

College of Forestry & Conserv Catalog Year: 2015-2016

Degree Type: Minor Level: Minor Subject: **Climate Change Studies (Minor)**

Total Credits: 21 Cumulative GPA Required: 2.0

Lower Division Core

Category Name: Required course Rule: must take the following course

Criterion: C- Number of Credits 3

Course Listing

CCS 103X Intro Climate Change:Sci & Soc 3

Commentary: Major Electives

Category Name: Climate Change Science

Rule: Must take at least 6 credits from the following list

Criterion: C- Number of Credits 6

Course Listing

ERTH 303N Weather and Climate 3

GEO 482 Global Change 3

NRSM 281 Science of Climate Change 3

NRSM 291 Special Topics 1 To 12

NRSM 408 Global Cycles and Climate 3

NRSM 418 Ecosystem Climatology 3

NRSM 491 Special Topics 1 To 9

Commentary: Earth 303N same as CCS 303N NRSM 408 same as CCS 408

NRSM 418 same as CCS 418

Commentary: Major Electives

Category Name: Climate Change and Society

Rule: Must take at least 6 credits from the following list

Criterion: C- Number of Credits 6

CCS 395 Special Topics 1 To 9

COMX 349 Comm Consump & Climate 3

ECNS 445 Int Env Econ & Clim Change 3

ENST 367 Envr Politics & Policies 3

GPHY 421 Sustainable Cities 3

NRGY 295 Practicum 2

NRSM 426 Climate and Society 3

NRSM 449E Climate Change Ethics/Policy 3

PSCI 324 Climate Policies: China & U.S. 3

Commentary: ENST 427 Social Issues: The Mekong Delta; Wintersession cross-listed with NRSM 427 and GPHY 427 count toward Society Area; taught with ENST/NRSM/GPHY 437 Climate Change: Mekong Delta.

Also NRSM 321 AND ENST 311 Cycle the Rockies: Energy and Climate Change in Montana 6 cr. in Summer

COMX 349 same as CCS 349

ECNS 445 same as CCS 445

GPHY 421 same as CCS 421

NRSM 426 same as CCS 426

PSCI 324 same as CCS 324

ENST 476 same as CCS 476

Commentary: Major Electives

Category Name: Climate Change Solutions

Rule: Must take at least 6 credits from the following courses with at least one course from category "A" Criterion:

Number of Credits 6

Course Listing Commentary:

Subcategory Name: Category A: Practical Application

Rule: Must take at least 1 course but a total of 6 credits between both categories A and B

Criterion: C-

Course Listing Number of Credits 3-6

CCS 391 Climate Change Practicum 2 To 4

CCS 398 Clmt Change Internship/SERV 2 To 4

ENST 476 Environmental Citizenship 3

NRGY 298 Internship 2

Rule: May take 1 of the following courses

Criterion: C- Number of Credits 0-3

Course Listing

BGEN 160S Issues in Sustainability 3

CCS 352 Climate Field Studies 3

GPHY 421 Sustainable Cities 3

NRGY 102 Intro to Sustainable Energy II 3

NRGY 195 Practicum 2

Commentary: Commentary: ENST 437 Climate Change: Mekong Delta Wintersession cross-listed with NRSM 437 and GPHY 437 count toward Solutions Area; taught with ENST 427 Social Issues: The Mekong Delta.

Also NRSM 321 AND ENST 311 Cycle the Rockies: Energy and Climate Change in Montana 6 cr. in Summer

BGEN 160S same as EVST 160S

GPHY 421 same as CCS 421

NRGY 102 same CCS 102

College of Forestry & Conserv Catalog Year: 2015-2016

Degree Type: Minor Level: Minor Subject: **Ecological Restoration (Minor)**

Total Credits: 24 Cumulative GPA Required: 2.0

Lower Division Core

Category Name: Major Required Course Rule: must take the following course

Criterion: C- Number of Credits 9

Course Listing

FORS 201	Forest Biometrics	3	F
NRSM 210N	Soils, Water and Climate	3	F
NRSM 265	Elements of Ecological Restora	3	F

Commentary: FORS 201 can be substituted for either STATS 216 Into to Statistics OR WILD 240 Into to Biostatistics

Commentary: Upper Division Core

Category Name: Required Courses

Rule: Must complete all of the following courses

Criterion: C- Number of Credits 9

Course Listing

FORS 330	Forest Ecology 3	F,S
NRSM 385	Watershed Hydrology 3	F,S

Commentary: FORS 330 can be substituted for either BIOE 370 Genera Ecology OR BIOE 428 Freshwater Ecology OR NRSM 462 Range Ecology; NRSM 385 can be substituted for BIOO 335 Rocky Mountain Flora

Commentary: Major Electives

Category Name: Natural Science Electives

Rule: Must take one of the following courses, but not a course already used for a core or above requirement

Criterion: C-

Course Listing	Number of Credits	3
BIOE 342	Field Ecology	5
BIOE 370	General Ecology	3
BIOE 416	Alpine Ecology	3
BIOE 428	Freshwater Ecology	5
BIOE 439	Stream Ecology	3
BIOE 448	Terrestrial Plant Ecology	4
BIOE 451	Landscape Ecology	3
BIOE 453	Ecology of Small & Large Lakes	3
BIOE 458	Forest and Grassland Ecol	3
BIOO 335	Rocky Mountain Flora	3 S
BIOO 340	Biology and Mgmnt of Fishes	4
BIOO 433	Plant Physiology	3
FORS 202	Forest Mensuration	3 S
FORS 330	Forest Ecology 3	F,S
FORS 331	Wildland Fuel Management	3 F
FORS 333	Basic&Applied Fire Ecology	3 S
FORS 347	Multiple Resource Silviculture	3 S
GEO 228	Earth Surface Processes	2
GEO 420	Hydrogeology	4

GEO 460	Process Geomorphology	4	
NRSM 335	Environmental Entomology	3	F
NRSM 360	Rangeland Mgt (equiv 260)	3	F
NRSM 385	Watershed Hydrology	3	F,S
NRSM 408	Global Cycles and Climate	3	
NRSM 415	Environmental Soil Science	3	
NRSM 418	Ecosystem Climatology	3	
NRSM 462	Rangeland Ecology	3	S
NRSM 485	Watershed Management	3	I
WILD 470	Conserv of Wildlife Populatns	3	
WILD 491	Special Topics 1 To 12		

Upper Division Electives

Category Name: Social Science Electives

Rule: take at least one course from the following, but if one of these courses are required for the major a second elective must be taken
 Criterion: C- Number of Credits 3-6

Course Listing

ECNS 433	Economics of the Environment	3	
FORS 320	Forest Environmental Economics	3	F
NRSM 379	Collab in Nat Res Decisions	3	S
NRSM 422	Nat Res Policy/Administration	3	F,S
NRSM 426	Climate and Society	3	
NRSM 449E	Climate Change Ethics/Policy	3	F
NRSM 475	Environment & Development	3	S
NRSM 489E	Ethics Forestry & Conservation	3	F
PTRM 482	Wilderness & Protctd Area Mgt	3	F

Degree Specific Ethical & Human Values

Category Name: Ethical & Human Values Elective within Minor Rule: Can take the elective courses

Criterion: C- Number of Credits 3

Course Listing

NRSM 449E	Climate Change Ethics/Policy	3	F
NRSM 489E	Ethics Forestry & Conservation	3	F

Commentary: can take these courses for Social Science Electives in the minor and will work for this General Education Requirement

Degree Specific Natural Sciences

Rule: must take the following course

Criterion: C- Number of Credits 3

Course Listing

NRSM 210N	Soils, Water and Climate	3	F Commentary:
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Fire Sciences and Management

