FOREST RESOURCES AND CONSERVATION

FAS 6306C Spatial Sciences for Marine Environmental Characterization 4 Credits
Grading Scheme: Letter Grade
An introduction to the geospatial technologies, concepts and methods required to acquire, analyze and manage geographic data used in a context of marine habitat mapping. Emphasis is given to the understanding and appreciation of maps as a mean of communication between stakeholders with different backgrounds and expertise.

FAS 6356 Fisheries Enhancement 2 Credits
Grading Scheme: Letter Grade
Provides participants with knowledge and skills required for assessing where and when enhancements can contribute to fisheries management goals, and for developing and managing such initiatives effectively. Emphasizes integrative systems approaches and the key elements of population dynamics, aquaculture production, release strategies, genetic management, governance, and social/economic costs and benefits.

FNR 5015 Ecosystem Restoration Principles and Practice 3 Credits
Grading Scheme: Letter Grade
Application of ecological theory and economic and political constraints to restoration practice. Emphasizes regional, national, and international case studies.

FNR 5016 Ecology and Restoration of Longleaf Pine Ecosystems 3 Credits
Grading Scheme: Letter Grade
History, structure, function and ecological and economic importance; regeneration ecology, stand dynamics, restoration techniques, ownership patterns, and socio-economic and political and policy aspects of restoration

FNR 5072C Environmental Education Program Development 3 Credits
Grading Scheme: Letter Grade
Comprehensive approach, from needs assessment to evaluation, applied to youth-based, nonformal environmental education. Required field trip and group project.

FNR 5405 Forest Information Systems 3 Credits
Grading Scheme: Letter Grade
Sampling methodology for natural resource inventories, involving remote sensing, geographic information systems (GIS), and global positioning system (GPS). Offered spring term of even-numbered years.
Prerequisite: Consent of instructor.

FNR 5608 Research Planning 3 Credits
Grading Scheme: Letter Grade
History and philosophy of science, scientific method, development of a research proposal. Research facilities and programs are presented. Offered fall term.
Prerequisite: consent of instructor. Required for all new M.S. students.

FNR 5625 Managing Public Lands and Waters 3 Credits
Grading Scheme: Letter Grade
Concepts, principles and practices of managing public lands and waters of the United States, and, to a lesser extent, other countries; the natural resources involved; and the roles and responsibilities of governing bodies, management organizations, constituents and the general public.

FNR 5626 Forest Resource Manag 3 Credits
Grading Scheme: Letter Grade
Forest Resource Manag

FNR 6006 Silviculture: Concepts and Application 3 Credits
Grading Scheme: Letter Grade
Principles governing establishment, treatment, and control of forest stands; regeneration systems; intermediate cuttings; intensive cultural practices; land use ethics; and management systems.
Prerequisite: Course in ecology.

FNR 6046C Lidar Remote Sensing for Forestry Applications 3 Credits
Grading Scheme: Letter Grade
Lidar remote sensing is a state-of-the-art technology widely used in research and forestry applications. Learn how to visualize, process lidar point cloud data, build terrain and canopy height models and establish statistical models using open-source software including R-statistical language and FUSION/LDV. This face-to-face course includes a chance to develop your own lidar project in data visualization, aboveground biomass and fuel load estimations and more with the many datasets available.

FNR 6061 Conflict and Collaboration in Natural Resources 3 Credits
Grading Scheme: Letter Grade
Overview of major issues, theories, and approaches related to conflict management and collaboration in natural resources. Topics include conflict management, collaborative processes, and negotiation; tools and frameworks for analyzing conflict; and evolving management approaches to natural resource conflict including co-management and community-based management.

FNR 6075 Science Communication & Public Education 3 Credits
Grading Scheme: Letter Grade
Provides an introduction to science communication, environmental education, and public outreach. The course will focus on strategic message framing and how to convey scientific research to the public. The public outreach portion will focus on general audiences as well as K-12 specific outreach.

FNR 6085 Landscape Planning for Ecotourism 3 Credits
Grading Scheme: Letter Grade
Planning frameworks and techniques of large natural areas. Offered fall term.

FNR 6134 Physiology of Forest Trees 3 Credits
Grading Scheme: Letter Grade
Growth and development of woody perennial plants, with emphasis on understanding how environmental factors affect their physiology.
Prerequisite: Graduate status or consent of instructor.

