Forest Resources

Jo Ellen Force, Dept. Head, Dept. of Forest Resources (204 CNR Bldg. 83844-1133; phone 208/885-7952; fores@uidaho.edu).

Prerequisite: Courses in this subject field that are numbered above 299 are not open to undergraduate students on academic probation.

For 102 Introduction to Forest Management (1 cr)
Intro to forestry, current management issues, timber and non-timber resources, educational and professional opportunities.

For 200 (s) Seminar (cr arr)

For 221 Ecology (3 cr)
Fundamental principles of ecology. Major topics covered in the course include the physical environment, how organisms interact with each other and their environment, evolutionary processes, population dynamics, communities, energy flow and ecosystems, human influences on ecosystems, and the integration and scaling of ecological processes through systems ecology. Recommended preparation: introductory botany and zoology
Prereq: Biol 102, 115, 116, or PlSc 205; or Permission

For 235 Society and Natural Resources (3 cr)
Same as CSS 235. *May be used as core credit in J-3-d.* The social sciences applied to natural resources management; relationship between natural resources and human socioeconomic systems; analysis of resource issues.

For 274 Forest Measurement and Inventory (3 cr)
Practical techniques for the design and execution of the measurement and inventory of forest resources. One two hour lab, one half-hour tutorial, and two one-hour lectures per week. (Fall only)
Coreq: Stat 251

For 299 (s) Directed Study (cr arr)

For 320 Dendrology (3 cr)
Identification, classification, distribution, and associations of the important tree species of the U.S.; important regional shrubs. Two lec and two 2-hr labs a wk; one 1-day field trip.
Prereq: Biol 116 or PlSc 205

For 324 Forest Regeneration (2 cr)
Natural and artificial regeneration of forest ecosystems; reproduction methods; selection of seed source and stock type; nursery cultural practices; tree improvement;site preparation methods to establish regeneration. One lecture and one 2-hr lab a week. Two all day field trips. (Spring only)
Prereq: For 274, For 330, Soil 205 and Soil 206

For 325 Numerical Analysis for Fire Managers (4 cr)
The assembly, summarizing and display of fire management data, including fuels inventories, fire occurrence, behavior, and weather, as well as environmental and other effects of fire. Students will learn to formulate testable hypotheses from data, develop predictive equations and correlations, create probability-weighted decision matrices, and draw supportable conclusions from analyses. Intensive off-campus short course with pre-work and homework. Course is only open to students enrolled in the US Technical Fire Management program. (Fall only)
Prereq: 1 year of high school math and a minimum 5 years of experience in natural resource management

For 330 Forest Ecosystem Processes (2 cr)
Chemical, physical, and physiological processes that determine how trees and forests function; emphasis on carbon budgets, productivity, process modeling of consequences of forest management, and global climate change. One 4-hr lec/lab a week; one field trip.
Prereq: Soil 205, and Math 143 or 160, andPhys 100 or 111, and For 221 or REM 221

For 361 Farm and Natural Resource Appraisal (3 cr)
See AgEc 361.

For 375 Introduction to Spatial Analysis for Natural Resource Management (3 cr)
Methods and techniques for obtaining quantitative and qualitative geospatial information from aerial and satellite images, maps, and the Global Positioning System for input into geographic information systems. Analysis of geospatial data for mapping, monitoring and planning associated with all aspects of natural resource management. Two lec and one 2-hr lab a wk.
Prereq: College Algebra

For 383 Economics for Natural Resource Managers (3 cr)

Same as AgEc 383. Role of economic forces in resource analysis and conservation; planning of forest resource use by the firm and society.
Prereq: Econ 201 or 202, and Math 143 or 160 or 170, and For 235; or Permission

For 398 (s) Renewable Natural Resources Internship (cr arr)
Supervised field experience with an appropriate public or private agency. Reqd for cooperative education students. Graded P/F.
Prereq: Permission of department

For 400 (s) Seminar (cr arr)

For 403 (s) Workshop (cr arr)

For 404 (s) Special Topics (cr arr)

For 408 Community and Urban Forestry (2 cr)
Community or urban environment as affected by its included forest; forest components, benefits, liabilities, values, ordinances, and issues; management by selection, design, planting, care, and maintenance.

For 414 Plant Pathology (3 cr)
See PlSc 415.

