracks: Restoration Ecology, Wildlife Habitat, Land & Livestock, Wildland Fire, or Individualized Interest. We want to add this language because it is clear from student surveys that students seldom
understand what options they may pursue with this degree. REM advisors have outlined specific requirements for each of these career tracks which will be used to improve advising and student preparation for specific careers.

9. Make the following curricular changes to the Fire Ecology, Management, and Technology Graduate Certificate:

*Note: A grade of 'B' or higher is required in all coursework for this academic certificate.*

**Fire Core (8 cr):**
- FOR 526 Fire Ecology 3 cr
- FOR 546 Science Synthesis and Communication 3 cr
- FOR 587 Wildland Fire Policy 2 cr

**Ecology and Management Course Group (2-3 cr):**
- FOR 427 Prescribed Burning Lab 3 cr
- FOR 451 Fuels Inventory and Management 3 cr
- FOR 529 Forest Ecosystem Analysis 3 cr
- FOR 531 Invasion Biology 3 cr
- FOR 557 Advanced Fire Behavior 3 cr
- REM 429 Landscape Ecology 3 cr
- REM 440 Wildland Restoration Ecology 3 cr
- REM 459 Rangeland Ecology 2 cr
- REM 507 Landscape and Habitat Dynamics 3 cr

**Tools and Technology Course Group (2-4 cr):**
- FOR 435 Remote Sensing of Fire 3 cr
  - OR
- FOR 535 Remote Sensing of Fire 3 cr
- FOR 472/REM 472 Remote Sensing of the Environment 4 cr
- REM 407 GIS Application in Fire Ecology and Management 2 cr
  - OR
- REM 510 GIS Application in Fire Ecology and Management 2 cr

**Planning and Policy Course Group (3 cr):**
- FOR 454 Air Quality, Pollution, and Smoke 3 cr
  - OR
- FOR 554 Air Quality, Pollution, and Smoke 3 cr
Natural Resource Policy Development 3 cr
Planning & Decision Making for Watershed Management 3 cr
Integrated Rangeland Management 3 cr

Electives to total 15 for the certificate

Available via distance: 100% of curricular requirements can be completed via distance. 
Geographical Availability: Distance
Rationale: We propose to remove NRS 573 Planning & Decision Making for Watershed Management 3 cr as the professor whom taught this course retired and there are no immediate plans by the home department to offer it. We instead propose to add in FOR 454/FOR 554 Air Quality, Pollution, and Smoke 3cr into the Planning and Policy course bin as it contains considerable policy details and also is taught both on campus and online.

We also propose to add in the on-campus (and senior) version of REM 510, namely REM 407 to better enable on-campus students to complete this graduate certificate.

NATURAL RESOURCES
1. Change the following course:

   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 115/115L, Introductory biology or permission
   Coreq: NR 322

   Available via distance: Yes
   Geographical Area: Moscow, World-wide availability via online, plus a section in an Idaho wilderness setting in summer
   Rationale: Provides third-year students with knowledge and understanding of the science of ecology. The science of ecology is typically offered at the third-year level for students majoring in various scientific disciplines. The course title, Ecology, accurately denotes the name of this science – and is consistent with the major ecology course at universities countrywide. The 300-level course on the science of ecology is more easily transferred to programs at other universities – this is a distinct advantage for students in
the online course and students in the Semester in the Wild program (one of the summer sections of the course). The content and computer-based interface for the online course and the DVD-based course (specific for Semester in the Wild) have been designed for a third-year major course on the science of ecology. The second- and third-year level courses allow for a better and clearer separation between the science of ecology and the application of ecology for proper management of natural resources.

**NATURAL RESOURCES AND SOCIETY**

1. Add the following courses:

   **NRS 411 Environmental Project Management and Decision Making (4 cr)**
   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:** The purpose of this course is to meet a growing demand in the College of Natural Resources, and as expressed by alumni and employers, to provide practical training to students in the task of developing environmental planning documents for natural resource agencies. Students will gain hands-on experience and basic skills in evaluating documents, crafting scenarios for problem analysis, and understanding of how to use tools like GIS and others to aid decision making. This course will be co-instructed by existing NRS faculty representing an interdisciplinary range of skills in project and program development and management.

