RANGELAND ECOLOGY & MANAGEMENT (REM)

REM 144 Wildland Fire Management
3 credits
Introduction to wildland fire management including fire behavior, fuels, fire prevention and suppression, fire policy and fire ecology. Includes discussion of current fire management issues.

REM 151 Rangeland Principles
3 credits
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 requires in-class projects and field experience(s).

REM 152 Rangeland Ecosystem Exploration
1 credit
Students will explore the climates, plants, animals, and human communities of rangeland throughout North America and the globe. The grasslands, shrublands, woodlands, and deserts that are collectively called rangelands include extensive challenges and opportunities for management and conservation. Students will individually explore these ecosystems through photos, ecosystem descriptions, videos, and internet-based tools. In discussions and presentations, students will collectively share their findings about these incredible rangeland ecosystems. (Fall only)

REM 200 (s) Seminar
Credit arranged
REM 203 (s) Workshop
Credit arranged
REM 204 (s) Special Topics
Credit arranged

REM 221 Principles of Ecology
3 credits
Cross-listed with FOR 221 and WLF 220. 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

REM 252 Wildland Plant Identification
2 credits
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)

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

REM 280 Introduction to Wildland Restoration
2 credits
History and overview of the ecological, social, and economic aspects of wildland restoration using case studies. Students will explore approaches and philosophies towards restoring and rehabilitating wildlands that have been damaged through natural forces and human activities such as wildfire, overgrazing, cultivation, and weed invasion.

REM 299 (s) Directed Study
Credit arranged

REM 304 Ethnobotany
2 credits
Course covers the relationships between humans and plants and the ecology of important native wildland plants of western North America. Course focus is on the natural ecology, identification and cultural attributes (historical and present) of 50 to 75 important native wildland plant species found in forestland, rangeland and other wildland settings in the Northwest U.S. Recommended preparation: plant identification course. (Spring only)

REM 341 Systematic Botany
3 credits
Phylogenetic approach to understanding plant systematics and evolution with a primary focus on the flora of the Pacific Northwest. Includes identification of important plant families and the use of dichotomous keys for species identification. (Spring only)
Prereq: BIOL 114 or BIOL 115; and BIOL 213 or PLSC 205.

REM 398 Renewable Natural Resources Internship
Credit arranged
Supervised field experience with an appropriate public or private agency. Required for cooperative education students. Graded P/F.
Prereq: Department Permission

REM 400 (s) Seminar
Credit arranged
REM 403 (s) Workshop
Credit arranged
REM 404 (s) Special Topics
Credit arranged
REM 405 (s) Professional Development
Credit arranged
REM 407 GIS Application in Fire Ecology and Management
2 credits
Joint-listed with REM 510
Introduces applications of GIS in fire ecology, research, and management including incident mapping, fire progression mapping, GIS overlay analysis, remote sensing fire severity assessments, fire atlas analysis and the role of GIS in the Fire Regime Condition Class concept and the National Fire Plan. Additional assignment/projects required for graduate credit. (Spring only)
Prereq: FOR 375 or GEOG 385; or Permission

REM 510 Introduction to Wildland Fire Management
3 credits
Introduction to wildland fire management including fire behavior, fuels, fire prevention and suppression, fire policy and fire ecology. Includes discussion of current fire management issues.
REM 410 Principles of Vegetation Monitoring and Measurement  
2 credits  
This course introduces theory and application of quantitative and qualitative methods for measuring and monitoring vegetation in grasslands, shrublands, woodlands, and forests. Students will gain a solid understanding of how to measure and evaluate vegetation attributes and design and implement monitoring programs relative to wildlife habitat, livestock forage, fire fuel characteristics, watershed function, and many other wildland values. Recommended Preparation: A basic understanding of how to use computer spreadsheets such as Excel. Students are encouraged to also enroll in REM 460 for field experience in collecting vegetation data that will be used in this course. Graduate students should enroll in REM 520 - Advanced Vegetation Measurements and Monitoring. (Fall only)  
Prereq: STAT 251 or permission

REM 411 Wildland Habitat Ecology and Assessment  
2 credits  
Cross-listed with WLF 411. This course integrates field sampling with quantitative and theoretical concepts related to scientific research, wildlife habitat, and land management practices. Students collect, analyze, and report on ecological data in various formats, and learn specific protocols used by professionals to assess wildlife habitat. Class field trips required. Recommended preparation: REM 252 and REM 253, REM 341, or other plant identification class; ability to use Excel. Co-enrollment in REM 410 is recommended.  
Prereq: STAT 251 or Permission