FNR 6308 Urban Forestry 3 Credits
Grading Scheme: Letter Grade
Explores the nature, scope and components of the urban forest, including biology, culture, protection and aspects of management, planning and policy.
Prerequisite: Graduate standing.

FNR 6314 Issues in Southeastern Forest Health 3 Credits
Grading Scheme: Letter Grade
Instructs students how to understand and address invasive and native forest and tree health issues and their management in the southeastern U.S. Topics include threats from insects, pathogens, wildlife, climate change, invasive plants and more. For each forest health topic, students will learn the biology, ecology, and management strategies.
Prerequisite: Graduate standing.

FNR 6315 Tropical Forestry 3 Credits
Grading Scheme: Letter Grade
Promise and pitfalls of production-oriented management as a conservation strategy for naturally regenerated tropical forests. Ecological constraints to sustainable forest management in the tropics; strategies, tools, and techniques for large- and small-scale management of old growth and secondary tropical forests for timber and non-timber forest products and services; future of forests and forestry in tropical landscapes. Offered spring term.
Prerequisite: Consent of instructor.

FNR 6406C Lidar Remote Sensing for Forestry Applications 3 Credits
Grading Scheme: Letter Grade
Lidar remote sensing is a state-of-the-art technology widely used in research and forestry applications. Learn how to visualize, process lidar point cloud data, build terrain and canopy height models and establish statistical models using open-source software including R-statistical language and FUSION/LDV. This face-to-face course includes a chance to develop your own lidar project in data visualization, aboveground biomass and fuel load estimations and more with the many datasets available.

FNR 6462 Foundations of Geospatial AI for Natural Resource Management 3 Credits
Grading Scheme: Letter Grade
Focuses on practical applications of AI in geospatial analysis for fields like resource management, agriculture, forestry, and marine sectors. Students will gain hands-on experience with Python and GeoAI tools for tasks such as data preprocessing, spatial data mining, image processing, and pattern recognition. The course also covers the use of Generative AI for spatial data analysis and big data processing, alongside ethical and societal considerations

FNR 6504 Analysis of Forest Ecosystems 3 Credits
Grading Scheme: Letter Grade
Concepts of the forest ecosystem, the role of models for understanding ecosystem dynamics, disturbance regimes and stability theory, nutrient cycles, and ecosystem energetics.
Prerequisite: BSC 2010, or equivalent.

FNR 6505 Forest Ecosystem Health 3 Credits
Grading Scheme: Letter Grade
Forest Ecosystem Health is an integrated course dedicated to the study of forest health and how it relates to ecological restoration.

FNR 6506 Forest Ecosystem Resilience 3 Credits
Grading Scheme: Letter Grade
Offers an overview of the abiotic and biotic drivers, and management activities that can either stimulate or suppress alterations in forest structure and function. The course also covers the methods used to detect change and surveys the models used to estimate how a forest will change in the future.

FNR 6516 Management and Restoration of Invaded Ecosystems 3 Credits
Grading Scheme: Letter Grade
An overview of the ecological basis for plant invasions in terrestrial ecosystems, with emphasis on applications for restoration and management of invaded ecosystems. Methods and techniques for prediction, prevention, control, and restoration will be discussed, and plant invasions from Florida and around the U.S. will be used as case studies. This course focuses heavily on applying scientific theory and research to on-the-ground management.

FNR 6560 Intro to Bayesian Statistics for Life Sciences 3 Credits
Grading Scheme: Letter Grade
Introduces life scientists to Bayesian statistics. Will explore basic ideas regarding integration through simulation (Monte Carlo integration), the philosophy and strengths of Bayesian statistics, and the Markov Chain Monte Carlo (MCMC) algorithms needed to fit such models.

FNR 6564 Ecohydrology 3 Credits
Grading Scheme: Letter Grade
Introductory course on ecohydrology - the study of interactions between organisms, ecosystems, and the hydrologic cycle. Uses a blend of theory and case studies.
Prerequisite: permission of instructor

FNR 6565 Simulation Analysis of Forest Ecosystems 3 Credits
Grading Scheme: Letter Grade
Conceptual basis, evaluation, implementation, testing, and analysis of forest simulation models. Students develop and present modeling projects.

FNR 6607 Conservation Behavior 3 Credits
Grading Scheme: Letter Grade
Methods for changing behavior in various groups to improve environmental sustainability.

