

# FOREST AND WILDLIFE ECOLOGY (F&W ECOL)

## F&W ECOL 1 – COOPERATIVE EDUCATION/CO-OP IN FOREST & WILDLIFE ECOLOGY

1 credit.

Full-time off-campus work experience which combines classroom theory with practical knowledge of operations to provide students with a background upon which to base a professional career. Students receive credit only for the term in which they are actively enrolled and working. The same work experience may not count towards credit in F&W ECOL 399.

**Requisites:** Consent of instructor

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Fall 2018

## F&W ECOL/ENVIR ST 100 – FORESTS OF THE WORLD

3 credits.

Ecology and conservation of a wide range of forests, from tropical rain and dry forests, boreal forests, to temperate forests, outside of the USA. The main threats to forests, and different strategies to solve conservation and sustainable management issues in international forestry. Trade-offs in forest conservation and management, resulting from different values that people place on forests, issues in equity and equality in access to forest resources. The role of forests in climate change and extinction of species.

**Requisites:** None

**Course Designation:** Breadth - Either Biological Science or Social Science

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

## F&W ECOL 101 – ORIENTATION TO WILDLIFE ECOLOGY

1 credit.

Introduction to Wildlife Ecology and the profession of wildlife management/conservation. Emphasis on preparing for a successful career.

**Requisites:** Declared in Wildlife Ecology

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

## F&W ECOL 110 – LIVING WITH WILDLIFE - ANIMALS, HABITATS, AND HUMAN INTERACTIONS

3 credits.

A general survey of wildlife and wildlife conservation. Basic characteristics and management of wildlife populations and habitats. Human perceptions and interactions with wildlife. Current issues in wildlife management and conservation.

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

## F&W ECOL/C&E SOC/SOC 248 – ENVIRONMENT, NATURAL RESOURCES, AND SOCIETY

3 credits.

Introduces the concerns and principles of sociology through examination of human interaction with the natural environment. Places environmental issues such as resource depletion, population growth, food production, environmental regulation, and sustainability in national and global perspectives.

**Requisites:** None

**Course Designation:** Breadth - Social Science

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

## F&W ECOL/BOTANY 250 – FORESTS AND HUMANS: FROM THE MIDWEST TO MADAGASCAR

2 credits.

Provides an overview of the geography, ecology, and economic importance of the world's forest biomes. Learn how climate influences vegetation and, in-turn, how forests impact global climate. Meet scientists working to understand the astounding biodiversity and ecological complexity of forest ecosystems, and how these ecosystems support human life. Discuss the threats to forest ecosystems around the world, and hear from the people trying to protect them. Emphasizes the forest resources and services upon which humans depend, and how we can maintain these resources into the future. Analyze the idea of "sustainability" when it comes to forest management, hear alternative viewpoints about what this word means, and discuss potential trade-offs and conflicts. Look at the many real-world programs in place at the global, national, and local level to sustainably manage forests.

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2020

## F&W ECOL 289 – HONORS INDEPENDENT STUDY

1-2 credits.

Research work for Honors students under direct guidance of a faculty member in an area of Forest and Wildlife Ecology. Students are responsible for arranging the work and credits with the supervising instructor.

**Requisites:** Consent of instructor

**Course Designation:** Honors - Honors Only Courses (H)

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2001

## F&W ECOL 299 – INDEPENDENT STUDY

1-3 credits.

Research work for students under direct guidance of a faculty member in an area of Forest and Wildlife Ecology. Students are responsible for arranging the work and credits with the supervising instructor.

**Requisites:** Consent of instructor

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2024

**F&W ECOL 300 – FOREST MEASUREMENTS**

4 credits.

Field measurements of trees and forests. Basic concepts of statistics and sampling as applied to forestry. Use of aerial photographs, GIS, and satellite imagery.

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL 305 – FOREST OPERATIONS**

2 credits.

Introduction to forestry operations in the implementation of forest plans, including site preparation, stand establishment, and harvesting systems. Analysis of costs and productivity, including system balance, marketing, timber procurement, and contractual services.