For 423 Forest Community Ecology (1 cr)
Principles of synecology related to vegetation classification and interpretation of structural and compositional change in communities following disturbance; practice in plant association/habitat type delineation as applied in western U.S. Accelerated first nine wks; eight lec periods and four 8-hr field trips. Recommended Preparation: For 221. Graded P/F.

For 424 Forest Dynamics and Management (2 cr)
Integrated methods and techniques for sustainable management of forest ecosystems including, stand and disturbance dynamics, exercises in forest assessment, thinning, harvesting, silviculture prescriptions, forest modeling and communicating management guidelines. This course will be accelerated and completed in the first 13 weeks of the semester to take advantage of the good weather for field exercises. Field trips required. One 4-hr lec/lab a wk.
Prereq: Senior standing and For 274, 320, 324 and 330

For 426 Wildland Fire Ecology and Management (3 cr)
Integrated fire-related ecological effects of fire on vegetation, soils, and air quality; natural and changing role of fire in forests, woodlands, shrublands and rangelands; influence of global change including climate and invasive species; fire as a management tool; application to current issues. One-day field trip. (Fall only)
Prereq: For 221 or REM 221

For 427 Prescribed Burning Lab (3 cr)
Planning, conducting and evaluating prescribed burns designed to accomplish natural resource management objectives. Sampling, models and analysis used in writing required fire use plan. 5 days of field trips; some on Saturdays. (Fall only)
Prereq: REM 244, Senior standing, and Permission

For 429 Landscape Ecology (3 cr)
Same as REM 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

For 433 Science-Based Fuels Management Planning (2 cr)
Potential, limitations, and application of recently developed tools for assessing fuels and ecological consequences of alternative approaches to fuels management. Critically review and synthesize relevant scientific literature. Students must develop a fuels management plan using the tools and insights from the course. Hands-on field exercises to enhance learning. This is an intensive short course following pre-work online. Students accomplish substantial parts of their learning online. Recommended preparation: This course assumes that you understand fuels and fire behavior, and that you have experience and are adept with Windows-based software for presentation, word processing, database management, and spreadsheets, and that you understand and can use maps and GIS data layers. You must have a working knowledge of fire ecology.

For 434 Assessing Fire Effects and Burn Severity (2 cr)
Terminology and methods for assessing fire effects and burn severity in the field and from airborne and satellite remote sensing. Quantitative analysis and interpretation of the ecological impacts of fires on plants and soils. Critically review and synthesize relevant scientific literature. Field trips. Recommended preparation: This course assumes that you understand fuels and fire behavior, and that you have experience and are adept with Windows-based software for presentation, word processing, database management, and spreadsheets, and that you understand and can use maps and GIS data layers. You must have a working knowledge of fire ecology.
Prereq: For 426

For 435 Remote Sensing of Active Fire and Post-fire Effects (3 cr)
Application, potential and limitations of methods for assessing active-fire behavior and post-fire effects (e.g., burn severity) in the field and from airborne and satellite remote sensing. Clarification of definitions of fire descriptors (fire intensity, fire severity, and burn severity) and relative merits of field and remote sensing tools for address them. Understanding of the ecological/physical impacts of fires on plants and soils and relation to field and remote measures. This course assumes that you understand fuels and fire behavior, and that you have experience and are adept with Windows-based software for presentation, word processing, database management, and spreadsheets, and that you understand and can use maps and GIS data layers. (Spring, alt/yrs)
Prereq: NR 402 or REM 402; or Permission

For 437 LANDFIRE: Concepts, Data, and Methods (1 cr)
Basic concepts of landscape ecology, scale and fire ecology relevant to the use of US-wide LANDFIRE databases for vegetation, fuels and environmental conditions. Basic use of LANDFIRE data with GIS software, and for describing and communicating local and regional conditions for fire and other natural resource management applications. Course is taught online.