FNR 6615C Visualization of Ecological Data 3 Credits
Grading Scheme: Letter Grade
Equip students to work with big (ecological) data, with focus on data visualization as exploratory data analysis. Students will understand the importance and basics of data management and effective visualization and will be able to read data into R from external sources (csv, txt) and be able to check and manipulate data types. They will communicate their data and/or findings using R, Rstudio, and Rprojects, as well as make basic statistical summaries and plots of data.
Prerequisite: Graduate standing.

FNR 6620 Community Forest Management 3 Credits
Grading Scheme: Letter Grade
Integrates theory from the socio-economic and bio-physical sciences with on-the-ground realities in implementing community-based forest management and conservation.

FNR 6626 Fire Paradigms 3 Credits
Grading Scheme: Letter Grade
Reviewing dominant fire paradigms worldwide, including in-depth review of specific paradigm, its theoretical basis, and social/ecological/management implications.

FNR 6628 Watershed Management and Restoration 3 Credits
Grading Scheme: Letter Grade
Addresses science and policy of watershed management, focusing on biophysical factors, socioeconomic drivers, and the legal/policy context.

FNR 6665 Natural Resource Economics and Valuation 3 Credits
Grading Scheme: Letter Grade
Extending microeconomic principles to problems in forest production, supply behavior, forest valuation, and multiple use of forest lands. Offered spring term of odd-numbered years.
Prerequisite: Consent of instructor.

FNR 6668 Natural Resources in a Changing Climate 3 Credits
Grading Scheme: Letter Grade
This course takes a multidisciplinary and systems approach to address potential global climate change (GCC) effects to our natural resources and understand how adaptive strategies may sustain these resources in a changing climate.

FNR 6669 Policy and Economics of Natural Resources 3 Credits
Grading Scheme: Letter Grade
Factors in evolution of forest, range, wildlife and related natural resources administration and policies in the United States. Includes policy components, policy formation and implementation, change processes, and economic criteria for evaluating policy effectiveness.

FNR 6905 Research Problems in Forest Resources and Conservation 1-6 Credits, Max 10 Credits
Grading Scheme: Letter Grade
Research Problems in Forest Resources and Conservation
Prerequisite: Consent of instructor.

FNR 6910 Supervised Research 1-5 Credits, Max 5 Credits
Grading Scheme: S/U
Supervised Research
Prerequisite: Consent of instructor.

FNR 6933 Seminar 1 Credit, Max 2 Credits
Grading Scheme: Letter Grade
Seminar

FNR 6934 Topics in Forest Resources and Conservation 1-4 Credits, Max 12 Credits
Grading Scheme: Letter Grade
Selected topics in forestry and natural resources.

FNR 6940 Supervised Teaching 1-5 Credits, Max 5 Credits
Grading Scheme: S/U
Supervised Teaching
Prerequisite: Consent of instructor.

FNR 6971 Research for Master's Thesis 1-15 Credits
Grading Scheme: S/U
Research for Master's Thesis

FNR 7979 Advanced Research 1-12 Credits
Grading Scheme: S/U
Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

FNR 7980 Research for Doctoral Dissertation 1-15 Credits
Grading Scheme: S/U
Research for Doctoral Dissertation

GIS 6116 Geographic Information Systems Analysis 3 Credits
Grading Scheme: Letter Grade
Analytical tools such as software grid modules, database query, map algebra, and distance operators; analytical operations such as database query, derivative mapping, and process modeling; sources and nature of uncertainty and error, and project planning management.
Prerequisite: SUR 3393 and SUR 3393L

PCB 5530 Plant Molecular Biology and Genomics 3 Credits
Grading Scheme: Letter Grade
Integrated overview of the fundamental mechanisms enabling plant growth, development, and function, and approaches to study these at molecular level. Topics include replication, repair, transcription, translation, cell cycle, transformation, gene tagging, structural genomics, proteomics, and metabolomics. Offered in fall term.
Prerequisite: undergraduate molecular biology or biochemistry.

PCB 6528 Plant Cell and Developmental Biology 3 Credits
Grading Scheme: Letter Grade
Cellular and developmental biology of plants. Lecture format with frequent discussion of recent papers. Topics include signal transduction, organelles, protein trafficking, and developmental mechanisms. Offered in spring term.
Prerequisite: PCB 5530 and PCB 5065 or equivalent.

PCB 6555 Introduction to Quantitative Genetics 3 Credits
Grading Scheme: Letter Grade
Intended for students of all disciplines who are interested in genetic principles and biometric evaluation of characters that exhibit continuous variation in natural populations or breeding programs.
Prerequisite: STA 6166.