**Requisites:** F&W ECOL 300 or 410**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL 306 – TERRESTRIAL VERTEBRATES: LIFE HISTORY AND ECOLOGY**

4 credits.

Life history, ecology, distribution, and taxonomy of reptiles, amphibians, birds, and mammals. Birds will receive less emphasis. Primary focus is on Wisconsin species, including conservation threats, but covers all major North American families, and surveys major groups of the world. Designed as a foundation for detailed study of vertebrates or to satisfy the need for a scientific introduction to Wisconsin vertebrates.

**Requisites:** ZOOLOGY/BIOLOGY/BOTANY 151, (ZOOLOGY/BIOLOGY 101 and 102), (BIOCORE 381 and 382), or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL/HORT/LAND ARC/PL PATH 309 – DISEASES OF TREES AND SHRUBS**

3 credits.

Fundamental disease concepts, pathogens and causal agents, diagnosis, and biologically rational principles and practices for management of diseases of trees and shrubs. Includes field trips

**Requisites:** (ZOOLOGY/BIOLOGY/BOTANY 152, BOTANY/BIOLOGY 130, or BIOCORE 381) or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2018**F&W ECOL 318 – PRINCIPLES OF WILDLIFE ECOLOGY**

3 credits.

Major environmental factors affecting wildlife; structure and behavior of wildlife populations; regional wildlife communities and their conservation.

**Requisites:** Declared in Wildlife Ecology**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Fall 2023**F&W ECOL/ZOOLOGY 335 – HUMAN/ANIMAL RELATIONSHIPS: BIOLOGICAL AND PHILOSOPHICAL ISSUES**

3 credits.

An interdisciplinary approach to our complex and often contradictory relationships with non-human animals, including information about the nature, needs and behavior of human and non-human animals in relation to our personal and professional interactions with them.

**Requisites:** Sophomore standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL/ENVIR ST/ZOOLOGY 360 – EXTINCTION OF SPECIES**

3 credits.

A comprehensive treatment of the ecology, causes, and consequences of species extinction. Ecology and problems of individual species, habitat alteration and degradation, socio-economic pressures and conservation techniques and strategies.

**Requisites:** Sophomore standing and ZOOLOGY/BIOLOGY/BOTANY 151, (ZOOLOGY/BIOLOGY 101 and 102), BIOLOGY/BOTANY 130, or (BIOCORE 381 and 382)**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Fall 2023**F&W ECOL/ENVIR ST/G L E/GEOG/GEOSCI/LAND ARC 371 – INTRODUCTION TO ENVIRONMENTAL REMOTE SENSING**

3 credits.

Introduction to the Earth as viewed from above, focusing on use of aerial photography and satellite imagery to study the environment. Includes physical processes of electromagnetic radiation, data types and sensing capabilities, methods for interpretation, analysis and mapping, and applications.

**Requisites:** (Sophomore standing and MATH 113, 114, or 171), graduate/professional standing, or member of Engineering Guest Students**Course Designation:** Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Spring 2024

**F&W ECOL/ENVIR ST/G L E/GEOG/GEOSCI/LAND ARC 372 – INTERMEDIATE ENVIRONMENTAL REMOTE SENSING**

3 credits.

Examines intermediate-level concepts in information extraction, data processing and radiative transfer relevant to remote sensing of the environment. Includes transforms, image correction, classification algorithms and change detection, with emphasis on applications for land use planning and natural resource management.

**Requisites:** LAND ARC/ENVIR ST/F&W ECOL/G L E/GEOG/GEOSCI 371, graduate/professional standing, or member of Engineering Guest Students

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2015

**F&W ECOL 375 – SPECIAL TOPICS**

1-4 credits.

Specialized subject matter of current interest to undergraduate students.

**Requisites:** None

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2024

**F&W ECOL 379 – PRINCIPLES OF WILDLIFE MANAGEMENT**

3 credits.

Ways of conserving desired numbers of animals for the overall best interests of society, be they aesthetic, ecological, economic, commercial or recreational; includes management of endangered species, exploited species, wildlife communities in nature reserves, and wildlife pests.