REM 429 Landscape Ecology  
3 credits  
Cross-listed with FOR 429. Ecological relationships and conservation issues for biotic communities across the landscape, including spatial and temporal dynamics and patterns, and importance of landscapes in maintenance of ecosystem diversity and function. One or more field trips; one 2-3 hour lab period per week. Recommended Preparation: Familiarity with spreadsheet programs and problem solving using computers. (Spring only)  
Prereq: FOR 221 or REM 221

REM 440 Restoration Ecology  
3 credits  
Cross-listed with NRS 440. The ecological restoration of disturbed ecosystems. Fundamental principles from ecology, ecophysiology, and community ecology are used in a systems ecology approach to examine how the structure and function of damaged ecosystems can be restored — with the goal of establishing a stable and self-sustaining ecosystem.  
Prereq: NR 321, FOR 221, REM 221, WLF 220, BIOL 314, or Permission

REM 456 Integrated Rangeland Management  
3 credits  
Gen Ed: Senior Experience  
Management strategies for integrating grazing with other natural resource values such as wildlife, water, timber, recreation, and aesthetics; emphasis on herbivore ecology including ecological impacts of grazing, ways to manage grazing, and nutritional relationships between plants and free-ranging ungulates on rangeland, pastureland, and forest ecosystems. One 4 to 5 day field trip. Recommended Preparation: REM 151. (Spring only)  
Prereq: ENGL 313 or ENGL 317

REM 459 Rangeland Ecology  
3 credits  
Application of ecological principles in rangeland management; stressing response and behavior of range ecosystems to various kinds and intensity of disturbance and management practice. Recommended Preparation: courses in general ecology (e.g., REM 221), technical writing (e.g., ENGL 317), and vegetation assessment (e.g., REM 410 or FOR 274) or Permission. Students are encouraged to also enroll in REM 460 for field experience in collecting vegetation data that will be used in this course.

REM 460 Integrated Field Studies in Rangelands  
1 credit  
Field experiences in rangeland ecology, vegetation measurements, and habitat assessment. The course consists of preparatory lectures and a four-day field trip to rangelands. The course integrates concepts from Principles of Vegetation Monitoring and Measurement (REM 410), Wildland Habitat Ecology and Assessment (REM 411), and Rangeland Ecology (REM 459). Students should take this course concurrently or before REM 410, REM 411, and REM 459. Required for REM majors. (Fall only)  
Prereq: Permission

REM 473 ECB Senior Presentation  
1 credit  
Gen Ed: Senior Experience  
Cross-listed with FISH 473, FOR 473, FSP 473, NRS 473, and WLF 473. Reporting and presenting the senior project (thesis or internship); taken after or concurrently with REM 485 or REM 497. Serves as the senior capstone course for Ecology and Conservation Biology (ECB).  
Prereq: Instructor Permission

REM 480 Ecological Restoration  
3 credits  
Joint-listed with REM 580. Planning and implementing restoration projects in conjunction with land agencies and stakeholders. Includes service-learning projects. Field trip(s) required. Additional literature review, reports, discussion, and/or a class project are required for graduate credit.  
Prereq: REM 440 or Permission

REM 495 Teaching Practicum  
1-3 credits, max arranged  
Gen Ed: Senior Experience  
Provides students with peer teaching experience and assisting an instructor. May include classroom activities, grading assignments, developing materials, and/or participating in field trips. Students who take this course as the graduate level, as REM 595, will be asked to do additional work related to developing a teaching philosophy, developing assessment, or experimenting with specific pedagogical approaches with the faculty supervisor.  
Prereq: Permission

REM 497 Senior Research and Thesis  
Credit arranged  
A research investigation, selected and designed jointly by the student and professor, during which the student has the opportunity to learn research techniques of experimental design, proposal writing, data collection and analysis, scientific writing, and publication; at completion, the student will produce a publishable journal manuscript and/or a conference presentation.  
Prereq: Senior standing and Permission.
REM 498 (s) Internship
Credit arranged
Supervised field experience where students define specific topics and skills in rangeland management they wish to gain, develop a learning plan, and present a final report of knowledge gained or project outcomes. The internships will be overseen by an on-site field supervisor and a faculty mentor. Instructor Permission required.

