RANGELAND ECOLOGY & MANAGEMENT (REM)

REM 1510 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 2000 (s) Seminar (1-16 credits, max 99)
Credit arranged

REM 2030 (s) Workshop (1-16 credits, max 99)
Credit arranged

REM 2040 (s) Special Topics (1-16 credits, max 99)
Credit arranged

REM 2520 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. Typically Offered: Spring.

REM 2530 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 in natural settings. Exploration will include ecosystem roles of wildland plants and developing site descriptions. This course includes a 4-day field trip at the beginning of the fall semester. Recommended to take REM 2520 (Wildland Plant Identification) before or after this field class. Typically Offered: Fall.
Prereqs: REM 2520

REM 2800 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 2990 (s) Directed Study (1-16 credits, max 99)
Credit arranged

REM 3410 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. Typically Offered: Spring.
Prereqs: BIOL 1140 or BIOL 1150; and BIOL 2130 or PLSC 2050.

REM 3980 Renewable Natural Resources Internship (1-16 credits, max 99)
Supervised field experience with an appropriate public or private agency. Required for cooperative education students. Graded Pass/Fail.
Prereqs: Department Permission

REM 4000 (s) Seminar (1-16 credits, max 99)
Credit arranged

REM 4030 (s) Workshop (1-16 credits, max 99)
Credit arranged

REM 4040 (s) Special Topics (1-16 credits, max 99)
Credit arranged

REM 4050 (s) Professional Development (1-16 credits, max 99)
Credit arranged

REM 4100 Principles of Vegetation Monitoring and Measurement (3 credits)
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 4600 for field experience in collecting vegetation data that will be used in this course. Graduate students should enroll in REM 5200. Typically Offered: Fall.
Prereqs: STAT 2510

REM 4290 Landscape Ecology (3 credits)
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. Typically Offered: Spring.
Prereqs: FOR 2100

REM 4400 Restoration Ecology (3 credits)
Cross-listed with NRS 4400
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.
Prereqs: NR 3210, FOR 2100, WLF 2200, BIOL 3140, or Permission

REM 4410 Riparian Management & Restoration (3 credits)
Course focuses on the management and restoration of riparian areas, taking a systems approach to understanding the ecological and hydrological relationships occurring in riparian areas of both forests and rangelands. Course is focused on developing a knowledge of multiple connections between soil, water, and terrestrial vegetation occurring in riparian areas, with an emphasis on the impacts of land use and management of riparian ecosystem functions, methods of restoration, and sustainable use of riparian systems. Typically Offered: Fall.

REM 4510 Rangeland Issues and Management Principles (2 credits)
Advanced discussion of ecological principles and challenges associated with managing rangelands, including sustainable practices to maintain and restore rangelands and the human communities that rely on them. Typically Offered: Fall.

REM 4560 Integrated Rangeland Management (3 credits)
General Education: Capstone 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 1510. Typically Offered: Spring.
Prereqs: ENGL 3130 or ENGL 3170

REM 4590 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, technical writing (e. g. , ENGL 3170), and vegetation assessment (e. g. , REM 4100 or FOR 2210) or Permission. Students are encouraged to also enroll in REM 4600 for field experience in collecting vegetation data that will be used in this course.

REM 4600 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 4100), Wildland Habitat Ecology and Assessment, and Rangeland Ecology (REM 4590). Students should take this course concurrently with or before REM 4100 and REM 4590. Required for REM majors. Typically Offered: Fall.
Prereqs: REM 4590 or Permission

REM 4730 ECB Senior Presentation (1 credit)
General Education: Capstone Experience
Cross-listed with FISH 4730, FOR 4730
, FSP 4730, NRS 4730, WLF 4730. Reporting and presenting the senior project (thesis or internship); taken after or concurrently with REM 4970. Serves as the senior capstone course for Ecology and Conservation Biology (ECB).
Prereqs: Instructor Permission