College of Forestry & Conserv Catalog Year: 2015-2016

Degree Type: Minor Level: Minor Subject: **Fire Sciences & Management (Minor)**

Total Credits: 23 Cumulative GPA Required: 2.0

Lower Division Core

Category Name: Major Required Course Rule: must take the following course

Criterion: C- Number of Credits 2

Course Listing

FORS 230	Forest Fire Management	2	S
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Commentary: Upper Division Core

Category Name: Required Course Rule: must take the following course

Criterion: C- Number of Credits 3

Course Listing

FORS 333	Basic&Applied Fire Ecology	3	S
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Commentary: Major Electives

Category Name: Ecology Courses

Rule: Must take one of the following courses

Criterion: C- Number of Credits 3

Course Listing

BIOE 370	General Ecology	3	F,S
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FORS 330	Forest Ecology	3	F,S
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Commentary: Major Electives

Category Name: Practicum or Planning Course Rule: Must take one of the following courses

Criterion: C- Number of Credits 3

Course Listing

FORS 440	Forest Stand Management	3	F
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FORS 495	Wildland RxFire Practicum	3	I
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FORS 498	Internship	1 To 6	
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NRSM 495	Ecological Restor Practicum	3 To 6	S
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PTRM 485	Recreation Planning	4	S
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WILD 480	The Upshot--Appld Wildlife Mgt	3	S
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Commentary: FORS 498 Internship must be approved by fire minor advisor prior to registration and taken for 3 credits

Commentary: Major Electives

Category Name: Meteorology or Climate Course Rule: Must take one of the following courses

Criterion: C- Number of Credits 3

Course Listing

ERTH 303N Weather and Climate 3 F
NRSM 418 Ecosystem Climatology 3

Commentary: Major Electives

Category Name: Measurements & Analysis Electives Rule: Must take one of the following courses

Criterion: C- Number of Credits 3

Course Listing

FORS 202 Forest Mensuration 3 S
FORS 350 Forestry Apps of GIS 3 S
FORS 351 Env Remote Sensing 3 S

Upper Division Electives

Category Name: Natural/Management Science Electives

Rule: Take at least one course from the following, but if one of these courses is required for the major a second elective must be taken Criterion: C- Number of Credits 3-6

Course Listing

BIOE 449 Plant Biogeography 3
FORS 331 Wildland Fuel Management 3 F
FORS 347 Multiple Resource Silviculture 3 S
FORS 349 Practice of Silviculture 3
GPHY 317 Geomorphology 3
NRSM 335 Environmental Entomology 3 F
NRSM 385 Watershed Hydrology 3 F,S
NRSM 465 Restoration Ecology 3
WILD 370 Wildlife Habitat Cons & Mgmt 3

Upper Division Electives

Category Name: Social Science Electives

Rule: Take at least one course from the following, but if one of these courses is required for the major a second elective must be taken Criterion: C- Number of Credits 3-6

Course Listing

FORS 320 Forest Environmental Economics 3 F
NASX 303E Ecol Persp in Nat Amer Trad 3
NRSM 379 Collab in Nat Res Decisions 3 S
NRSM 422 Nat Res Policy/Administration 3 F,S
NRSM 489E Ethics Forestry & Conservation 3 F
PTRM 482 Wilderness & Protctd Area Mgt3 F

Degree Specific Ethical & Human Values

Category Name: Ethical & Human Values Elective within Minor Rule: Can take the elective courses

Criterion: C- Number of Credits

NASX 303E Ecol Persp in Nat Amer Trad 3
NRSM 489E Ethics Forestry & Conservation 3 F

Commentary: can take either course for minor and will work for General Education Requirement

Wilderness Studies

Wayne Freimund (Professor) Director of Wilderness Institute

Students who successfully complete the requirements of the Wilderness and Civilization Program are eligible for the Wilderness Studies minor. Wilderness and Civilization is an interdisciplinary campus and field-based program. Each year, 25 students investigate wildland conservation and the human-nature relationship through the lenses of policy, ecology, art, Native American Studies, and literature. Wilderness and Civilization combines the strengths of classroom and field learning, interactive classes, innovative faculty, and applied learning through internships. Field trips include extended backcountry trips as well as shorter field trips examining ecology, environmental issues, land use, and natural history. Wilderness and Civilization offers students the opportunity to explore contemporary conservation debates, make connections between disciplines, and learn how to work for positive change.

Wilderness and Civilization is an undergraduate, immersion program geared toward sophomore-, junior-, and senior-level students in any major. Students take 17.0 credits of campus and field-based courses during the fall, and then continue in the spring with an art course, an internship, a 1.0 credit field course, and a 1.0 credit lecture series. The Wilderness and Civilization program is administered by the Wilderness Institute of the College of Forestry and Conservation. The program is offered in collaboration with the College of Arts and Sciences, the College of Visual and Performing Arts, and the Davidson Honors College.

Students must apply for admission to the Wilderness and Civilization program, which is limited to 25 students each year. Applicants must have a cumulative GPA of 3.0 or higher for all college and university work. Applications are due by April 1 and are available at the Wilderness Institute, University Hall 303.

College of Forestry & Conserv Catalog Year: 2015-2016

Degree Type: Minor Level: Minor Subject: **Wilderness Studies (Minor)**

Total Credits: 24 Cumulative GPA Required: 2.0

Lower Division Core

Category Name: Required courses Rule: must take the following courses

Criterion: C- Number of Credits 5

Course Listing

NRSM 271N Conservation Ecology 3 F

NRSM 273 Wilderness/Civ Field Stds 1 To 3 F

Commentary: NRSM 271 is an Honors course; NRSM 273 will be taken two times fall for 2 credits and spring for 1 credit

Commentary: Upper Division Core

Category Name: Required Courses Rule: must take the following courses

Criterion: C- Number of Credits 19

Course Listing

LIT 373L	Lit & Environment	3	F	
MUSI 304A	Sound in the Natural World	3	S	
NASX 303E	Ecol Persp in Nat Amer Trad	3	F	
NRSM 370S	Wildland Conserv Pol/Govrnance	3	F	
NRSM 371	Wilderness Issues Lect Series	1	S	
NRSM 373	Wilderness and Civilization	3	F	
NRSM 398	Internship	1 To 6	S	

Commentary: MUSI 304A is offered during Wintersession - if not offered then take ART 394A Env. Drawing

Degree Commentary

This minor can be completed during a fall semester plus one wintersession course and four credits in the spring;

Experiential learning credit for Honors will be completed with this minor.

College of Forestry & Conserv Catalog Year: 2015-2016

Degree Type: Minor Level: Minor Subject: **Wildlife Biology**

Total Credits: 21 Cumulative GPA Required: 2.0

Lower Division Core

Category Name: Required courses Rule: must take the following courses

Criterion: C- Number of Credits 15

Course Listing

BIOO 101N	Survey MT Wldlife & Habitats	3	F	
NRSM 180	Careers in Natural Resources	2	F,S	
WILD 105N	Wildlife & People	3	F	
WILD 275	Wildlife Conservation	2	S	

Commentary: Upper Division Core

Category Name: Required courses Rule: must take the following courses

Criterion: C- Number of Credits 6

Course Listing

BIOO 335	Rocky Mountain Flora	3	S,SU	
FORS 330	Forest Ecology	3	F,S	

Commentary: Can take NRSM 360 Rangeland Mgmt in place of FORS 330

Course Descriptions

Forestry

FORS 130 - Intro Forestry Field Skills

Credits: 2. Offered autumn. Prereq., Forestry major or consent of instructor. This course is focused on developing introductory forestry field skills through experiential learning at the College's Lubrecht Experimental Forest. Classroom lecture and experiences that introduce students to orienteering, map reading, GPS, tree measurements, fire and fuels management, recreation, human dimensions, hydrology, wood products, and the careers possible with a Forestry degree.