**Requisites:** F&W ECOL 318 or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL 390 – LEARNING TO ACTION: PROFESSIONAL DEVELOPMENT**

1 credit.

Preparation for natural resources professions and the job market after graduation. Development of professional skills including communication, ethical decision-making, and conflict resolution. Experience in job searching, editing resumes, and interviewing for jobs.

**Requisites:** Declared in Forest Science

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL 399 – COORDINATIVE INTERNSHIP/COOPERATIVE EDUCATION**

1-8 credits.

An internship under guidance of a faculty or instructional academic staff member in Forest and Wildlife Ecology and an internship site supervisor. Students are responsible for arranging the work and credits with the faculty or instructional academic staff member and the internship site supervisor.

**Requisites:** Consent of instructor

**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Workplace - Workplace Experience Course

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2023

**F&W ECOL 400 – STUDY ABROAD IN FOREST AND WILDLIFE ECOLOGY**

1-6 credits.

Provides an area equivalency for courses taken on Madison Study Abroad Programs that do not equate to existing UW courses. Current enrollment in a UW-Madison study abroad program

**Requisites:** None

**Repeatable for Credit:** Yes, unlimited number of completions

**F&W ECOL 401 – PHYSIOLOGICAL ANIMAL ECOLOGY**

3 credits.

Physiological adaptation and function in wild animals, primarily birds, mammals, reptiles, amphibians. Focus on interactions between animals and their environment, and relationships between animal physiology and the ecology and dynamics of populations.

**Requisites:** ZOOLOGY/BIOLOGY/BOTANY 151, (ZOOLOGY/BIOLOGY 101 and 102), (BIOCORE 381 and 382), or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2021

**F&W ECOL/BOTANY 402 – DENDROLOGY: WOODY PLANT IDENTIFICATION AND ECOLOGY**

3 credits.

Identification, ecological characteristics, ranges, adaptations to environment, and uses of evergreen and deciduous woody plants, with emphasis on species native to Wisconsin; lab and field work.

**Requisites:** Sophomore standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL 404 – WILDLIFE DAMAGE MANAGEMENT**

3 credits.

Theory and application of wildlife management from a species-specific and situational perspective. Introduction to career options in wildlife damage management.

**Requisites:** F&W ECOL 379**Repeatable for Credit:** No**Last Taught:** Fall 2022**F&W ECOL 410 – PRINCIPLES OF SILVICULTURE**

3 credits.

Ecologically-based forest management principles for sustainable timber production, maintenance or restoration of biological diversity, and maintenance of aesthetic quality and site productivity. Includes coverage of even-aged and uneven-aged management, reforestation principles, and ecological restoration techniques.

**Requisites:** ZOOLOGY/BOTANY/F&W ECOL 460, F&W ECOL 550, declared in Forest Science or Wildlife Ecology, or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL 411 – PRACTICES OF SILVICULTURE**

1 credit.

Utilization of ecologically-based forest management practices for sustainable timber production, maintenance or restoration of biological diversity, and maintenance of aesthetic quality and site productivity. Includes coverage of even-aged and uneven-aged management, reforestation principles, and ecological restoration techniques.

**Requisites:** F&W ECOL 410 or concurrent enrollment**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL 415 – TREE PHYSIOLOGY**

3 credits.

Physiological basis of development of forest trees and stands, factors affecting tree growth.

**Requisites:** BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 152, or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Fall 2020**F&W ECOL 420 – REGULATED TRAPPING IN WILDLIFE MANAGEMENT AND CONSERVATION**

1 credit.

Training and professional skill development for future natural resources professionals. Introduction to the importance of regulated trapping as a technique used in research, wildlife damage management, wildlife reintroduction, disease management, fur/food acquisition, etc.

**Requisites:** Consent of instructor**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL 424 – WILDLIFE ECOLOGY SUMMER FIELD PRACTICUM**

2 credits.

Practicum emphasizing research and habitat management techniques through individual and group field work, tours, demonstrations and lectures.

**Requisites:** Consent of instructor**Repeatable for Credit:** No**Last Taught:** Summer 2022**F&W ECOL 448 – DISTURBANCE ECOLOGY**

3 credits.