For 438 Fuel Assessment Techniques Using LANDFIRE Data (2 cr)
Intermediate-level concepts of landscape ecology, scale and fire ecology relevant to assessments for fire and natural resource management. Strategic fuels and resource assessment using US-wide LANDFIRE databases for vegetation, fuels and environmental conditions to address common fire, fuels and land management issues at appropriate temporal and spatial scales. Common fire and natural resource assessment and planning applications are addressed in this intensive short-course.
Prereq: For 437

For 450 Combustion, Fire Behavior and Fuels (3 cr)
Understand the process of combustion in wildland fuels and how it is modeled in making fire behavior predictions; relate combustion, fire behavior and fuels to emissions. Lab sessions and field trips. (Spring only)
Prereq: Phys 111 and REM 244
Coreq: For 451

For 451 Fuels Inventory and Management (3 cr)
Tools, quantitative analysis, and approaches for inventory and management of fuels for wildland fires over large, diverse areas in forests, woodlands, shrubland, and grasslands. Critically review and synthesize relevant scientific literature. Field trips.
Prereq: For 375, REM 244 and For 274 or REM 357
Coreq: For 450

For 452 Quantification of Wildland Fire and Fuels Analysis (1 cr)
Methods for inventorying woody fuels and for characterizing tree stands for assessing potential fire behavior and fire effects. Sampling design, field methods, computer programs, and statistical analysis for describing and quantifying the amount and type of fuels. Intensive 5-day short course offered off-campus. Recommended preparation: Requires introductory knowledge of fire behavior, fuels, and fire weather, as well as basic computer skills including file management.

For 453 Fuels Analysis Techniques (1 cr)
Students learn the fire and fuels modeling necessary to conduct project level analysis for fire management on federal lands. Intensive 3-day, off-campus, short course follows reading and testing pre-work. Includes reading and discussion of scientific literature, critical assessment of methods, and problem-solving requiring synthesis, application, and interpretation of course material to a case study project. (Spring only).
Prereq: For 452

For 454 Air Quality and Smoke Management (3 cr)
Assessment of the controls and drivers of emission processes and impacts on air quality from agricultural, prescribed, and wildfires. Overview of the combustion and emission process, how these emissions impact the 'quality of air', and what models exist to monitor the emission. Other topics to include: recent EPA and other guidelines for smoke management planning, attainment issues, collaborative process for implementing smoke management plans.
Prereq: For 426

For 462 Watershed Science and Management (3 cr)
Influence of land management practices on hydrologic processes, water quality, and riparian habitat w/emphasis on wildland watersheds. Two days of field trips. Recommended Preparation: Math 143 or 160, high school physics or Phys 100 or 111. (Fall only)

For 463 Hydrologic Measurement Techniques (1 cr)
See CE 326.

For 468 Forest and Plant Pathology (2 cr)
A survey of plant diseases. Emphasis on forest trees and other woody plants. Organisms that cause diseases. Strategies to minimize negative effects. Symbiotic roles of microbes in plants. Two hours of lecture, and two hours of lab per week, in addition to multiple field trips (as weather allows) to observe diseases and their effects. (Spring only)
Prereq: For 320 and For 330

For 469 Introduction to Forest Insects (2 cr)
Roles and impacts of insects within forest ecosystems. Current management techniques of arthropod pests (insects and mites) in natural and managed forest systems. Interactions of arthropods with other agents of forest disturbance (fire and fungi). Identification of some common arthropod pests of Rocky Mountain forests. 1-hr. lecture, 1 2-hr. lab, 2 all-day field trips.
Prereq: For 221

For 472 Remote Sensing of the Environment (3-4 cr)
Same as REM 472. Current airborne and satellite systems, data acquisition on ground and from remote locations, instrumentation, imagery interpretation and digital analysis, applications for natural resource management. One additional two-hour lab per week for fourth credit. Recommended Preparation: Phys 100 or Phys 112.

For 474 Forest Inventory (3 cr)
Principles and practice of natural resources inventory, forest growth, LIDAR, inventory sampling method, and quantitative decision support. Two days of field trips. Two lectures/labs a week. Recommended Preparation: For 324 and 424.
Prereq: For 274 and Stat 251

For 475 Financial Aspects of Fire Management (3 cr)
Application of microeconomics to fire management, including price theory, budgeting and theory of the firm. Elements of financial analysis applied to fire management problems, including compounding, discounting, and time preference for money. Decision theory, optimization techniques and statistical analysis applied to various financial problems in fire management. Intensive off-campus short course with pre-work and homework. Course is only open to students enrolled in the US Technical Fire Management program. (Winter Intersession only)
Prereq: For 325

For 482 Technical Fire Management (3 cr)
Identification, quantitative analysis of alternative solutions, and recommendation to address a wildland fire management problem based upon synthesis of science and application of concepts and processes learned in previous courses. Writing and oral defense of thesis-quality paper before a review panel. Intensive off-campus short course with prework and homework. Course is only open to students enrolled in the US Technical Fire Management program. (Spring only)
Prereq: For 488

For 483 Senior Project Presentation (1 cr)
Same as CSS/Fish/ForP/REM/WLF 483. Reporting and presenting the senior project (thesis or internship); taken after or concurrently with 485 or 497.