FORS 140 - Urban Forestry

Credits: 2. Offered spring. An introduction to urban forestry principles and practices. Benefits of the urban forest. Topics covered include plant species selection, site design, site assessment, planting, watering, fertilization, insects and diseases, pruning and tree care, inventory of property values, and community forestry development.

FORS 191 - Special Topics

Credits: 1 TO 6. (R-6) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

FORS 192 - Independent Study

Credits: 1 TO 3. (R-3) Offered every term. Prereq., consent of instr. Problems course designed to allow individual research at the undergraduate level.

FORS 200 - Forest Res Measurements Camp

Credits: 2. Offered summer. Intensive two-week resident camp at the Lubrecht Experimental Forest. Introduction to the common measurements and skills used in identifying, quantifying, and understanding natural resources.

FORS 201 - Forest Biometrics

Credits: 3. Offered autumn. Prereq., M 115 or M 121 or M 122 or M 151 or M 162 or M 171 or M 172. Introduction to probability and statistical methods for forestry and environmental sciences covering natural resource applications of common probability distributions, data analysis, hypothesis testing, and regression.

FORS 202 - Forest Mensuration

Credits: 3. Offered spring. Prereq., FORS 201 or STAT 216 or SOCI 202 or WILD 240; and M 121 and M 122 or M 151 or M 162 or M 171 or M 172. The theory and practice of timber inventory and growth projection, including field measurements, sampling procedures, statistical methods, inventory compilation, and stand growth simulation under specified management prescriptions. Stand growth under specified management prescriptions.

FORS 230 - Forest Fire Management

Credits: 2. Offered spring. Fire as an ecological factor in Western forests is presented. Fire weather, the measurement of fire weather, and the factors of fuel, weather and topography that influence fire behavior, and fire management decisions are included. NFDRS, state and national fire policy evolutions are discussed. Basic fire suppression tactics are also presented.

FORS 232 - Forest Insects & Diseases

Credits: 2. Offered spring. Identification, significance of and remedies for insect infestations and infectious and non-infectious diseases of forests and forest products.

FORS 235 - Prob Solving for Forest Oper

Credits: 4. Offered intermittently. Prereq., M 115 or M 121 or M 151 or M 162 or M 171 or M 172. Introduction to problem solving including the fundamentals of statics and mechanics of materials presented in the context of forest operations.

FORS 240 - Tree Biology

Credits: 2. Offered autumn and spring. Suggested coreq., FORS 241N. The physical and biological requirements for the growth and development of trees. Discussions of: identification, classification, range, and economic importance of the major tree species of North America.

FORS 241N - Dendrology

Credits: 3. Offered autumn and spring. Suggested coreq., FORS 240. Methods and techniques for identifying the major families of North American trees, based on gross morphological and anatomical features. Building and use of identification keys. Course Attributes: Natural Science Lab Course Natural Science Course

FORS 250 - Intro to GIS for Forest Mgt

Credits: 3. Offered every term. Open to sophomores or juniors or with consent of instructor. This course is designed as a practical introduction to the use of Geographic Information Systems (GIS) for storing, retrieving, analyzing and displaying spatial data. It will also cover the history of cartography and the conventions of the modern map-making process.

FORS 291 - Special Topics

Credits: 1 TO 6. (R-6) Offered intermittently. Experimental offerings of visiting professors; new courses or one-time offerings of current topics.

FORS 292 - Independent Study

Credits: 1 TO 3. (R-3) Offered every term. Prereq., consent of instr. Individual research at the undergraduate level.

FORS 308 - Fire Ecology Field Studies

Credits: 3. This course introduces students to all aspects of forest demography and forest community ecology in the field. Particular attention is given to the agents of woody plant mortality, including beetle gallery identification, pathogenic fungi, density-dependent mortality, fire, and the effects of landscape position. Students learn how data are collected to maximize information used to answer scientific questions, including the relationships between accuracy, precision, uncertainty, and cost (in time and money). Students learn how to measure fuel loading at landscape scales according to federal standards. In addition to specific measurements in ponderosa pine and larch/mixed-conifer forest types, students visit and compare Engelmann spruce/subalpine forests and riparian cottonwood forests. Students will also study forest-river interactions and the modification thereof by fire.

FORS 310 - Field Methods in Forest Ecology

Credits: 3. This course introduces students to all aspects of forest demography and forest community ecology in the field. Particular attention is given to the agents of woody plant mortality, including beetle gallery identification, pathogenic fungi, spatially explicit density-dependent mortality, fire, and the effects of landscape position. Students learn how data are collected to maximize information used to answer scientific questions, including the relationships between accuracy, precision, uncertainty, and cost (in time and money). Students then collect tree demography data within the Yosemite Forest Dynamics Plot. Students learn how to measure fuel loading at landscape scales according to federal standards. In addition to specific measurements in one forest type (white fir/sugar pine), students visit and compare the other principal forest types of the Sierra Nevada and White Mountains (ponderosa pine, red fir, Jeffrey pine, lodgepole pine, whitebark pine, pinyon/juniper, and bristlecone pine).

FORS 320 - Forest Environmental Economics

Credits: 3. Offered autumn. Prereq., ECNS 201S; and M 121 and M 122 or M 151 or M 162 or M 171 or M 172. Economic techniques to support decision making about the allocation of scarce resources, and management of forests for timber and other ecosystem services.

FORS 330 - Forest Ecology

Credits: 3. Offered autumn and spring. Prereq., FORS 210 or ENSC 245N or NRSM 210N; and BIOO 105N or BIOB 170N or BIOE 172 or BIOB 160N or FORS 240; and FORS 201 or STAT 216 or SOCI 202 or WILD 240 or PSYX 222. Examination of physical and biological factors affecting forest structure, composition, and function, including biodiversity, disturbance, and nutrient cycling. Field labs throughout Northern Rockies including developing skills in field observation, data interpretation and problem solving.

FORS 331 - Wildland Fuel Management

Credits: 3. Offered autumn. Prereq., FORS 230 or consent of instr. The fire ecology of some western vegetation types is discussed. Elements of the principles of wildland fuel management are presented. Prescribed fire use and mechanical manipulation are matched to historic ecosystem processes. Smoke management considerations and health issues are also presented.

FORS 333 - Basic&Applied Fire Ecology

Credits: 3. Offered spring. Prereq., FORS 230. A detailed, analysis of fire ecology in terrestrial ecosystems with a focus on the Rocky Mountains, including fire history, fire effects, landscape pattern, land use legacies, and management implications.

FORS 340 - Forest Product Manufacturing

Credits: 2. Offered autumn. Survey of the manufacture of wood-based products generated from timber harvest. Laboratory field trips to several local manufacturing facilities.

FORS 341 - Timber Harvesting & Roads

Credits: 3. Offered spring. Prereq., NRSM 200 or WRIT 222. An overview of harvesting system capabilities and selection for multiple resource objectives. Fundamentals of forest road management. Best management practices as they apply to forest operations in Montana and the western United States.

FORS 342 - Wood Anatomy, Properties, & ID

Credits: 3. Offered spring. Prereq., BIOO 105N or FORS 240 or FORS 241N. Lecture and laboratory investigation of the structure, identification and physical and mechanical properties of the commercial tree species of North America.

FORS 347 - Multiple Resource Silviculture

Credits: 3. Offered spring. Prereq., FORS 330 or BIOE 370. Credit not allowed for both FORS 347 and 349. An introduction to the concepts and application of silvicultural techniques to forest ecosystems to meet multiple resource objectives.