An introduction to fire, wind, flooding, disease, insects and other disturbance regimes that serve as primary drivers of the structure and function of terrestrial ecosystems. Discusses how these disturbances interact, using case studies and data that highlight the role of disturbance in different ecosystems (e.g. grasslands, forests, tundra) with a focus on the ecosystem services they provide. Discusses and critiques management strategies used to mitigate biotic and abiotic disturbances, gaining critical insights from the literature as well as personal perspectives and experiences.

**Requisites:** BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 151, BIOCORE 381, or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL 449 – DISTURBANCE ECOLOGY LAB (I): HERBIVORES AND FIRE**

1 credit.

Explores natural and anthropogenic disturbances occurring in forest ecosystems through hands on learning experiences. Emphasis on the role of herbivores and fire with examination of management strategies. Applies basic ecological laboratory and field techniques to understanding disturbances that change the physical environment and disrupt ecosystem structure.

**Requisites:** BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 151, BIOCORE 381, or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Spring 2024

**F&W ECOL 450 – DISTURBANCE ECOLOGY LAB (II): FOREST PATHOGENS**

1 credit.

Explores natural and anthropogenic disturbances occurring in forest ecosystems through hands on learning experiences. Focuses on the causes of impoverished forests and the role and management of pathogens. Applies basic ecological laboratory and field techniques to understanding disturbances that change the physical environment and disrupt ecosystem structure.

**Requisites:** BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 151, BIOCORE 381, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL/SOIL SCI 451 – ENVIRONMENTAL BIOGEOCHEMISTRY**

3 credits.

Explores long and short-term cycles of carbon, nitrogen, phosphorus, sulfur, and metals as well as water and energy cycles between water, the atmosphere, terrestrial vegetation, and soils. Emphasizes the linkage between terrestrial vegetation and soils across global biomes for managed and unmanaged ecosystems. Investigates biogeochemical processes through their biochemical constituents, conceptual models and exploration of isotopic and chemical data. Provides a practical understanding of the interactions between components and fluxes of terrestrial ecosystems and how data is developed and employed.

**Requisites:** CHEM 104, 109, 116, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL/BOTANY 455 – THE VEGETATION OF WISCONSIN**

4 credits.

Ecology of Wisconsin plant communities: floristic composition, community structure; relationship to history, climate, soil, and geology; response to human perturbation.

**Requisites:** ZOOLOGY/BIOLOGY/BOTANY 151, BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY 101, BIOCORE 381, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL 458 – ENVIRONMENTAL DATA SCIENCE**

3 credits.

Introduces fundamental machine learning techniques for numerical modeling and data analysis and modern computer programming tools used to analyze, prepare, and visualize data from common formats of datasets in the field of Earth and environmental sciences. Emphasizes opportunities to consider real-world applications for concepts in environmental data science.

**Requisites:** STAT 240, 301, 324, 371, or graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL/BOTANY/ZOOLOGY 460 – GENERAL ECOLOGY**

4 credits.

Ecology of individual organisms, populations, communities, ecosystems, landscapes, and the biosphere. The interaction of organisms with each other and their physical environment. These relationships are studied, often in quantitative terms, in both field and laboratory settings.

**Requisites:** Satisfied Quantitative Reasoning (QR) A requirement and ZOOLOGY/BIOLOGY/BOTANY 152, (ZOOLOGY/BIOLOGY 101 and 102), BIOCORE 381, or BOTANY/BIOLOGY 130, or graduate/professional standing

**Course Designation:** Gen Ed - Quantitative Reasoning Part B

Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL/ENTOM 500 – INSECTS IN FOREST ECOSYSTEM FUNCTION AND MANAGEMENT**

2 credits.

Roles of insects in the functioning of healthy forest ecosystems, tactics for addressing challenges they pose to sustainable natural resource management, and emerging issues such as biological invasions, habitat alteration, and climate change that influence interactions among insects, their microbial associates, forests, and humans.