For 484 Forest Policy and Administration (2 cr)
Evaluation of land and forest problems and policies in the U.S.; analysis of current conditions and policies; historical development of governmental and private agencies concerned with the administration of forest conservation program. Recommended Preparation: FOR 235 and 383.
Prereq: Junior standing

For 485 Ecology and Conservation Biology Senior Project (1-3 cr, max 3)
See WLF 485.

For 486 Fuels, Fuels Management and Fire Science (3 cr)
Basic principles and process fire spread as it is currently modeled and relationship of fire characteristics to fuel bed particles and other fuel bed characteristics. Analysis and forecasting of fuel type and amount from accretion, decay, and management activities. Structure and operation of the principal fire behavior models used in the US and implications for collection, analysis and application of fuels and weather data in fire behavior prediction and fire danger rating. Intensive off-campus short course with pre-work and homework. Course is only open to students enrolled in the US Technical Fire Management program. (Winter Intersession only)
Prereq: For 475

For 487 Fire Effects and Landscape Ecology (3 cr)
Temporal and spatial distribution and extent of fire effects in landscapes throughout the US. Consequences of fire for ecosystem components, various remedial strategies to ameliorate these effects, and implications for restoration ecology. Intensive off-campus short course with pre-work and homework. Course is only open to students enrolled in the US Technical Fire Management program. (Spring only)
Prereq: For 486

For 488 Fire and Land Management (3 cr)
Principles of Geographic Information Systems and application to fire management planning. Use of the rational planning process for analyzing and comparing alternative system configurations on the basis of least cost plus loss; allowable resource loss; and social, legal and environmental constraints as these relate to specific land management directives. Intensive off-campus short course with pre-work and homework. Course is only open to students enrolled in the US Technical Fire Management program. (Spring only)
Prereq: For 487

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

Prereq: Senior standing and minimum 3.20 GPA or Permission

For 498 (s) Renewable Natural Resources Internship (cr arr)
Supervised field experience with an appropriate public or private agency. Required for cooperative education students.
Prereq: Permission of department

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

For 500 Master's Research and Thesis (cr arr)

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

For 502 (s) Directed Study (cr arr)

For 503 (s) Workshop (cr arr)
Selected topics in the conservation and management of natural resources.
Prereq: Permission

For 504 (s) Special Topics (cr arr)

For ID510 Fundamentals of Research (3 cr) WSU BSysE 510
Same as CS 507. The research process, the graduate program, and the graduate research project; objectives, techniques, and challenges; science and the scientific method; research literature; ethics; creativity; writing and speaking about research; preparation of a proposal for the graduate research project. Students should be in very early stages of planning their research.
Prereq: Permission

For WS511 Introduction to Population Genetics (3 cr) WSU Biol 519

For 515 Physical Hydrology (3 cr)
A quantitative treatment of the physical processes that control water fluxes in the environment. Specific emphasis on evaporation, transpiration, snow processes and soil water flow. (Fall, Alt/yrs)

For 516 Current Literature in the Hydrologic Effects of Forest Management (1 cr)
Evaluation and discussion of how management activities affect hydrologic processes and flow regimes in forested watersheds. Seminar based on primary literature. (Spring, Alt/yrs)

For 526 Fire Ecology (3 cr)
Fire-related ecology of plant and animal species in wildlands; effects of fire occurrence and suppression on physical environment, landscapes, and processes in both natural and managed ecosystems. Two days of field trips. (Alt/yrs)
Prereq: General ecology course

For 527 Landscape Ecology of Forests and Rangelands (2-3 cr)
Ecological relationships of biotic communities in heterogeneous environments, spatial and temporal patterns, importance of landscapes in maintenance of ecosystem diversity and function. One 2-hr lecture/discussion a week based on extensive reading of current literature and case studies. In addition, those students taking 3 credits will meet an additional hour a week, focusing on quantitative landscape analysis, and they will participate in a 2-day field trip. (Spring only)
Prereq: Upper-Division plant or animal ecology