   **NRS 482 Outdoor Leadership Expedition (3 cr)**
   This expedition based course will explore the practice of leadership, using the wilderness experience as the classroom. Topics include trip planning, small group dynamics, decision-making, communication and expedition behavior. Examining leadership theory, modeling of leadership techniques, written assignments, and backcountry skill development are used to support learning.

   **Available via distance:** No
   **Geographical Area:** Moscow, Taylor Wilderness Research Station
   **Rationale:** This course has been successfully offered as NRS 404-50 (Field Leadership Skills and Awareness) in the fall Semester in the Wild program (www.uidaho.edu/wild). The course is limited to students participating in the full-semester program at the Taylor Wilderness Research Station in the Frank Church River of No Return Wilderness. At this point in time, it is appropriate to formalize the course in the UI catalog, which is where the other 4 courses currently reside.
NRS 566 Place-based Ecology II (4 cr)
Explore how plants and animals manage the unique survival challenges of winter. Delve into fundamentals of winter ecology including the changing snowpack, life under the ice, plants and animals in the winter environment and plant-animal interactions. The middle of the course addresses environmental change and interactions with winter ecology. At the end of the semester, the springtime environment will be used to study fundamental chemical and physical processes that drive the natural world emerging out of its apparent hibernation. Work outdoors to gain hands-on knowledge and practical experience. Field experiences will be fundamental in developing ecological understanding, with field trips to various locations to gain crucial insight into the natural world during the winter and spring seasons. Outdoor experience and learning will be complemented by lectures, group discussions, readings, and field experiments.

Available via distance: No
Geographical Area: McCall Field Campus
Rationale: This course is being added as a foundational course in the McCall Field Campus-based Masters of Natural Resources. It represents content that was previously being taught without credit being ascribed to it. We propose to add this course to expand further on that content as it is a very often requested part of the degree that has historically been underserved. Additional faculty workload will be taken on by a part-time faculty member who has recently had an increase in work hours.

2. Add and cross-list the following courses:

NRS 552 Current Literature in Environmental Remote Sensing (1 cr, max arr)
See For 552.

Available via distance: No
Geographical Area: McCall Field Campus
Rationale: The College of Natural Resources was recently reorganized, and this course has been taught by a faculty member that was formerly in FRFS (and now in NRS) for the past 5 years. Therefore a cross listing is requested between FOR and NRS.

NRS 472 Remote Sensing of the Environment (4 cr)
See For 472.

Available via distance: No
Geographical Area: Moscow
Rationale: The College of Natural Resources was recently reorganized, and this course has been taught by a faculty member that was formerly in FRFS (and now in NRS) for the past 10 years. Therefore a cross listing is requested between FOR and NRS.
3. Change the following courses:

**NRS 125 Introduction to Conservation and Natural Resources (3 cr)**

Overview of conservation and natural resources from a political, economic, behavioral, and land use perspective: philosophical, theoretical, and historical foundations of conservation as linked to social trends. Foundations of natural resource management and agencies with responsibility for land management; philosophical, theoretical, and historical basis for protected areas; principles and frameworks for managing human use of and recreation on public lands.

**Available via distance:** No

**Geographical Area:** Moscow

**Rationale:** The change in this course description is a result of thorough discussions that have occurred to revise and scaffold the NRC degree offerings. This course description is a more accurate reflection of the material students will study and that will be built upon later in the curriculum.

**NRS 235 Society and Natural Resources (3 cr)**

Gen Ed: Social Science

Same as For 235. The social sciences applied to natural resources management; relationship between natural resources and human socioeconomic systems; analysis of resource issues Introduction to the human dimensions of natural resources management. Includes individual values, attitudes and behaviors and societal norms and behaviors; methods of measurement, research and interpretation of human influence; institutions and processes for implementing policy and regulation and managing human difference; and understanding the nature of major natural resource issues.

**Available via distance:** No

**Geographical Area:** Moscow

**Rationale:** This course description more accurately reflects the specific topics covered in the course, which reflects a depth of knowledge in theory, practice, and application of the topics presented.


Theory and practice of decision-making for conservation planning and management, including protected areas, working landscapes, conservation organizations and the challenges facing natural resource managers in the 21st Century. Field trips and a collaborative group community Service-Learning project are required. (Fall only) 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 reflects a recent change in the makeup of our department, which now brings together deep expertise in the social sciences and biophysical/ecological sciences. The construct of social-ecological systems is key to understanding current views of natural resource, economic, and societal sustainability. Incorporation of this course into the curriculum will allow more departmental faculty to participate in our departmental undergraduate degree programs.