FORS 349 - Practice of Silviculture

Credits: 3. Offered fall. Prereq., FORS 202 or FORS 302 and FORS 241. Coreq., FORS 330. Practice of Silviculture is designed primarily for Forestry majors (open to others with appropriate prerequisites), and will consider the conceptual foundations behind various silvicultural practices and techniques, as well as and their application in forest ecosystems to meet multiple resource objectives. The course will cover natural stand dynamics, stand assessment and site classification schemes, even- and uneven-aged silvicultural systems, thinning/stand density

concepts, regeneration practices, stand diagnosis and prescription development, vegetative management strategies for diverse objectives, along with quantitative assessment and modeling of alternative prescriptions.

FORS 350 - Forestry Apps of GIS

Credits: 3. Offered spring. Prereq., FORS 250 or FORS 284 or GPHY 284. Introduction to the basic concepts and techniques of computerized spatial data management and analysis systems and application to natural resource management.

FORS 351 - Env Remote Sensing

Credits: 3. Offered spring. The theory and application of photo- and electro-optical remote sensing for mapping resources and developing information systems.

FORS 391 - Special Topics

Credits: 0 TO 12. (R-12) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

FORS 392 - Independent Study

Credits: 1 TO 3. (R-10) Offered every term. Prereq., consent of instr. Individual study or research problems.

FORS 398 - Internship

Credits: 1 TO 6. Offered every term. Prereq., consent of department. Extended classroom experience that provides practical application of classroom learning during placements off campus. Prior approval must be obtained from the faculty supervisor and the Internship Services office. A maximum of 6 credits of Internship (198, 298, 398, 498) may count toward graduation. Course Attributes: Internships/Practicums

FORS 434 - Advanced Forest Roads

Credits: 3. Offered autumn. Prereq., FORS 341. The purpose of this course is to help students understand the principles and skills of forest road design and the concepts of forest transportation planning. The course will cover the basic topics of road location, design, construction, and maintenance and provide students with techniques to identify the combination of roads, facilities and transport systems which minimize costs and negative environmental impacts.

FORS 435 - Advanced Timber Harvesting

Credits: 3. Offered autumn. Prereqs., FORS 341. This course covers the fundamentals of logging feasibility and cost analyses of various timber harvesting systems including the characteristics and performance of ground vehicles, cable and aerial systems; cost factors and cost analysis procedures; safety issues; and environmental impacts of harvesting systems .

FORS 436 - Project Appraisal

Credits: 3. Offered autumn. Prereq., FORS 320 or consent of instructor. A suite of techniques, collectively referred to as project appraisal methods, facilitate evaluation of alternative projects. In this applied, computer laboratory-based course, students will become familiar with the use of discounted cash flow analysis and mathematical programming to evaluate proposed courses of action and recommend the economically efficient alternative. Skills will be developed applying these techniques to problems faced by natural resource managers and policy-makers.

FORS 440 - Forest Stand Management

Credits: 3. Offered autumn. Prereq., FORS 202 or 302; FORS 341; FORS 347 or 349. The management and manipulation of forest stands to reach multiple objectives, with a focus on the planning of forest operations for a community partner.

FORS 444 - Applied Methods in Forest Restoration and Utilization

Credits: 1 TO 3. (R-9) Meeting all day on Saturdays, and some Sundays, this course involves training students to safely and efficiently identify forest stands to be restored through appropriately-planned management activities including both live and dead timber felling operations, manufacture of sawlogs and pulpwood, proper management of slash and residuals, grapple skidding and the production of lumber using both circular sawmill and bandsaw mill.

FORS 447 - Advanced Silviculture

Credits: 3. Offered intermittently. Prereq., FORS 347 or FORS 349 or consent of instr. Examination of silvicultural topics such as regeneration practices, thinning/stand density concepts, and silvicultural systems at an advanced level.

FORS 481 - Forest Planning

Credits: 3. Offered spring. Prereq., FORS 320; FORS 347 or FORS 349 or consent of instr. Integrated multiple use planning at the forest-wide level: defining multi-resource management goals, generating management alternatives, projecting outcomes, assessing environmental impacts, and implementing preferred option.

FORS 491 - Special Topics

Credits: 1 TO 12. (R-12) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

FORS 492 - Independent Study

Credits: 1 TO 3. (R-10) Offered every term. Prereq., consent of instr. Individual study or research problems.

FORS 495 - Wildland RxFire Practicum

Credits: 3. Offered wintersession. Co-convened with FORS 544. Prereq. Fire experience and Consent of Instructor. An intensive field course providing students with technical training, practical applications, and theoretical foundations in ecological burning for restoration purposes. Class is typically held in southeastern United States.

Course Attributes: Co-Convened Course

FORS 498 - Internship

Credits: 1 TO 6. Offered every term. Prereq., consent of instr. Extended classroom experience which provides practical application of classroom learning during placements off-campus. Prior approval must be obtained from faculty advisor and Internship Services office. A maximum of 6 credits of Internship (198, 298, 398, 498) may count toward graduation. Course Attributes: Internships/Practicums

FORS 499 - Senior Thesis

Credits: 1 TO 3. Offered autumn and spring. Prereq., senior standing and consent of instr. Preparation of a major paper based on study or research in a field selected according to the needs and objectives of the student.

FORS 505 - Sampling Methods

Credits: 3. Offered spring. Prereq., consent of instr. Fundamentals of statistical sampling emphasizing natural and environmental resource applications. Principles of inferences and alternative estimators are studied in the context of simple random, systematic, unequal probability, stratified, and 3P/Poisson designs. Variable radius plot

sampling, line intersect sampling, and other probability proportional to size designs used in forest and ecological inventories are also covered. Level: Graduate

FORS 521 - Heur. Opt. for For. Plan.

Credits: 3. Offered spring even-numbered years. Prereq. FORS 481 or equiv. and consent of instr. Modern heuristic optimization techniques and their applications to solving spatially explicit forest planning problems. Level: Graduate

FORS 533 - Use Fire Wldland Mgmt

Credits: 3. Offered autumn. Prereq., consent of instr. Evolution of federal fire policy is discussed. Western fire ecology and the planned use of fire for wildlife, range, and forest applications of prescribed fire are presented. Fire behavior and a fire science vocabulary are introduced. Students review literature, present seminars, and lead discussions. Level: Graduate

FORS 535 - Applied Forest Ecology

Credits: 3. Prereq., graduate status or consent of instructor. This course covers the use of ecological theory and data in the design of silvicultural treatments to achieve multiple management objectives, with particular emphasis on forest restoration and climate change adaptation. We examine methods of silvicultural design, including use of historical and contemporary reference conditions, and climate adaptation strategies. Analysis exercises use the open source statistical program and language R for data analysis, visualization, and modeling, especially of spatial point pattern data. Introduction to monitoring and adaptive management of silvicultural treatments. Level: Graduate

FORS 538 - Ecological Statistics

Credits: 3. Offered in the Fall. Prerequisites: STAT451/452 or equivalent. This is an applied course covering advanced statistical modeling techniques using examples from forestry, ecology, and the environmental sciences. Covers data management, visualization, and scripting with R, an open source data analysis and statistics platform. Explores various parametric and semi-parametric modeling strategies that allow for non-linear response functions and/or non-Gaussian response distributions. Estimation and inference in the context of generalized linear models, generalized additive models, and classification and regression trees are discussed using examples from the scientific literature. Lays the foundation for subsequent graduate-level analytic coursework. Level: Graduate

