Forest, Watershed, and Wildland Sciences

GRADUATE

FWWS 501. Research Methods and Planning (2). Methods of inquiry into the ecology and management of forests and wildlands. Review and composition of grant proposals and current literature. Planning and presentation of scientific research. [Open to upper-division students in FWR required for all FWR graduate students.]


FWWS 695. Field Research Problems (1-3). Directed individual research on field or laboratory problems. [Passing grade of B- required. Rep.]


For 222. Forest Health & Protection (2). Biotic and abiotic disturbance agents. Identification and ecology of important forest insects and diseases of North America. Predisposing factors that increase susceptibility of forests. Management strategies to reduce impacts. [Prereq: FOR 130 or FOR 131. Weekly: 1 hr lect, 3 hrs lab.]

For 223. Introduction to Wildland Fire (2). An introduction to the elements of wildland fire behavior, fire management and suppression, and fuels management. History and policy development of forest and rangeland fire management. [Prereq: FOR 130 or FOR 131. Weekly: 1 hr lect, 3 hrs lab.]

For 250. Introduction to Forest Operations (3). Overview of forest operations and environmental issues associated with today’s forest management practices. Use of mechanized equipment as a tool to meet various forest management objectives. [Weekly: 2 hrs lect, 3 hrs lab.]

UPPER DIVISION

For 302. Forest Ecosystems & People (3). Interaction between forest science principles of different forest ecosystems and social expectations and needs. Evolution of how people use the forests of California from wilderness to city parks. California as the leading edge of forest users. Nonmajors only. [B-UD.]


For 311. Forest Mensuration & Growth (4). Sampling techniques in forest inventory, timber cruising, and site index determination. Develop volume tables and predict stand growth. Use growth models and computer applications. [Prereq: FOR 130, FOR 210. Weekly: 3 hrs lect, 3 hrs lab.]

For 315. Forest Management (3). Managing forest-covered landscapes to meet a variety of objectives by applying economic, sociological, ecological, silvicultural, and operational principles. Nonmajors only. [Weekly: 2 hrs lect, 3 hrs lab.]

For 321. Fire Ecology (3). Fire as an ecosystem and physical process. Fire history, fire effects, fire regimes; interactions with abiotic and biotic ecosystem components; managing fire in California bioregions. [Prereq: Course in Ecology or IA. Weekly: 2 hrs lect, 3 hrs lab.]


For 331. Silvics — Foundation of Silviculture (3). Woody plant interaction with environmental stresses. Factors influencing vigor and growth. Changes to stand structure caused by humans (thinning, harvesting, fertilization), nature (wind, soil, climate) or time. Selection using genetic principles for improved growth. Seedling production methods in stock types in relation to their effect on morphology/survival. [Prereq: BOT 105, FOR 130, FOR 131, FOR 210 and SOIL 280. Weekly: 2 hrs lect, 3 hrs lab.]

For 350. Forest Harvesting Systems (3). Machine operations in ground-based systems, rigging requirements and payload analysis in skyline yarding, helicopter yarding, harvesting planning and unit layout, optimization in transportation planning. [Prereq: FOR 210, FOR 250. Weekly: 2 hrs lect, 3 hrs lab.]

For 353. Forest Road Location & Design (3). Road design procedures, standards, and techniques for forest management. Reconnaissance, route surveying, office and field design and location, geometry, drainage systems, soil engineering, construction sequencing and techniques, erosion control, maintenance. [Prereq: FOR 210, FOR 250, SOIL 260. Weekly: 2 hrs lect, 3 hrs lab.]

For 359. CA & US Forest and Wildland Policy (3). US and California government and policies are introduced with an emphasis on the interactions between these institutions and natural resource management. Regulations are analyzed from creation to implementation and interpretation. Meets requirement in “US Constitution and California State and Local Government” established by CA legislature.

For 365. Forest Economics and Finance (3). Capital budgeting, benefit/cost analysis; forest appraisal and taxation; welfare economics, management decision making; uncertainty and risk. [Rec: FOR 311 (C). Weekly: 2 hrs lect, 3 hrs lab.]

For 374. Wilderness Area Management (3). Paradox of “managing” wilderness; scientific, legal philosophical frameworks; managing human use of, and influences on, wilderness. [Weekly: 2 hrs lect, weekend field trips.]

For 400. Forestry in Modern Society (3). “Humans are moral creatures” as a model for human integration. Role of professional forestry to serve society and conserve the landscape. Social and environmental reasoning for integrating layers of moral obligation. [E-UD.]

For 422. Wildland Fire Use (3). Applying prescribed fire in land management. Fire effects, prescription burning objective, benefits, plans, prescriptions, firing patterns, burn monitoring and evaluation, and smoke management. [Prereq: FOR 321 and FOR 323, or IA. Evening presentations or weekend field trips may substitute for class meeting. Weekly: 2 hrs lect, 3 hrs lab.]

