Forestry course descriptions – University of Idaho

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Forest Products

Thomas M. Gorman, Dept. Head, Dept. of Forest Products
(102 CNR Bldg. 83844-1132; phone 208/885-9663).
Prerequisite: Courses in this subject field that are numbered above 299 are not open to undergraduate students on academic probation.

ForP 100 Forest Products Issues and Technology (2 cr)
Critical issues facing the forest products industry, forest operation, lumber manufacturing, wood-composite manufacturing, and professional career opportunities. Technical writing assignments. One lec and one three-hour lab a wk. (Fall only).

ForP 203 (s) Workshop (cr arr)

ForP 204 (s) Special Topics (cr arr)

ForP 230 Field Measurement for Forest Operations (2 cr)
Evaluation and quantification of harvesting impacts on forest systems; public land surveying, land measurements, resource impact measurements and evaluation. Two lec and one 3-hr lab a wk for 10 wks. Recommended Preparation: Math 143 or Equivalent (Fall only)

ForP ID277 Wood Anatomy and Identification (3 cr) WSU NATRS 321
Physiology of woody plants, anatomy and nomenclature of wood, physical and chemical nature of wood, identification of commercial wood species. Two lec and 2-hr lab a wk. (Fall only)

ForP 299 (s) Directed Study (cr arr)

ForP 337 Physical and Mechanical Properties of Wood (3 cr)
Properties of wood as they relate to physical behavior and product application; other related topics include biodeterioration, machining and adhesive technology, and strength considerations. Recommended Preparation: ForP 277 or Permission (Spring only)

ForP 365 Wood Building Technology (3 cr)
Basic structural design including elementary statics and principles and technology of wood structural design. Recommended Preparation: Phys 100, Phys 111. (Fall only)

ForP 400 (s) Seminar (cr arr)

ForP 403 (s) Workshop (cr arr)

ForP 404 (s) Special Topics (cr arr)

ForP 405 (s) Professional Development (cr arr)
Credit earned in this course will not be accepted toward grad degree programs.
Prereq: Permission

ForP J410/J510 Wood Properties, Processes, and Uses (1-2 cr)
Open to non-majors only. Physical, mechanical, and chemical properties of wood and wood products; timber harvesting technologies; and issues in use of wood products. Additional projects/assignments reqd for grad cr. Graded P/F. Five days of workshop, including field trip.

ForP ID425 Forest Products Marketing (3 cr) WSU NATRS 420/520
Aspects of marketing from an industrial perspective; survey of domestic and international forest products marketing; marketing research in forest products; current issues and problems in marketing forest products. (Spring, Alt/yrs)

ForP ID430 Forest Engineering and Harvesting (3 cr) WSU NATRS 320
Survey of logging equipment capabilities; intro to cable logging systems, road layout, and design; cost analysis of logging systems; development of road and logging plans. Three days of field trips. Recommended Preparation: ForP 230. (Fall only)

ForP ID431 Forest Operations and Investment Analysis (3 cr) WSU NATRS 439
Intro to production planning and cost control in forest operations; development of cost equations for investment and operational analysis; financial analysis of long term forestry decisions; cash flow in forest operations; breakeven analysis. (Alt/yrs, Spring only)
Prereq or **Coreq:** ForP 430 or Permission

ForP ID432 Designing Forest Access (3 cr) WSU NATRS 432
Classification of forest roads and trails; forest road and trail design; design for drainage that meets standards; construction techniques; costing, environmental considerations, design project. Three days of field trips. Recommended Preparation: ForP 430. (Spring, Alt/yrs)
Prereq or Coreq: ForP 430 or Permission

ForP ID434 Forest Tractor and Cable Systems (4 cr) WSU NATRS 434
Planning, layout and design for forest tractor and cable timber harvesting systems; analysis of mechanics and forces involved in equipment and movement of logs; determination of machine capabilities; production and cost estimation; layout and design project. Three 1-day field trips. (Spring, Alt/yrs)
Prereq: Phys 111 or 211, and ForP 430 or Permission; Coreq: ForP 430

ForP J436/J536 Wood Composites (3 cr)
Raw material, processes, properties, and markets for a number of wood composites made of particles and fibers. Additional projects and assignments reqd for grad cr. One full-day field trip. Recommended Preparation: ForP 277. (Spring only)

ForP J438/J538 Wood Chemistry (3 cr)
The chemistry of wood formation, wood structure and reactions of wood. Additional projects and assignments reqd for grad cr. Two lec and one 3-hr lab a wk. Recommended Preparation: Chem 101 and ForP 277. (Fall only).