For 529 Forest Ecosystem Analysis (3 cr)
Forest ecosystem processes and analysis from the leaf to the landscape scale; techniques for measuring forest ecosystem attributes; integration with forest management. Field trip required. (Fall only)

For 530 Fire Regime Condition Class (1 cr)
Value, challenges and limitations of the concepts, methods, and applications of methods used to evaluate ecological conditions related to departure from historical fire and vegetation conditions for managed landscapes. Students must complete some course content, quizzes and readings online in preparation for discussion and critique of science literature, applied quantitative and spatial analysis, and two all-day field trips. (Fall only)
Prereq: For 426 or REM 459; and Geog 385

For 531 Invasion Biology (3 cr)
An introduction to the biology of invasive species, covering plants, animals, and microbial invasives. The course will review relevant readings from the primary literature, especially those dealing with the current state of our knowledge of invasives, their ecology, control, and implications for public policy. (Spring only)
Prereq: Basic introductory genetics class and ecology

For 540 Conservation Genetics (3 cr)
Basic principles of population genetics and phylogenetics and their applications to the field of conservation genetics and natural resource management; case studies and examples from current literature; topics include genetic diversity, inbreeding, population structure, gene flow, genetic drift, molecular phylogenetics, and hybridization.

For ID&WS541 Stable Isotope Theory and Methods (3 cr) WSU Biol 540
Theory and practice of measuring stable isotope ratios of biologically important elements; training in the use of isotope mass spectrometers. (Fall Alt/yrs)

For 551 Current Literature in Forest Ecology/Tree Physiology (1 cr, max arr)
Review recent articles in forest ecology and physiology journals. Students choose, critically review, and discuss the articles to develop critical-thinking skills and confidence in their knowledge of the literature. Graded P/F.

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

For 553 Current Literature in Genetics and Ecology (1 cr, max arr)
Review recent articles in genetics and ecology journals. Students choose, critically review, and discuss the articles to develop critical-thinking skills and confidence in their knowledge of the literature. Graded P/F.

For 569 Advanced Forest Entomology (3 cr)
Methods and applications of biological and economic evaluation and control strategies of forest insect populations in relation to pest management programs. One -hr seminar and one 2-hr lab a wk; two 1-day field trips. (Spring, Alt/yrs)
Prereq: For 466 or Permission

For 570 Advanced Remote Sensing Measurement Methods (3 cr)
Development of remote sensing methods to measure vegetation attributes from individual trees, to stands, to regional scales. Includes, LIDAR and hyperspectral data, non-traditional accuracy assessment, land-use/land-cover change assessment, linear and non-linear mixture models, autocorrelation, time series analysis, and application of object-orientated approaches. (Spring, alt/yrs)
Prereq: For 472 or Geog 483

For ID&WS572 Spatial and Biophysical Modeling (3 cr) WSU SoilS 574
Development of concepts, techniques, and methods for the fusion of remote sensing, GIS and biogeochemical modeling techniques for analyzing energy and material pathways and cycles; review latest methods for temporal and spatial scaling of datasets and models to develop and test hypotheses for understanding forest ecosystem structure and function.

For 585 Natural Resources Policy Analysis (2 cr)
Theories of policy analysis, natural resource policy formulation, and applications for developing policy-relevant information. (Alt/yrs)
Prereq: Undergraduate course in natural resource policy or political science or Permission

For 586 Social Ecology of Natural Resources (3 cr)
Social theory and methods relevant to resource management; interdisciplinary examination of specific natural resource issues such as fire management, wilderness, fisheries disputes, energy policy; emphasis on understanding social aspects of natural resources within an ecological perspective.

For 594 Analysis of Correlated Data (3 cr)
Theory and application of statistical tools to data of intricate correlation structures, such as are commonly found in natural resources. Coverage will include mixed-effects linear models and either nonlinear models or geostatistical techniques, depending on student interests. Use of R and Splus for data analysis. Graded P/F. (Spring only)
Prereq: Stat 401

For 597 (s) Practicum (cr arr)

For 598 (s) Internship (cr arr)

For 599 (s) Non-thesis Master's Research (cr arr)
Research not directly related to a thesis or dissertation.
Prereq: Permission

For 600 Doctoral Research and Dissertation (cr arr)
Prereq: Admission to the doctoral program in "natural resources" and Permission of department