FORS 540 - Disturbance Ecology

Credits: 3. Prereq., graduate status or consent of instructor. This course covers foundational disturbance ecological concepts; examines important and influential disturbance ecology theories; and introduces important disturbance agents and processes operating in temperate and boreal forest ecosystems. Level: Graduate

FORS 544 - Adv. Wildland RXFire Practicum

Credits: 3. Offered wintersession. Co-convened with FORS 495. Prereq. Consent of Instructor. An intensive field course providing students with technical training, practical applications, and theoretical foundations in ecological burning for restoration purposes. Students will practice leadership skills by supervising and training fire personnel in application of prescribed fire. Class typically held in southeastern United States. Credit is not allowed for both FORS495 Wildland Prescribed Fire Practicum and FORS544 Prescribed Fire Practicum. Level: Graduate Course
Attributes: Co-Convened Course

FORS 545 - Silviculture Research

Credits: 1. (R-6) Offered intermittently. Prereq., consent of instr.; prereq. or coreq., FOR 347 or equiv. Reading and discussion of scientific literature related to silvicultural practice and science. Different topic each semester. Students

become familiar with silviculture literature, develop skills for scrutinizing scientific literature, and examine silvicultural topics in detail. Level: Graduate

FORS 551 - Digital Image Processing

Credits: 4. Offered intermittently. Prereq., FORS 351 or consent of instr. Fundamentals of electro-optical digital remote sensors, data compilation, preprocessing, and pattern recognition. Level: Graduate

FORS 594 - Graduate Seminar

Credits: 1. (R-12). Offered Spring. Prereq. graduate standing. Presentations by students, faculty, and professionals on issues and topics in their field. Level: Graduate

FORS 595 - Special Topics

Credits: 1 TO 12. (R-12) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics. Level: Graduate Course Attributes: Internships/Practicums

FORS 596 - Independent Study

Credits: 1 TO 3. (R-10) Offered every term. Prereq., consent of instr. Individual study or research problems. Level: Graduate Course Attributes: Service Learning/Volunteer

FORS 598 - Internship

Credits: 1 TO 15. (R-15) Offered every term. Prereq., consent of instr. Extended classroom experience which provides practical application of classroom learning during placements off campus. Prior approval must be obtained from the faculty supervisor and the Internship Services office. Level: Graduate Course Attributes: Internships/Practicums

FORS 599 - Professional Paper

Credits: 1 TO 15. (R-15) Offered autumn and spring. Preparation of Master of Ecosystem Management professional paper. Level: Graduate

FORS 697 - Graduate Research

Credits: 1 TO 15. (R-15) Offered every term. Independent graduate research in forest management, wood science, soils, wildlife management, silviculture, recreation and other topic areas. Level: Graduate

FORS 699 - Thesis

Credits: 1 TO 15. (R-15) Offered every term. Preparation of thesis/dissertation. Level: Graduate

Natural Resource Science & Management

NRSM 121S - Nature of Montana

Credits: 3. Offered autumn. An exploration of the major natural resource management issues facing the people of Montana and the social processes to manage environmental conflicts. Provides an introduction to the function of ecological systems and the impacts of human uses on the environment and looks at strategies for addressing global climate change, ex-urban population growth, and protecting environmental quality. Course Attributes: Social Sciences Course

NRSM 170 - International Envir. Change

Credits: 3. Offered spring. An introduction to natural and anthropogenic environmental change from ancient to contemporary times. Exploration of the historical role and importance of ecological disturbance on the development

and maintenance of terrestrial ecosystems around the world. Introduction to fields of study available in the College of Forestry and Conservation.

NRSM 180 - Careers in Natural Resources

Credits: 2. Offered autumn and spring. Subject matter and fields of study within natural resources management.

Topics include forestry, wildlife biology, range, water, recreation management, forest products production, and other opportunities for careers in natural resources.

NRSM 191 - Special Topics

Credits: 1 TO 6. (R-6) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one time offerings of current topics.

NRSM 200 - Nat.Resource Professional Wrtg

Credits: 3. Offered fall and spring to College of Forestry and Conservation majors. Prereq., WRIT 101. Students synthesize scientific literature and, using appropriate evidence and APA style, write natural-resources-based documents appropriate for distribution to scientists, managers, and the public. Course Attributes: Writing Course-Intermediate

NRSM 210N - Soils, Water and Climate

Credits: 3. Prereq., M 115 or M 121 or M 122 or M 151 or M 162 or M 171 or M 172. The factors affecting earth's terrestrial ecosystems are rapidly changing, and understanding their impact on ecosystem services to humanity is becoming increasingly important and yet complex. In this course, students will explore how climate, water and soils interact to shape Earth's biosphere. We will introduce students to a number of fundamental concepts in climate, hydrology, and soil science to gain a comprehensive view of the factors that shape and affect all terrestrial ecosystems. Through a series of lectures and field-based laboratories, students will be introduced to the fundamental principles of climate and hydrology that influence soil development, how they vary across small spatial scales, and how these physical, chemical, and biological processes interact to affect soil development. Ultimately, this class will introduce students to intimate relationship between climate, water, and soils, and how they interact to affect patterns of vegetation we see across the biosphere. Course Attributes: Natural Science Lab Course

NRSM 215 - Field Studies in Conservation

Credits: 1. Offered spring. Open to Resource Conservation Majors. Field study focusing on flora and fauna, history of land use and ecological change, contemporary forest management, conservation and community development in western Montana.

NRSM 265 - Elements of Ecological Restora

Credits: 3. Offered autumn. Prereq., one course in the ecological or biological sciences: BIOO 105N, BIOB 160N, BIOB 170N, BIOB 172, BIOE 370, BIOE 428, BIOE 447 or BIOE 448; or FORS 330; or NRSM 271N or NRSM 462 or consent of instructor. Overview of the natural and social science elements of ecological restoration, including the ecological foundations of restoration, practices used to restore terrestrial and aquatic habitats, philosophical and ethical challenges involved, and current initiatives in Montana and the United States. Includes Saturday field trips.

NRSM 271N - Conservation Ecology

Credits: 3. Offered autumn. An overview of ecological concepts and how ecology is applied to further our understanding of ecosystems and conservation. Topics include: ecosystems functions and values, biomes, natural

selection and speciation, biodiversity, succession, climate change, fragmentation, protected areas, impacts of exotic species and other human influences on ecosystem functions. Course Attributes: Natural Science Course

NRSM 273 - Wilderness/Civ Field Stds

Credits: 1 TO 3. (R-6) Offered autumn and spring. Field studies in ecology and conservation. Includes natural history, field journaling, ecological monitoring, protected area management, and community conservation. One-day trips as well as extended backcountry trips. Part of the Wilderness and Civilization program.

NRSM 281 - Science of Climate Change

Credits: 3. This course provides an introduction to Earth's climate system and the scientific evidence of climate change. This course explores how past climate has shaped Earth's ecosystem and how humans are currently altering Earth's climate system, as well as potential future climate scenarios. Through this course students will gain a better understanding of Earth's energy budget, the global carbon cycle, and potential impacts of climate change. This class is open to all undergraduates, both science and non-science majors, and counts toward the Climate Change Studies minor.

NRSM 291 - Special Topics

Credits: 1 TO 12. (R 12) Offered intermittently. Experimental offerings of visiting professors; new courses or one time offerings of current topics.

NRSM 311 - Field Stds ecol/Human Commun

Credits: 2 TO 3. (R-12) Offered every term. Prereq., consent of instr. Via extended backcountry travel, experiential examination of the structure and function of the ecosystems occurring within the course area. Also investigates the relationship of those ecosystems with the people that manage, live, and work in the area. Offered by the Wild Rockies Field Institute.