NRS 475 Conservation Management and Planning II Conservation Planning and Management (4 cr)
Gen Ed: Senior Experience
Advanced theory, processes, and techniques for the management and planning of conservation systems including conservation organizations, natural areas, and their uses; focuses on resource and user management programs and techniques such as programming, budgeting, financing, contracting, and personnel management processes, as well as conservation planning processes including operational, strategic, and long-range planning for natural sites and larger landscapes. A required 2-day field trip, collaborative group projects and a Service-Learning project are required. (Spring only)
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.
Prereq: NRS 385 and Junior or Senior standing; or Permission

Available via distance: No
Geographical Area: Moscow
Rationale: NRS 385 (Conservation management and planning – I) has been discontinued and replaced by NRS 390, so the title and prerequisites need to reflect this. Course description has been updated to better reflect current content.

NRS 486 311 Public Involvement in Natural Resource Management (3 cr)
Theoretical and applied concepts of public involvement in both public and private sectors of natural resource management; case studies and applied techniques or methods for public involvement; National Environmental Policy Act (NEPA) regulations and other public involvement policy or law, historical and legal mandates, government agency responsibilities, applied methods and techniques, case studies, and practical experience. Three lec and three hrs of lab a wk; field trip may be reqd. (Spring only)

Available via distance: No
**Geographical Area:** Moscow

**Rationale:** This course already exists and has been taught by faculty in the Department of Natural Resources and Society under course heading NRS 486. The course is being changed to NRS 390 to help restructure an undergraduate degree and provide a logical sequence of classes for students. This course will become a prerequisite for a senior-level course on natural resource project management. It needs a course prefix befitting a junior-level requirement.

**NRS 560 Place-based Ecology I (34 cr)**
Cover plant and animal community ecology from both a qualitative and quantitative perspective. Topics will include: community interaction of plants and animals; community dynamics, succession, and disturbance; basic data collection and statistical analysis of habitat association data; and the effect of abiotic factors on community structure. (Fall only)

**Available via distance:** No

**Geographical Area:** Moscow

**Rationale:** This course is a foundational course in the McCall Field Campus-based Masters in Natural Resources Environmental Education/Science Communication option and the contact hours between faculty and students already meets the amount of time necessary for a 4-cr course. We propose to increase credit hours to provide students the appropriate credit for time spent in the course.

**NRS 563 Place Based Environmental Education (34 cr)**
Educating students so that they have the skills and knowledge base in order to begin to understand the human and natural environment in which they live is a complicated endeavor. This course is designed to provide a foundation of educational pedagogy, a survey of place-based literature in areas critical to this educational endeavor, and opportunities for personal and professional application. (Fall only)

**Available via distance:** No

**Geographical Area:** Moscow

**Rationale:** This course is a foundational course in the McCall Field Campus-based Masters in Natural Resources option in Environmental Education and Science Communication, and the content currently covered meets the required number of contact hours necessary for 4 credit hours. We propose to increase credit hours to more accurately reflect the contact hours spent in this course by faculty.

**NRS 565 Science Communication and the Environment (34 cr)**
Examines the flow of scientific information between experts and non-experts, with emphasis on educational settings. Project-based and includes practice in digital storytelling, documentary film, blogs, podcasts, public talks, and field experiences. McCall Field Campus. (Spring Only)
Available via distance: No  
Geographical Area: Moscow  
Rationale: This course is a foundational course in the McCall Field Campus-based Masters in Natural Resources option in Environmental Education and Science Communication, and the content currently covered meets the required number of contact hours necessary for 4 credit hours. We propose to increase credit hours to more accurately reflect the contact hours spent in this course by faculty.

4. Drop the following course:

**NRS 390 Environmental Decision Making (3 cr)**
Integrated, interdisciplinary approaches to explaining and understanding the importance of major environmental protection laws, with special emphasis on the National Environmental Policy Act, the Endangered Species Act, and the Clean Water Act.

Available via distance: No  
Geographical Area: Moscow  
Rationale: The material of this course is being re-scoped and incorporated into other courses within the NRC degree programs. This change is necessary because of change of faculty personnel and expertise within the home department of the NRC degree.