**Requisites:** ZOOLOGY/BIOLOGY 101, ZOOLOGY/BIOLOGY/BOTANY 152, BIOCORE 381, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2015

**F&W ECOL 501 – FOREST FIRE BEHAVIOR AND MANAGEMENT**

1 credit.

Principles and applications of forest fire behavior, prediction, control and use; current policy issues in fire management.

**Requisites:** ENVIR ST/F&W ECOL 100

**Repeatable for Credit:** No

**Last Taught:** Spring 2017

**F&W ECOL/ENVIR ST 515 – NATURAL RESOURCES POLICY**

3 credits.

Examine natural resources policy and law in the United States relating to forests, wildlife, and other natural resources. Investigates the policy-making process and the role of science, values, property, economics, and justice in the development of federal and state resources policy. Practice professional written and oral communication and ethical engagement in resources policy and administration.

**Requisites:** Satisfied Communications A requirement or graduate/professional standing

**Course Designation:** Gen Ed - Communication Part B

Breadth - Social Science

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL/AN SCI/ZOOLOGY 520 – ORNITHOLOGY**

3 credits.

Introduction to bird biology, ecology, and behavior. Topics include the evolutionary origin of birds and flight, anatomy and physiology, functional morphology, migration, communication, reproductive strategies, ecological adaptations and roles, and biogeographical patterns.

**Requisites:** ZOOLOGY/BIOLOGY 101 and 102, ZOOLOGY/BIOLOGY/BOTANY 152, (BIOCORE 381 and 382), or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL/AN SCI/ZOOLOGY 521 – BIRDS OF SOUTHERN WISCONSIN**

3 credits.

Outdoor and indoor labs/lectures emphasizing identification of southern Wisconsin birds by sight and vocalization. Two required Saturday field trips in Southern Wisconsin.

**Requisites:** ZOOLOGY/BIOLOGY 101 and 102, ZOOLOGY/BIOLOGY/BOTANY 152, (BIOCORE 381 and 382), or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL/HORT/SOIL SCI 524 – URBAN SOIL AND ENVIRONMENT**

3 credits.

Many environmental issues related to urbanization are derived from the manipulation of soil. By coupling contemporary literature in urban soils with soil science, students will be able to evaluate environmental issues within the urban environment and provide new ways of remediating their impact.

**Requisites:** (PHYSICS 103, 201, 207, or 247) and (SOIL SCI/ENVIR ST/ GEOG 230 or SOIL SCI 301 or concurrent), or graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2017

**F&W ECOL/A A E/ECON 531 – NATURAL RESOURCE ECONOMICS**

3 credits.

Economic concepts and tools relating to management and use of natural resources, including pricing principles, cost-benefit analysis, equity, externalities, economic rent, renewable and nonrenewable resources, and resource policy issues.

**Requisites:** ECON 301 or 311 or graduate/professional standing

**Course Designation:** Breadth - Social Science

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL/SURG SCI 548 – DISEASES OF WILDLIFE**

3 credits.

Provides an overview of the issues involved across a wide range of wildlife diseases, presented within the context of ecosystem health or "one health". Content will be on the biological, epidemiological, clinical, public health and, in some cases, sociopolitical ramifications of wildlife diseases. Covers a wide variety of wildlife diseases caused by bacteria, viruses, parasites, prions, and environmental contaminants. Consequences associated with environmental changes on the manifestation of wildlife diseases will also be discussed. This range of diseases will be presented in order to familiarize the many facets involved in disease management, from animal and human health issues, to ecological and environmental considerations, to the role of society in contributing to, and managing, these diseases.

**Requisites:** BOTANY/BIOLOGY 130, (ZOOLOGY/BIOLOGY 101 102), BIOLOGY/BOTANY/ZOOLOGY 151, BIOCORE 381, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL 550 – FOREST ECOLOGY**

3 credits.

Introduction to major abiotic and biotic factors that influence forest ecosystem composition, structure, and function. Reviews important processes that influence structure and function of forest ecosystems. Uses basic ecosystem concepts to elucidate influence of anthropogenic (including forest management) and natural disturbances on forest ecosystem structure and function.