REM 499 (s) Directed Study
Credit arranged
For the individual student; conferences, library, field, or lab work.
Prereq: Senior standing, 2.5 GPA, and Permission.

REM 500 Master’s Research and Thesis
Credit arranged

REM 501 (s) Seminar
Credit arranged
Major philosophy, management, and research problems of wildlands; presentation of individual studies on assigned topics.
Prereq: Permission

REM 502 (s) Directed Study
Credit arranged

REM 503 (s) Workshop
Credit arranged
Selected topics in the conservation and management of natural resources.
Prereq: Permission

REM 504 (s) Special Topics
Credit arranged

REM 505 (s) Professional Development
Credit arranged

REM 507 Landscape and Habitat Dynamics
3 credits
Students explore landscape change occurring a variety of spatial and temporal scales, including global change, succession, disturbance events, and change induced by humans. Via scientific readings, models and spatial analysis students will learn how to quantify landscape change and how a change in environmental conditions and disturbance regimes may affect the composition of landscapes, specifically plant and animal habitats. Recommended Preparation: courses in ecology, statistics, and GIS. (Fall, alt/years)
Prereq: Permission

REM 510 GIS Application in Fire Ecology and Management
2 credits
Joint-listed with REM 407
Introduces applications of GIS in fire ecology, research, and management including incident mapping, fire progression mapping, GIS overlay analysis, remote sensing fire severity assessments, fire atlas analysis and the role of GIS in the Fire Regime Condition Class concept and the National Fire Plan. Additional assignment/projects required for graduate credit. (Spring only)
Prereq: FOR 375 or GEOG 385; or Permission

REM 520 Advanced Vegetation Measurement and Monitoring
3 credits
This course introduces theory and application of quantitative and qualitative methods for measuring and monitoring vegetation in grasslands, shrublands, woodlands, and forests. Students will gain a solid understanding of how to measure and evaluate vegetation attributes and design and implement monitoring programs relative to wildlife habitat, livestock forage, fire fuel characteristics, watershed function, and many other wildland values. Advanced Vegetation Measurements and Monitoring includes a 1-hr weekly discussion of current literature on vegetation measurements and the use of monitoring data for natural resource decision making. Recommended Preparation: A basic understanding of how to use computer spreadsheets such as Excel. Students are encouraged to also enroll in REM 460 for field experience in collecting vegetation data that will be used in this course. (Fall only)
Prereq: STAT 251 or Permission

REM 529 World Savannas
3 credits
This course provides a broad overview of world savannas including their characteristics and the ecosystem goods and services they provide. The course focuses on the ecological and biogeochemical characteristics of savannas, how humans use these ecosystems, current problems, and strategies land management are applying to solve them.

REM 560 Ecophysiology
3 credits
Functional responses and adaptations of individual species to their environment, emphasizing the physiological mechanisms that influence the interactions between organisms and the major environmental factors (e.g., solar radiation, energy balance, temperature, water and nutrients, climate), and how this affects the interactions among species and their growth and survival (e.g., competition, herbivory, and allelopathy). The interactive learning materials are compatible only with computers that are 100% compatible with the Windows operating system and Internet Explorer. (Fall only)
Prereq: A course in general ecology (i.e. REM 221) and general botany, or Permission (www.EcologyOnline.net)

REM 570 Presentation Skills for Scientists
2 credits
A practical course to master the skills required for oral presentations for research, teaching, and outreach. A detailed examination of all elements that must be integrated and mastered for an effective and engaging oral presentation.

REM 580 Ecological Restoration
3 credits
Joint-listed with REM 480
Planning and implementing restoration projects in conjunction with land agencies and stakeholders. Includes service-learning projects. Field trip(s) required. Additional literature review, reports, discussion and/or a class project are required for graduate credit.
Prereq: REM 440 or Permission

REM 597 (s) Practicum
Credit arranged

REM 598 (s) Internship
Credit arranged

REM 599 (s) Non-thesis Master’s Research
Credit arranged
Research not directly related to a thesis or dissertation.
Prereq: Permission
REM 600 Doctoral Research and Dissertation
Credit arranged
**Prereq:** Admission to the doctoral program in Natural Resources and Department Permission