NRSM 321 - Field Stds Energy Syst Montana

Credits: 2 TO 3. Offered Summer. Via an extended bicycle tour of Montana, students examine a variety of energy developments and their environmental, social, and economic implications.

NRSM 335 - Environmental Entomology

Credits: 3. Offered autumn odd years. An introduction to the importance of insects in ecosystem function and process, and their use in ecological monitoring as indicators of ecological change, degradation, and the efficacy of ecological restoration efforts. This course also covers the effects of climate change and biological invasions in the context of both pest and beneficial insect species.

NRSM 344 - Ecological Restoration Capstone

Credits: 5. Offered spring. Prereq., junior or senior standing in Ecological Restoration and successful completion of NRSM 265 and one advanced ecology course: BIOE 370, BIOE 428, BIOE 447, BIOE 448, FORS 330, or NRSM 462.; and completion or concurrent enrollment in NRSM 465. This service-learning course teaches students about planning and designing and implementing restoration and monitoring projects. The course includes lectures, labs, and hands-on experience working with ecologists and restoration practitioners from local government agencies, NGOs, or other organizations.

NRSM 345 - Watershed Dynamics

Credits: 3. Coreq. ENST 291, 391 392, NRSM 346. Offered each autumn by Northwest Connections. Via hands on application in rural Montana, students investigate watershed function; introductory stream hydrology and

morphology; and fish, amphibian and aquatic furbearer habitat characteristics. The course also explores impacts of road building, timber harvest, and watershed fragmentation on watershed and stream function, fish habitat, and fish populations.

NRSM 352 - Himalayan Environment and Dev

Credits: 3. Offered summer only. Coreq., PTRM 353. This course covers the contentious issues surrounding environment and development in the Himalaya using the Garhwal region of India as the example.

NRSM 360 - Rangeland Mgt (equiv 260)

Credits: 3. Offered autumn. Prereq., junior standing or consent of instr. An introduction to rangelands and their management, grazing influences, class of animal, grazing capacity, control of livestock distribution, improvements, competition and interrelationships with wildlife. Laboratory exercises to gain on-site experience on topics and concepts presented in lectures.

NRSM 370S - Wildland Conserv Pol/Govrnance

Credits: 3. Offered autumn and spring. Examination of the historical, philosophical, and legislative background for development and management of our national system of wilderness areas, wild and scenic rivers, trails, and national parks; their place in our social structure. Part of the Wilderness and Civilization program. Course Attributes: Social Sciences Course

NRSM 373 - Wilderness and Civilization

Credits: 3. (R-6) Offered autumn and spring. Social and cultural perspectives on the wilderness idea and wildland practices. Course topics include history of wilderness and the wilderness movement, various philosophical viewpoints on wilderness, protected area management issues, and how wilderness fits into larger landscapes and societies. Part of the Wilderness and Civilization program.

NRSM 374 - Yellowstone Studies

Credits: 1. Offered spring. Ecological and sociopolitical perspectives on the greater Yellowstone ecosystem. Topics include winter ecology, biodiversity conservation, national park planning and management, winter recreation, fire, and wildlife. Field course in the Yellowstone area. Part of the Wilderness and Civilization Program.

NRSM 379 - Collab in Nat Res Decisions

Credits: 3. Offered autumn. Political and social processes affecting natural resource decisions. Examination of cases of multi-party collaboration in forestry, range, and watershed management issues.

NRSM 385 - Watershed Hydrology

Credits: 3. Offered autumn and spring. Prereq., M 115 or M 121 or M 122 or M 151 or M 162 or M 171 or M 172. An introduction to physical and biological controls over water movement and storage in the environment, and how those controls are affected by land management practices.

NRSM 386 - Watershed Hydrology Lab

Credits: 1. Offered autumn and spring. Coreq., NRSM 385 or consent of instr. An introduction to basic watershed measurement and analysis techniques. Lab exercises designed around the use of spreadsheets and computer graphics.

NRSM 391 - Special Topics

Credits: 0 TO 12. (R 12) Offered intermittently. Experimental offerings of visiting professors; new courses or one time offerings of current topics.

NRSM 395 - Community-Based Approaches to Wildlife Conservation

Credits: 1 TO 6. Offered each summer by Northwest Connections. Via field-based study in western Montana, students learn emerging strategies for reducing human-wildlife conflicts while considering ecological, economical, and societal impacts. Coreq., ENST 395 Wildlife Policy & Rural Communities and Field Ecology of Threatened & Endangered Species in the Northern Rockies. The course emphasizes the multiple perspectives of stakeholders and the importance of striving for collaborative solutions to conflicts over wildlife management and controversial species.

NRSM 398 - Internship

Credits: 1 TO 6. Offered every term. Prereq., consent of department. Extended classroom experience that provides practical application of classroom learning during placements off campus. Prior approval must be obtained from the faculty supervisor and the Internship Services office. A maximum of 6 credits of Internship (198, 298, 398, 498) may count toward graduation. Course Attributes: Internships/Practicums

NRSM 404 - Wilderness in American Context

Credits: 4. An expansive treatment of the history of the wilderness preservation movement in the United States. Introduction to the successive influences of philosophy, science, art and politics on society's relationship with wilderness. Discussion of the Wilderness Act of 1964.

NRSM 405 - Mgt of Wilderness Resource

Credits: 4. An ecology-based treatment of wilderness management. Brief overview of fundamental ecological principles followed by an examination of their specific and often unique applications to wilderness ecosystems. Presentation of basic wilderness management principles and guidelines. Discussion of nonconforming wilderness uses.

NRSM 406 - Wilderness Mgt Planning

Credits: 3. Exploration of basic planning theory, concepts, effective plan writing, and the characteristics of successful planning and implementation. In-depth treatment of the Limits of Acceptable Change planning framework. Comparison and evaluation of the different planning approaches used by the four wilderness managing agencies.

NRSM 408 - Global Cycles and Climate

Credits: 3. Offered spring even-numbered years. Same as CCS 408. An analysis of the earth's major global biogeochemical cycles with a focus on the ways and extent to which each of them influences and interacts with the global climate system.

NRSM 415 - Environmental Soil Science

Credits: 3. Offered spring odd-numbered years Prereq., ENSC 245N or NRSM 210N or consent of instr. A detailed analysis of the physical, chemical and biological properties of soils and how they function, with a focus on soil processes and how they affect, and are affected by human activities. Specific topics include element cycling, water quality, the effects of environmental change soil biogeochemistry, plant-soil interactions, and the consequences of large-scale disturbances on soil processes.

NRSM 418 - Ecosystem Climatology

Credits: 3. Interactions between the biosphere and atmosphere to advanced undergraduate students and graduate students. This course will explore the interactions between Earth's biosphere and atmosphere and how they affect

climate over a range of scales. We will focus on the exchange of energy, mass, and important elements between the biosphere and atmosphere and how this exchange can lead to fascinating feedbacks in Earth's climate system. Basic physics and math is not required but it is recommended.

NRSM 422 - Nat Res Policy/Administration

Credits: 3. Offered autumn and spring. Policy formation in the United States and a survey of the major resource policies interpreted in their historical and political contexts.

NRSM 424 - Community Forestry & Conservtn

Credits: 3. Offered spring. Co-convened with NRSM 524. In-depth examination of the history, theory and management issues faced in community-driven forestry and conservation in the United States and abroad. Cannot get credit for both NRSM 424 and NRSM 524. Course Attributes: Co-Convened Course

NRSM 425 - Nat Res & Envir Economics

Credits: 3. Offered alternate spring. Prereq., ENSC 201S or FORS 320; and M 115, M 121, M 122, M 151, M 162, M 171, or 172. Introduction to analytical approaches for economic analysis of management of non-renewable resources, fisheries, forests, threatened and endangered species, and the atmosphere.