ForP 439 Operational Analysis in Timber Harvesting (3 cr)
Address contemporary issues associated with timber harvesting; harvesting production and cost analysis, soil compaction, residual stand damage, landslides related to road construction, optimization in forest transportation, forest biomass energy, and quality control in timber harvesting. Recommended Preparation: Work experience with public agencies and private companies. (Spring only, Alt/yrs)
Prereq: ForP 430 or Permission

ForP 444 Primary Wood Products Manufacturing (3 cr)
Raw materials, procurement, production methods, drying product specifications, and grading for primary wood products including lumber, plywood, poles, and cedar products; plant layout, machines, and systems analysis; plant tours. Two lec and one 5-hr lab a wk. Recommended Preparation: ForP 277. (Spring only)

ForP 450 Wood Deterioration and Preservation (2 cr)
Thermal, biotic, and abiotic agents that cause wood deterioration; biological control methods; design considerations; wood preservatives and preservative systems; treatability of wood; treatment mechanics; pollution control systems; preservative effectiveness; standards; environmental concerns and law. Recommended Preparation: ForP 277. (Fall, Alt/yrs).

ForP 470 Interdisciplinary Natural Resource Planning (3 cr)
See CSS 470.

ForP WS475 Estimating I (3 cr) WSU Cst M 470

ForP 480 Senior Project (2 cr)
Case studies involving analysis of forest industry problems and issues; open-ended projects involving wood design and construction; problems addressed individually or in project teams. Field trips. Prereq: Senior standing

ForP 483 Senior Project Presentation (1 cr) See For 483.

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

ForP 491 Biomaterial Product and Process Development Lab (2 cr)
May be used as core credit in J-3-d. Lab to accompany ForP 495. One 3-hr lab per week. (Spring only) Prereq: Econ 201 or Econ 202, and ForP 495

ForP 495 Product and Process Development and Commercialization (3 cr)
Same as Bus 495. May be used as core credit in J-3-d. Principles of product planning, development and commercialization; concept testing; product-life cycle management; portfolio analysis; targeting and positioning; team management; and implementing product decisions. (Fall only) Prereq: Econ 201, 202 or 272

ForP 498 Renewable Natural Resources Internship (cr arr)
Supervised field experience with an appropriate public agency or private company. Required for students in the Forest Products Business Management option and for cooperative education students. Graded P/F. (Summer only) Prereq: Permission of advisor.

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

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

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

ForP 502 (s) Directed Study (cr arr)

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

ForP 504 (s) Special Topics (cr arr)

ForP 505 (s) Professional Development (cr arr)
Credit earned in this course will not be accepted toward graduate degree programs. Prereq: Permission

ForP 510 Wood Properties, Processes, and Uses (1-2 cr)
See ForP J410/J510.

ForP 536 Wood Composites (3 cr)
See ForP J436/J536.

ForP 538 Wood Chemistry (3 cr)
See ForP J438/J538.

ForP 597 (s) Practicum (cr arr)

ForP 598 (s) Internship (cr arr)

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

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

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 or 116, or Permission

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

For 270 Principles of Forest Ecosystem Management (2 cr)
Forest resources, regions, and management objectives; silvicultural principles and practices employed in management of forest ecosystems; interrelations between uses of forest land. Two 1-day field trips.

For 274 Forest Measurement and Inventory (3 cr)
Practical techniques for the design and execution of the measurement and inventory of forest resources. One three hour lab and three one-hour lectures. (Spring only) Prereq: Stat 251

For 299 (s) Directed Study (cr arr)

For 302 Wildland Field Ecology (2 cr)
See Fish 302.

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 330 Forest Ecosystem Processes (3 cr)
Chemical, physical, and physiological processes that determine how trees and forests function; emphasis on carbon budgets, productivity, consequences of forest management, and global climate change. Two lec and one 2-hr lab a wk; one field trip.
Prereq: Soil 205, Math 143 or 160, and high school physics or Phys 100 or 111; or Permission

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)
Same as Fish/Rnge/WLF 398. 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 (4 cr)
Integrated methods and techniques for sustainable management of forest ecosystems including, stand and disturbance dynamics, regeneration, exercises in forest assessment, 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 and one 5 hr-lec/lab a wk. Prereq: For 320 or 330

For 426 Wildland Fire Management and Ecology (3 cr)
Integrated fire-related biological, ecological, physical, and economic information for land managers; autecology and synecology of plant and animal species in wildlands; natural role of fire; fire as a management tool; application to current issues. Two days of field trips. Recommended Preparation: For/Rnge/WLF 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: For 426, Senior standing, and Permission