**Requisites:** BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 152, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL 551 – FOREST ECOLOGY LAB**

1 credit.

Review concepts presented in F&W ECOL 550 by exposing the key concepts and processes discussed that can best be seen in the field or illustrated with the use of ecosystem models.

**Requisites:** F&W ECOL 550 or concurrent enrollment, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL 561 – WILDLIFE MANAGEMENT TECHNIQUES**

3 credits.

Preparation of collections, analyses of food habits, sex and age determinations, censuses, trapping and banding, planting food and cover, research techniques.

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL/LAND ARC/ZOOLOGY 565 – PRINCIPLES OF LANDSCAPE ECOLOGY**

2 credits.

Emphasizes the importance of spatial patterns at broad scales. Concepts and applications are covered.

**Requisites:** (ZOOLOGY/BOTANY/F&W ECOL 460 or F&W ECOL 550) and (STAT 301, 371, or HORT/F&W ECOL/STAT 571), or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2019

**F&W ECOL/HORT/STAT 571 – STATISTICAL METHODS FOR BIOSCIENCE I**

4 credits.

Descriptive statistics, distributions, one- and two-sample normal inference, power, one-way ANOVA, simple linear regression, categorical data, non-parametric methods; underlying assumptions and diagnostic work.

**Requisites:** Graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL/HORT/STAT 572 – STATISTICAL METHODS FOR BIOSCIENCE II**

4 credits.

Polynomial regression, multiple regression, two-way ANOVA with and without interaction, split-plot design, subsampling, analysis of covariance, elementary sampling, introduction to bioassay.

**Requisites:** STAT/F&W ECOL/HORT 571

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL 577 – COMPLEXITY AND CONSERVATION OF WHITE-TAILED DEER**

3 credits.

Solve problems that arise in the conservation and management of wildlife populations requires that managers understand and evaluate human cultural, economic, and political issues in addition to ecological issues. Use case studies to understand the interdisciplinary nature of wildlife management while gaining practical hands-on experiences.

**Requisites:** Declared in Wildlife Ecology and Junior Standing

**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL 590 – INTEGRATED RESOURCE MANAGEMENT**

3 credits.

Resource management planning in state and federal land management agencies. Apply principles by working in teams to develop a management plan for a real property by inventorying resources; developing management objectives and alternatives; and analyzing their ecological, social and institutional implications.

**Requisites:** Declared in Forest Science, Junior Standing, and F&W ECOL 658

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**F&W ECOL 599 – WILDLIFE RESEARCH CAPSTONE**

3 credits.

Synthesize concepts in wildlife ecology and prepare for a wildlife research career. Develop a professional-quality research proposal for an extended project, carry out a pilot ecological field study, and design and implement a social survey questionnaire.

**Requisites:** F&W ECOL 561

**Repeatable for Credit:** No

**Last Taught:** Fall 2023

**F&W ECOL/ENTOM/PL PATH/SOIL SCI 606 – COLLOQUIUM IN ENVIRONMENTAL TOXICOLOGY**

1 credit.

Current topics in molecular and environmental toxicology and problems related to biologically active substances in the environment. Topics vary each semester. Lectures are by resident and visiting professors and other researchers.

**Requisites:** ZOOLOGY/BIOLOGY 101 or BOTANY/BIOLOGY 130 or ZOOLOGY/BIOLOGY/BOTANY 151, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2016

**F&W ECOL/AGRONOMY/ENTOM/M&ENVTOX 632 – ECOTOXICOLOGY: THE CHEMICAL PLAYERS**

1 credit.

Introduction to natural and man-made toxins/toxicants, their distribution, transport, and fate in the environment.

**Requisites:** (CHEM 341 or 343) and ((BOTANY/BIOLOGY 130 and ZOOLOGY/BIOLOGY 102) or ZOOLOGY/BIOLOGY/BOTANY 152 or BIOCORE 383); or graduate/professional standing

**Repeatable for Credit:** No

**Last Taught:** Fall 2019

**F&W ECOL/AGRONOMY/ENTOM/M&ENVTOX 633 – ECOTOXICOLOGY: IMPACTS ON INDIVIDUALS**

1 credit.