REM 4750 Remote Sensing Application with Unmanned Aerial Systems (UAS) (3 credits)
Cross-listed with ASM 4760
This course introduces students to the fundamental components of UAS, sensors and platforms, UAS operational concepts, the principles of UAS data collection, the legal framework for UAS operations, photogrammetric theory, image processing software, and the generation and analysis of orthomosaics and 3D point clouds. The course emphasizes the use of UAS in the context of natural resource science, technology and applications. Typically Offered: Varies.
Prereqs: FOR 3700 or equivalent

REM 4760 Unmanned Aerial Systems (UAS) Operations (1 credit)
This course covers the material necessary for students to pass the FAA Part 107 Remote Pilot Certificate test needed to legally fly UAS for business, research, or resource management purposes. Additionally, the course reviews state and local laws and University policies for UAS operation and provides opportunities for students to gain operations experience through planning and executing UAS flights. Typically Offered: Varies.

REM 4800 Ecological Restoration (3 credits)
Joint-listed with REM 5800
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.
Prereqs: REM 4400 or Permission

REM 4950 Teaching Practicum (1-3 credits, max 99)
Joint-listed with REM 5950
Provides students with peer teaching experience and assisting an instructor. May include classroom activities, grading assignments, developing materials, and/or participating in field trips. Additional coursework required for graduate credit.
Prereqs: Permission

REM 4970 Senior Research and Thesis (1-16 credits, max 99)
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.
Prereqs: Senior standing and Permission.

REM 4980 (s) Internship (1-16 credits, max 99)
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 4990 (s) Directed Study (1-16 credits, max 99)
For the individual student; conferences, library, field, or lab work.
Prereqs: Senior standing, 2.5 GPA, and Permission.

REM 5000 Master's Research and Thesis (1-16 credits, max 99)
Credit arranged Prereqs or
Coreqs: Four-digit number change and miscellaneous edits for catalog consistency

REM 5010 (s) Seminar (1-16 credits, max 99)
Major philosophy, management, and research problems of wildlands; presentation of individual studies on assigned topics.
Prereqs: Permission

REM 5020 (s) Directed Study (1-16 credits, max 99)
Credit arranged

REM 5030 (s) Workshop (1-16 credits, max 99)
Selected topics in the conservation and management of natural resources.
Prereqs: Permission

REM 5040 (s) Special Topics (1-16 credits, max 99)
Credit arranged

REM 5050 (s) Professional Development (1-16 credits, max 99)
Credit arranged

REM 5070 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. Typically Offered: Fall (Odd Years).
Prereqs: Permission

REM 5200 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 4600 for field experience in collecting vegetation data that will be used in this course. Typically Offered: Fall.
Prereqs: STAT 2510 or Permission

REM 5290 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 5291 Advanced Landscape Ecology (3 credits)
Graduate-level analysis of 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. Typically Offered: Spring.

REM 5590 Advanced Rangeland Ecology (3 credits)
Application of ecological principles in rangeland management, with a focus on the response and behavior of rangeland ecosystems to different types and intensity of disturbance and management practice. Typically Offered: Fall.

REM 5700 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 5800 Ecological Restoration (3 credits)
Joint-listed with REM 4800
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.

REM 5950 Teaching Practicum (1-3 credits, max 99)
Joint-listed with REM 4950
Provides students with peer teaching experience and assisting an instructor. May include classroom activities, grading assignments, developing materials, and/or participating in field trips. Additional coursework required for graduate credit.

REM 5970 (s) Practicum (1-16 credits, max 99)
Credit arranged

REM 5980 (s) Internship (1-16 credits, max 99)
Credit arranged

REM 5990 Non-thesis Master's Research (1-16 credits, max 99)
Research not directly related to a thesis or dissertation.
Prereqs: Permission

REM 6000 Doctoral Research and Dissertation (1-45 credits, max 99)
Credit arranged
Prereqs: Admission to the doctoral program in Natural Resources and Department Permission