For 429 Landscape Ecology (3 cr)
Same as Rnge 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/Rnge/WLF 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 (2 cr)
Application, potential and limitations of methods for the remote sensing of active fire and post-fire effects, and interpretation of the results. Clarification of definitions of fire descriptors (fire intensity, fire severity, and burn severity) and relative merits of remote sensing tools for address them. How to identify an appropriate mapping approach applicable to different types of imagery (depending on the specific questions to be addressed) and provide decision support for the user community. 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 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 451 Fuels Inventory and Mapping (2 cr)
In-depth analysis of recent developments in remote sensing, as well as tools to support fuels planning, including potential and limitations of mapping fuels with Lidar and from satellite imagery such as Landsat and ASTER (with and without gradient modeling). Application of tools for characterizing fuels over large, diverse areas. 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 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 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 466 Diseases and Insects of Woody Plants (3 cr)
Fundamentals of pathology and entomology of woody plants; labs focus on diagnosis. Two lec and 3 hrs of lab a wk; two pathology and two entomology field trips. (Spring only)

For 470 Interdisciplinary Natural Resource Planning (3 cr) See CSS 470.

For 472 Remote Sensing of the Environment (3-4 cr)
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.

For 474 Forest Inventory (3 cr)
Principles and practice of natural resources dynamics and forest growth and yield simulation, applied mathematical programming techniques, quantitative decision support. Two lec and 2 hrs of lab a wk. Prereq: Stat 251 and Permission

For 483 Senior Project Presentation (1 cr)
Same as CSS/Fish/ForP/Rnge/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)
May be used as core credit in J-3-d. 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.

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

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 Bio S 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 525 Advanced Silviculture (3 cr)
Silvicultural systems and cultural practices; design of silvicultural prescriptions. Term project, field labs, and two days of field trips. (Alt/yrs) Prereq: For 424 and/or Permission

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 ID528 Forest Gene Resource Management (3 cr) WSU NATRS 527
Genetic principles applied to forest ecosystem management; the origin and functions of genetic diversity; implications of silvicultural practices and ecosystem management on gene pools; management for genetic change; genetic considerations in conservation of forest ecosystems. One 3-hr discussion a wk based on readings of current and classic literature; two to three days of field trips. (Alt/yrs) Prereq: For 270 or Permission

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 Rnge 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 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 584 Natural Resource Policy Development (2 cr)
The development of natural resource policy with emphasis on the policy process in the legislative branch of U.S. government; the role of and interrelationships between staff, committees, agencies, and elected officials; the relationship of science and scientists with policy and politicians in the development of natural resource policy, including preparation of testimony related to natural resource science and policy issues. (Alt/yrs)
Prereq: Undergraduate course in natural resource policy or political science or Permission

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)
Same as Stat 594. 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

Soils

Matthew J. Morra, Division Chair, Soil and Land Resources Division
(242 Iddings Wing, Ag. Sc. Bldg. 83844-2339; phone 208/882-6315; mmorra@uidaho.edu).

Soil 205 The Soil Ecosystem (3 cr)
May be used as core credit in J-3-b. Introduction to the physical, chemical, and biological nature of soils. **Prereq:** Chem 101 or satisfy Prereq for Chem 111

Soil 206 The Soil Ecosystem Lab (1 cr)
May be used as core credit in J-3-b. Lab study relevant to Soil 205. Experiments and demonstrations on basic and applied aspects of soil science. One 3-hr lab a wk. **Coreq:** Soil 205

Soil 398 Internship (1-6 cr, max 6)
Graded P/F. **Prereq:** Permission of department

Soil 404 (s) Special Topics (cr arr)

Soil 415 Soil and Environmental Physics (3 cr)
Physical properties of soils and their relationships to moisture, aeration, and temperature; plant-soil-atmospheric relationships; solute transport and soil salinity. Two lec and one 3-hr lab a wk. Recommended Preparation: Soil 205, 206, and Phys 111. (Alt/yrs, Fall)

Soil 422 Environmental Soil Chemistry (3 cr)
Chemical processes in soil environment. Recommended Preparation: Soil 205, 206, and Chem 112 or 113. (Alt/yrs)

Soil J425/J525 Microbial Ecology (3 cr)
See MMBB J425/J525.