Addresses absorption, biotransformation, elimination of toxins in a wide variety of taxa (plants, invertebrates, vertebrates).

**Requisites:** M&ENVTOX/AGRONOMY/ENTOM/F&W ECOL 632

**Repeatable for Credit:** No

**Last Taught:** Fall 2019

**F&W ECOL/AGRONOMY/ENTOM/M&ENVTOX 634 – ECOTOXICOLOGY: IMPACTS ON POPULATIONS, COMMUNITIES AND ECOSYSTEMS**

1 credit.

Focuses on the impact of toxicants on populations, communities, ecosystems, and includes risk evaluation. Includes lectures, current research presentations, and discussions.

**Requisites:** M&ENVTOX/AGRONOMY/ENTOM/F&W ECOL 633 or declared in Molecular and Environmental Toxicology, PhD program

**Repeatable for Credit:** No

**Last Taught:** Fall 2019

**F&W ECOL/BOTANY/ENVIR ST/ZOOLOGY 651 – CONSERVATION BIOLOGY**

3 credits.

Application of ecological principles and human dimensions to the conservation of biological diversity. Topics: biodiversity science; conservation planning; population ecology; habitat loss, species exploitation, invasive species, pollution; human attitudes and activities as they affect the biosphere; approaches to monitoring interventions.

**Requisites:** Satisfied Quantitative Reasoning (QR) A requirement and ZOOLOGY/BOTANY 450, F&W ECOL/BOTANY 455, ZOOLOGY/BOTANY/F&W ECOL 460, or graduate/professional standing

**Course Designation:** Gen Ed - Quantitative Reasoning Part B Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL/A A E 652 – DECISION METHODS FOR NATURAL RESOURCE MANAGERS**

3 credits.

Applications of quantitative methods, including optimization and simulation, to the management of natural resources, especially forests.

**Requisites:** MATH 112, 114, or 171 or placement into MATH 211 or 221

**Course Designation:** Breadth - Social Science

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2024

**F&W ECOL 655 – ANIMAL POPULATION DYNAMICS**

3 credits.

Fluctuations of animal populations: techniques of study, documentation, controls.

**Requisites:** (F&W ECOL 318 or ZOOLOGY/BOTANY/F&W ECOL 460) and (MATH 112, 114, 171 or placement into MATH 221), or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2024



**F&W ECOL 658 – FOREST RESOURCES PRACTICUM**

3 credits.

Field training and experience; exposure to forestry operations, equipment, procedures, and management problems.

**Requisites:** None**Repeatable for Credit:** No**Last Taught:** Summer 2023**F&W ECOL/ZOOLOGY 660 – CLIMATE CHANGE ECOLOGY**

3 credits.

The evidence that the Earth's climate is changing at unprecedented rates is now overwhelming. Environmental tipping points are being crossed and many species are adapting or failing to adapt. Climate change poses a significant problem for conserving and managing wildlife and their habitats. Climate change and its ecological impacts will be discussed and analyzed.

**Requisites:** (Declared in Forest Science or Wildlife Ecology and Junior standing), ZOOLOGY/BOTANY/F&W ECOL 460, or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2023**F&W ECOL/BOTANY/ZOOLOGY 672 – HISTORICAL ECOLOGY**

2 credits.

Study the importance of past events for current ecosystems. Emphasizes concepts and applications.

**Requisites:** Senior standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL 675 – PROFESSIONAL DEVELOPMENT IN FOREST & WILDLIFE ECOLOGY**

1 credit.

Provides opportunities for additional training in professional development skills relevant to careers in natural resources.

**Requisites:** None**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2023**F&W ECOL 681 – SENIOR HONORS THESIS**

2-4 credits.

Individual study for undergraduate students in an Honors program completing a thesis in the area of Forest and Wildlife Ecology, as arranged with a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Honors - Honors Only Courses (H)**Repeatable for Credit:** No**Last Taught:** Fall 2023**F&W ECOL 682 – SENIOR HONORS THESIS**

2-4 credits.