NRSM 426 - Climate and Society

Credits: 3. Offered spring. Co-convened with NRSM 526. This course examines the social and political aspects of climate change, with a focus on international and domestic processes and cases. Cannot get credit for both NRSM 426 and NRSM 526. Course Attributes: Co-Convened Course

NRSM 449E - Climate Change Ethics/Policy

Credits: 3. Offered autumn. Same as CCS 449E. This course focuses on the ethical dimensions of climate change policy. It will cover the following major topics: (1) climate change, personal and collective responsibilities, (2) ethics, climate change and scientific uncertainty, (3) distributive justice and international climate change negotiations, (4) intergenerational justice and climate change policy. Course Attributes: Ethical & Human Values Course

NRSM 455 - Riparian Ecology & Management

Credits: 3. Offered intermittently. Prereqs., successful completion or concurrent enrollment in NRSM 385 and completion of one of the following introductory ecology courses: BIOE 172, BIOE 370, BIOE 428, BIOE 447, BIOE 448, FORS 330, or NRSM 462. Importance of riparian/wetland areas and the complexities associated with their management for short and long term benefits.

NRSM 462 - Rangeland Ecology

Credits: 3. Offered spring. We will discuss the ecological principles and processes that drive the structure and function of rangeland ecosystems. We will focus on the intersections of plant, animal, ecosystem, and landscape ecology. We will weave in discussions of management to understand how rangeland dynamics contribute and respond to differing management paradigms.

NRSM 465 - Foundations of Restoration Ecology

Credits: 3. Offered spring. Prereq., graduate or junior or senior standing and NRSM 265 and one 300-400 level ecology courses: BIOE 370, BIOE 428, BIOE 447, BIOE 448, FORS 330, or NRSM 462; or consent of instructor. This course covers the primary ecological theories that inform the practice of ecological restoration. Topics include the dynamic nature of ecological systems, community assembly, biodiversity and ecosystem functioning, food web dynamics, ecological engineering, macroecology, and statistical issues and study design.

NRSM 475 - Environment & Development

Credits: 3. Offered spring. Co-convened with NRSM 575. Examines key social forces that influence how individuals, groups and nation-states understand and live within their bio-physical environments, especially policies and processes relating to development, corporate capitalism, globalization, culture, class and other forms of power and social relations. Pays close attention to ways both indigenous and introduced resource use and management practices (including conservation) variably impact people of different races, classes, genders, cultures and livelihood practices. Cannot get credit for both NRSM 475 and NRSM 575. Course Attributes: Co-Convened Course

NRSM 489E - Ethics Forestry & Conservation

Credits: 3. Offered autumn. Prereq., lower division course in Perspective 5 or consent of instr.; senior standing. Theoretical and practical ethical issues affecting the management of natural resources in national forests and on other public lands. Course Attributes: Ethical & Human Values Course

NRSM 491 - Special Topics

Credits: 1 TO 9. (R 9) Offered intermittently. Experimental offerings of visiting professors; new courses or one time offerings of current topics.

NRSM 494 - Seminar in Ecol Restoration

Credits: 1. Offered spring. Prereq., senior standing and successful completion or concurrent enrollment in NRSM 495; and consent of instr. This seminar provides a forum for students to share the results of practicum projects conducted in NRSM 495. Each student will lead at least one seminar during the semester.

NRSM 495 - Ecological Restor Practicum

Credits: 1 TO 6. (R-6) Offered every semester. Prereq., senior standing in the WLR major and successful completion of NRSM 344, a faculty-approved practicum proposal; and consent of instructor. The goal of this service-learning practicum is for students to gain real-world experience in the practice of ecological restoration. Students will implement aspects of a restoration or monitoring plan for a local management agency, organization or other sponsor. Course Attributes: Internships/Practicums

NRSM 498 - Internship

Credits: 1 TO 6. Offered every term. Prereq., consent of instr. Extended classroom experience which provides practical application of classroom learning during placements off-campus. Prior approval must be obtained from faculty advisor and Internship Services office. A maximum of 6 credits of Internship (198, 298, 398, 498) may count toward graduation. Course Attributes: Internship graduation limit 6

NRSM 499 - Senior Thesis

Credits: 1 TO 3. (R-3) Offered autumn and spring. Prereq., senior standing and consent of instr. Preparation of a major paper based on study or research in a field selected according to the needs and objectives of the student.

NRSM 501 - Research Methods

Credits: 3. Offered autumn. Prereq., a course in statistics or consent of instr. The nature of scientific research, planning research projects, organization and presentation of research results. Emphasis on the development of study plans for specific research projects. Level: Graduate

NRSM 513 - Nat Res Conflict Resolution

Credits: 3. Offered autumn. Same as ENST 513 and LAW 613. Examines the basic framework for preventing and resolving natural resource and environmental conflicts in America. Reviews the history of alternative approaches,

emphasizes the theory and practice of collaboration, and considers future trends. This highly interactive course uses lectures, guest speakers, case studies, and simulations. Level: Graduate

NRSM 515 - Enviro Negotiation Mediation

Credits: 3. Same as COMM 515 and ENST 515. This course prepares students to effectively engage in multiparty negotiation on natural resource and environmental issues. It is grounded in theory and provides an opportunity to develop practical skills in both negotiation and facilitation/mediation. Guest speakers, case studies, and simulations allow students to develop, test, and refine best practices. The course is face-paced, highly interactive, and serves as the second of three required courses in the Natural Resources Conflict Resolution Program. Level: Graduate

NRSM 520 - Forest Resource Economics

Credits: 3. Offered intermittently. Prereq., FORS 320 or equiv., an upper-division or graduate level course in microeconomics, and consent of instr. The demand for, and supply of, commodity products from the forest, including characteristics of demand for stumpage, logs and processed products, forest management and harvesting decisions, and the supply of stumpage, intermediate and processed products. Level: Graduate

NRSM 524 - Community Forestry & Conservtn

Credits: 3. Offered spring. Co-convened with NRSM 424. In-depth examination of agroforestry, community forestry, and opportunities and constraints to the use of trees in rural development and protected areas management. Level: Graduate
Course Attributes: Co-Convened Course

NRSM 526 - Climate and Society

Credits: 3. Offered spring. Co-convened with NRSM 426. This course applies relevant social and political theory to the problem of climate change and examines the social science of climate change. Cannot get credit for both NRSM 426 and NRSM 526. Level: Graduate
Course Attributes: Co-Convened Course

NRSM 532 - Forest Ecosystem Analysis

Credits: 3. Offered spring. Graduate standing only. Logical strategies for transforming ecosystem complexity into simplified simulation models with emphasis on space/time scaling and environmental policy relevance. Level: Graduate

NRSM 560 - Am Wilderness Phil & Policy

Credits: 4. History of the American Wilderness idea and associated policies, including the Wilderness Act and implementing regulations. Current management challenges also covered. Level: Graduate

NRSM 561 - Manag Wilderness Ecosystems

Credits: 4. Ecosystem science and policies and management practices related to managing specific resources, such as air, wildlife, and water, within wilderness. Management of non-conforming uses is also covered. Level: Graduate

NRSM 563 - Wilderness Planning

Credits: 4. Planning theory and effective plan development, including principles and practices of public involvement. Includes examination of primary planning frameworks. Level: Graduate

NRSM 570 - Political Ecology

Credits: 3. Graduate seminar on key theories, issues and literature in the subfield of Political Ecology, an interdisciplinary environmental social science approach which integrates how political, economic, cultural and ecological processes interact and shape society nature relations. Case examples are drawn from both the North and South. Level: Graduate