Soil 437 Soil Biology (3 cr)
Introduction to soil organisms including bacteria, fungi, and macroinvertebrates and the influence of their activities on soil processes. Two lec and one 3-hr lab a wk. Recommended Preparation: Soil 205 and MMBB 250. (Alt/yrs)

Soil 438 Pesticides in the Environment (3 cr)
Same as Ent and PlSc 438. Principles of pesticide fate in soil, water, and air; pesticide metabolism in plants, pesticide toxicology, and pesticide mode-mechanism of action; pest resistance to pesticides; biotechnology in pest control; regulations and liability; equipment application technology; pesticide transport, storage, and disposal; and social and ethical considerations. Recommended Preparation: Chem 275.

Soil ID&WS442 Environmental Research Methods (3 cr) WSU SoilS 442
Field and laboratory characterization of soil, plant, and water samples in relation to plant growth and environmental problem solving; includes independent or team projects.
Prereq: Soils 205 and 422

Soil 446 (s) Soil Fertility (1-3 cr, max 3)
Principles of soil fertility management; availability of plant nutrients and their relationship to plant growth and fertilization practices. Recommended Preparation: Soil 205 and 206.

Soil J447/ID-J547 (s) Soil Fertility Management (1-3 cr, max 3) WSU SoilS 547
Philosophy of fertilizer recommendations based on soil and plant tissue testing; principles of fertilizer manufacture, placement, and use for improving plant growth. Project required for graduate credit. Recommended Preparation: Soil 446.

Soil 454 Soil Development and Classification (3 cr)
Relationship of soil development to soil properties; soil profile descriptions and classification. Two lec and one 2-hr lab a wk; two 1-day or one 2-day field trips. Recommended Preparation: Soil 205 and 206.

Soil 455 Forest Soils: Morphology, Function, and Spatial Dynamics (3 cr)
Soils as fundamental components of forested ecosystems; relation of soil properties to forest productivity and management; soil processes within ecosystems; soil-landscape interactions and inventory. Two lec and one 3-hr lab a wk; one 2-day field trip may be required. Recommended Preparation: Soil 205.

Soil 456 North Idaho Field Trip (1 cr)
Soils and land use in northern Idaho ecosystems; emphasis on soil parent materials, soil formation and morphology, and soil-plant community relationships. Graded P/F. One 3-day field trip; additional class meetings and assignments before and after field trip.
Prereq: Soil 205 or Permission

Soil 458 Soil and Site Evaluation (1-2 cr, max 8)
Description and evaluation of soils; emphasis on morphological features and properties that influence land use. Graded P/F. Two-four hrs of lab a wk; one 3-day or one 6-day field trip. Recommended Preparation: Soil 205.

Soil 499 (s) Directed Study (cr arr)

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

Soil 501 (s) Seminar (cr arr)

Soil 502 (s) Directed Study (cr arr)

Soil 504 (s) Special Topics (cr arr)

Soil 525 Microbial Ecology (4 cr)
See MMBB J425/J525.

Soil ID526 Soil Mineralogy (3 cr) WSU SoilS 526
Distribution and significance of common soil minerals; weathering and general reactivity as related to mineral structures; techniques of mineral identification including x-ray diffraction, chemical dissolution procedures, optical and electron microscopy. One lec and one 3-hr lab a wk. (Alt/yrs) Prereq: Soil 422, 454 or Permission

Soil 528 Advanced Chemistry of Soil Environment (3 cr)
Practical treatment of physical and chemical processes affecting ion retention and bioavailability in soils and sediments including speciation, adsorption, precipitation, dissolution and redox reactions. (Alt/yrs)
Prereq: Soil 422 or Permission

Soil ID537 Soil Biochemistry (3 cr) WSU SoilS 537
Same as MMBB 537. Origin, chemical structure, and significance of soil biochemical compounds. (Alt/yrs) Prereq: Soil 422, MMBB 380, MMBB 250 or Permission

Soil 546 Drinking Water and Human Health (3 cr)
See EnvS J446/J546.

Soil ID547 (s) Soil Fertility Management (1-3 cr, max 3)
See Soil J447/J547.

Soil ID557 Advanced Soil Genesis and Classification (3 cr) WSU SoilS 557
Processes of soil genesis as influenced by environmental factors; rationale and development of soil taxonomy; field study of pedological problems. Two lec and one 2-hr lab a wk; 1/2-day and 1-day field trips reqd. Prereq: Soil 454 or Permission (Alt/yr)

Soil 597 (s) Practicum (cr arr)

Soil 598 (s) Internship (cr arr)
Graded P/F
Prereq: Permission

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