For 423. Wildland Fuels Management (3). Managing wildland fuels in forests and rangelands. Advanced understanding of fuel dynamics, management strategies, and challenges facing fuels managers in fire-prone landscapes. Quantitative analysis of the effects of fuels treatments. [Prereq: FOR 223 or IA. Weekly: 2 hrs lect, 3 hrs lab.]
FOR 430. Forest Ecosystems [3]. Environmen-
tal factors on tree, stand, and landscape dynam-
ics. Investigation at physiological, population,
community, ecosystem, and landscape scales.
Analysis of ecological data, scientific writing, and
presentation. Extensive field trips in region.
[Prereq: FOR 131 or course in ecology. Weekly: 2
hrs lect, 3 hrs lab.]  
FOR 431. Forest Restoration [3]. Forest
restoration at multiple spatial scales from stand
to landscape level. Goals for biological conserva-
tion, carbon sequestration, economic viability.
Restoration techniques and case studies. Manag-
ing invasive plant species. [Prereq: FOR
131 or FOR 315 and junior or senior standing.]  
FOR 432. Silviculture [4]. Theory and practice
of controlling forest establishment, composition,
and growth. Fundamentals of forest stand devel-
opment and dynamics. Forest stewardship tech-
niques to satisfy a range of possible objectives
(biological, economic, and social). [Prereq: FOR
222, FOR 311 and FOR 331. Weekly: 3 hrs lect,
3 hrs lab.]  
FOR 450. Harvesting Systems Design & Cost
Analysis [3]. Designing integrative harvesting and
transporation systems. Computer applications
in harvesting cost analysis, equipment purchase
and replacement, break-even/sensitivity analysis,
statistical analyses and operations research
instruments applied to forest operations. [Prereq:
FOR 250. Weekly: 2 hrs lect, 3 hrs lab.]  
FOR 471. Forest Administration and Ethics
[3]. Policy making; administrative behavior; legisla-
tive, regulatory, legal, and ethical considerations
as applied to forest management. [Prereq: FOR
250; FOR 311; junior standing or greater. Rec: FOR
432.]  
FOR 475. Forest Management Decision Mak-
ing [3]. Social, political, economic, ecological, and
silvicultural principles relating to contemporary
forestry decision making processes. Predicting
forest outcomes, tactical and strategic forest
planning sustainability, risk assessment, monitor-
ing and adaptive management. [Prereq: FOR 311
and FOR 365, or IA. Weekly: 2 hrs lect, 3 hrs lab.]  
FOR 476. Advanced Forest Management [2].
In discussion with land management profession-
als, students will develop projects on contempo-
rary issues in forest disturbance-based manage-
ment such as resilience amid a changing climate
and management for ecosystem services.
[Prereq: Al. Coreq: FOR 432.]  
FOR 479. Forestry Capstone [3]. A forestry-
related project, produced either by a team or by
an individual, culminating in a public presentation.
[Prereq: must be in final term prior to graduation.]  
FOR 480. Selected Topics in Forestry [1-4].
Topics as demand warrants. [Rep.]  
FOR 482. Internship [1-3]. Students reflect
critically upon work experience and report their
critical reflections in a written report under faculty
guidance. [Prereq: FOR 131 and FOR 210, or IA.]  
FOR 489. Directed Study [1-4]. Individual study
at upper division level. Conference, directed read-
ing, field research, or problems. [Prereq: IA. Rep.]  
FOR 506. Advanced Principles of Remote
Sensing & GIS [3]. Forest ecosystem measure-
ments using remote sensing. Spectral signature
analysis and computer classification of multispectral data from satellites. Raster data
conversion to vector-based geographic informa-
tion systems. [Prereq: GSP 216 or IA. Weekly: 2
hrs lect, 3 hrs lab. Rep.]  
FOR 523. Advanced Wildland Fuels Manage-
ment [3]. Meets jointly with FOR 423. Students
enrolled in FOR 523 are expected to carry out
additional independent analyses of fuels treatment
effects and deliver a lecture on an independent
topic. [Prereq: FOR 311 [C] and FOR 323, or IA.]  
FOR 530. Advanced Forest Ecosystems [3].
Meets jointly with FOR 430. Students enrolled in
FOR 530 are expected to carry out additional in-
dependent field research projects and deliver a
lecture on an independent topic. [Prereq: FOR 131
or IA. Weekly: 2 hrs lect, 3 hrs lab. Rep.]  
FOR 532. Advanced Principles in Silviculture
[4]. Meets concurrently with FOR 432. Students
enrolled in FOR 532 are expected to carry out
additional independent analyses of silvicultural
topics and deliver a lecture on independent topic.
[Prereq: IA. Weekly: 3 hrs lect, 3 hrs lab. Rep.]  
FOR 680. Advanced Topics in Forestry [1-4].
Topics as demand warrants. [Rep with different
topics.]  
FOR 685. Forestry Graduate Seminar [1]. Re-
view important current literature. [Rep.]  
FOR 689. Directed Study [1-4]. Individual study
at upper division level. Conference, directed read-
ing, field research, or problems. [Prereq: IA. Rep.]  
FOR 695. Advanced Forest Management [2].
In discussion with land management profession-
als, students will develop projects on contempo-
rary issues in forest disturbance-based manage-
ment such as resilience amid a changing climate
and management for ecosystem services.
[Prereq: Al. Coreq: FOR 432.]  
FOR 700. Senior Thesis [1]. Student-designed
research project done by a single student with
faculty approval before the project is begun. Public
presentation of the results and a written paper in
journal-ready format. [Prereq: IA.]  
GRADUATE
FOR 709. Directed Study [1-4]. Individual study
at upper division level. Conference, directed read-
ing, field research, or problems. [Prereq: IA. Rep.]