NRSM 571 - Int'l Conserv & Develop

Credits: 3. Offered spring. Prereq., graduate standing. Critical review of selected international natural resource development, conservation and management approaches and experiences. Level: Graduate

NRSM 575 - Environment & Development

Credits: 3. Offered spring. Co-convened with NRSM 475. Examines key social forces that influence how individuals, groups and nation-states understand and live within their bio-physical environments, especially policies and processes relating to development, corporate capitalism, globalization, culture, class and other forms of power and social relations. Pays close attention to ways both indigenous and introduced resource use and management practices (including conservation) variably impact people of different races, classes, genders, cultures and livelihood practices. Level: Graduate

NRSM 579 - Collaborative Conservation

Credits: 3. (R-4) Offered every semester. Same as ENST 579 and LAW 679. Prerequisite, ENST 513 or consent of instructor. Designed as the capstone experience of the Natural Resources Conflict Resolution Program. Provides practical experience in multi-party collaboration and conflict resolution. Students may design their own project in consultation with the director of the NRCR Program, or participate in a project organized and convened by faculty. Projects may be conducted year-round. Level: Graduate

NRSM 582 - Trop Ecos & Mgmt

Credits: 3. Offered spring. Prereq., graduate standing or consent of instr. Introduction to tropical forests and agroecosystems, and a critical examination of their management and conservation within the context of ecological, socioeconomic and political change. Level: Graduate

NRSM 586 - Snow Hydrology

Credits: 3. Offered intermittently. Prereq., graduate standing or consent of instr. The physics of snow formation, distribution and ablation. Snow and forest management in the subalpine zone. Level: Graduate

NRSM 594 - Seminar

Credits: 1 TO 4. (R-12). Offered intermittently. Prereq. graduate standing. Presentations by student, faculty, and associates on issues and topics in their field. Level: Graduate

NRSM 595 - Special Topics

Credits: 1 TO 12. (R-12) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one time offerings of current topics. Level: Graduate Course Attributes: Internships/Practicums

NRSM 596 - Independent Study

Credits: 1 TO 12. (R-12) Offered every term. Prereq., consent of instr. Individual study or research problems. Level: Graduate Course Attributes: Service Learning/Volunteer

NRSM 597 - Graduate Research

Credits: 1 TO 15. (R-15) Offered every term. Independent graduate research in forest management, wood science, soils, wildlife management, silviculture, recreation and other topic areas. Level: Graduate

NRSM 598 - Internship

Credits: 1 TO 2. (R-12) Offered every term. Practical application of academic learning in an off-campus placement. Prior approval must be obtained from faculty supervisor. Level: Graduate

NRSM 599 - Professional Paper

Credits: 1 TO 15. (R-15) Offered every term. Professional paper preparation. Level: Graduate

NRSM 622 - Advanced Problems in Env Policy

Credits: 3. Offered spring even-numbered years. Examines environmental policy problems and contemporary issues in environmental policy, law, and administration. Policy tools, concepts and research resources introduced. Numerous problems, themes, and issues in environmental policy analyzed. Readings-based seminar; students lead most reviews and discussions. Level: Graduate

NRSM 695 - Special Topics

Credits: 1 TO 12. (R-12) Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics. Level: Graduate

NRSM 697 - Graduate Research

Credits: 1 TO 15. (R-15) Offered every term. Independent graduate research in forest management, wood science, soils, wildlife management, silviculture, recreation and other topic areas. Level: Graduate

NRSM 699 - Thesis

Credits: 1 TO 15. (R-15) Offered every term. Thesis/dissertation preparation. Level: Graduate

Parks, Tourism & Recreation Management

PTRM 150 - Current Issues in PTRM

Credits: 1. Offered autumn. This course will explore issues related to recreation and tourism in western Montana. This is a field based course designed to get students outside the classroom. Students will have a chance to visit outdoor recreation areas and meet recreation and tourism managers.

PTRM 191 - Special Topics

Credits: 1 TO 6. (R-6) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

PTRM 210 - Nature Tourism & Comm Rec

Credits: 3. Offered autumn. Introduction to the tourism and commercial recreation industries. Provides initial link between the natural environment and business operations. Combination of introductory business philosophies, economics, and natural resource management into a framework for future reference and course work.

PTRM 210S - Nature Tourism & Comm Rec

Credits: 3. Offered autumn. Introduction to the tourism and commercial recreation industries. Provides initial link between the natural environment and business operations. Combination of introductory business philosophies, economics, and natural resource management into a framework for future reference and course work. Course

Attributes: Social Sciences Course

PTRM 217S - Parks & Outdoor Rec. Mgmt.

Credits: 3. Offered autumn and spring. The management of land as an environment for outdoor recreation. Understanding the relationship between the visitor, resource base and management policies. Recreation planning on multiple use forest lands, parks, wilderness areas and private lands.

PTRM 230 - Programming in Recreation

Credits: 3. Offered intermittently. Principles of program planning for organized offerings in recreation. Selection, adaptation and evaluation of activities.

PTRM 291 - Special Topics

Credits: 1 TO 6. (R-6) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

PTRM 300 - Recreation Behavior

Credits: 3. Offered spring. Prereq., PTRM 217S. This course provides an understanding of recreation behavior in wildland and nature-based tourism oriented settings. Students will learn about theories/conceptual frameworks from social and environmental psychology and their application to visitor management issues in the wildland recreation and nature-based tourism fields.

PTRM 310 - Nat Res Interp and Comm

Credits: 3. Offered autumn. Prereq., COMX 111A or THTR 120A, junior or senior standing in PTRM or RECM. Principles, concepts, techniques essential to providing high quality interpretive programs in natural or cultural history. Course Attributes: Writing Course-Upper-Division

PTRM 345X - Sustaining Human Soc & Nat Env

Credits: 3 TO 6. Offered Winter and Summer. These field-based, experiential classes focus on the environmental and conservation concerns, as well as the modern and traditional cultures, of Australia, New Zealand, or Fiji. Course Attributes: Indigenous and Global

PTRM 353 - Tourism & Sustainability Himalaya

Credits: 3. Offered summer only. Coreq. NRSM 352. In this course we will explore the opportunities and challenges of development with particular reference to nature-based tourism and sustainability in an isolated but rapidly globalizing region of the Himalaya. Students will learn through extensive readings, class discussions, direct field experience (including living in a remote mountain village), meetings with development officials, sustainability activists and stakeholders in the region.

PTRM 355 - Wild. Med. And Risk Mgmt.

Credits: 5. This course will train students in injury and illness prevention in a backcountry setting while emphasizing risk management principles. The course also trains students in the treatment and long-term management of medical emergencies in the backcountry, including improvised litters and splints. Instructors cover decision making involved in dislocation reduction, medication administration, and evacuation protocols. Risk management topics include participant screening, emergency response plans, risk matrices, and incident reporting. Co-requisites include HHP 332, Emergency Medical Technician and Incident Management; and PTRM 356, Wilderness Rescue and Survival Skills.

PTRM 356 - Wild. Rescue and Survival

Credits: 5. This course is ideal for outdoor leaders involved in extended backcountry trips and those individuals seeking employment with search and rescue units, ski patrols and wilderness trip leading organizations. Students will be prepared to handle emergencies in high-elevation, winter conditions as well as in tropical and swiftwater environments. They will also be prepared for extended care of patients and rescuers in remote and challenging environments. Students will study navigation including landform interpretation of maps and use of map rulers to determine lat/long and UTM coordinates, as well as practical use of maps, compass and GPS. The course includes