Second semester of individual study for undergraduate students in an Honors program completing a thesis in the area of Forest and Wildlife Ecology, as arranged with a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Honors - Honors Only Courses (H)**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL 691 – SENIOR THESIS**

2-4 credits.

Independent research for Honors students completing a thesis in the areas of Forest Science or Wildlife Ecology, under the guidance of a faculty member.

**Requisites:** Consent of instructor**Repeatable for Credit:** No**Last Taught:** Spring 2023**F&W ECOL 692 – SENIOR THESIS**

2-4 credits.

Independent research for Honors students completing a thesis in the areas of Forest Science or Wildlife Ecology, under the guidance of a faculty member.

**Requisites:** Consent of instructor**Repeatable for Credit:** No**Last Taught:** Spring 2022**F&W ECOL 699 – SPECIAL PROBLEMS**

1-4 credits.

Individual advanced work in an area of Forest and Wildlife Ecology under the direct guidance of a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024**F&W ECOL/ENTOM 711 – MULTIVARIATE ANALYSIS OF ECOLOGICAL AND COMMUNITY DATA**

2 credits.

Examines common methods of multivariate data analysis in ecology and environmental science. Covers methods for the analysis of complex, multidimensional datasets that are collected in the study of plant, invertebrate, fish, and bird communities. Addresses the concurrent analysis of the environmental factors that may drive community distributions.

Provides the basis for predictive modeling of distributions across landscapes. General methods covered include ordination (PCA, DCA, NMDS, CCA), clustering (or classification), and other comparative analyses of data matrices (ANOSIM, Mantel tests). Includes an applied, "hands-on" approach on how to use these tools, and the circumstances under which their uses are either appropriate or inappropriate.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2024

**F&W ECOL 799 – PRACTICUM IN FORESTRY AND WILDLIFE ECOLOGY TEACHING**

1-3 credits.

Instructional orientation to teaching at the higher education level in the agricultural and life sciences, direct teaching experience under faculty supervision, experience in testing and evaluation of students, and the analysis of teaching performance.

**Requisites:** Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2022**F&W ECOL 875 – SPECIAL TOPICS**

1-4 credits.

Specialized subject matter of current interest to graduate students.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2023**F&W ECOL/BOTANY/ZOOLOGY 879 – ADVANCED LANDSCAPE ECOLOGY**

3 credits.

Emphasizes spatial patterning (its development and importance for ecological processes) and often focuses on large regions. Learn concepts, methods, and applications of landscape ecology.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2024**F&W ECOL/AGRONOMY/ATM OCN/BOTANY/ENTOM/ENVIR ST/ GEOG/ZOOLOGY 953 – INTRODUCTION TO ECOLOGY RESEARCH AT UW-MADISON**

1-2 credits.

Introduces new graduate students to the diversity of ecologists across the UW-Madison campus. Includes discussions of key topics in professional development, research presentations by faculty members, and discussions of assigned papers with senior graduate students.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2023**F&W ECOL/DS/URB R PL 955 – PRACTICAL RESEARCH DESIGN AND METHODS OF EMPIRICAL INQUIRY**

3 credits.

Provides a practical introduction to basic concepts of research question formulation, research designs and alternative methods of inquiry, implications for internal validity of the research and generalizability of the findings, operational definitions and measurement validity, reliability, utility and precision.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2022**F&W ECOL 961 – WILDLIFE SEMINAR**

1 credit.

Monthly research reports and special topics.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2016**F&W ECOL/ATM OCN/BOTANY/ENVIR ST/GEOG/GEOSCI/ ZOOLOGY 980 – EARTH SYSTEM SCIENCE SEMINAR**

1 credit.

Topics in earth system science. Emphasis on the coupling between atmospheric, oceanic and land surface systems, involving physical geochemical and biological processes, and including interactions with human systems.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024**F&W ECOL 990 – RESEARCH AND THESIS**

1-12 credits.

Independent research in preparation of a graduate thesis under supervision of a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024**F&W ECOL 999 – ADVANCED INDEPENDENT STUDY**

1-3 credits.

Independent graduate study under supervision of a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024