(WB) WILDLIFE BIOLOGY

Courses

WB 142. Conservation Biology. 3 Hours.
This course emphasizes the basic principles of conservation that are applied to utilization and management of natural resources such as soil, water, range lands, forests, wildlife, minerals, and human populations. The study of the interrelationships between living organisms and their environment is known as ecology. This course applies ecological concepts to conservation problems and policies.

WB 210. Marine Biology. 3 Hours.
Oceans cover more than 70% of the earth's surface and support all life on the planet. This course follows an ecological approach to consider the adaptations and interactions of plants and animals with their marine habitats, with particular emphasis on the ecosystems and organisms in the Gulf of Maine. Communities discussed include the open ocean, the deep-sea, subtidal and intertidal zones, and estuaries, as well as habitats found exclusively in tropical and polar regions. Prerequisite(s): BY 191 or BY 192.

WB 214. Marine Botany and Biodiversity. 3 Hours.
This course describes the diversity of marine and coastal plants, algae, and primary producers that form the foundation of ocean ecosystems. Students will explain how these primary producers contribute to productivity, habitat structure, nutrient cycling, and biodiversity across coastal and open-ocean systems. The course also introduces major groups of marine invertebrates to provide a broader foundation in marine biodiversity. Students will discuss the conservation significance of marine botanical and invertebrate biodiversity.

WB 215. Wildlife Techniques. 3 Hours.
This hands-on course introduces students to fundamental skills and techniques used by wildlife professionals to study and manage wild populations. Topics may include: wildlife identification, survey techniques, GPS navigation and spatial data collection, population estimation, habitat assessment, wildlife capture, aging and sexing, and wildlife telemetry. The course will include one or more Saturday field trips.

WB 218. Marine Vertebrates: Mammals, Seabirds, and Fishes. 3 Hours.
In this course, students examine the physiology, anatomy, and behavior of major groups of marine vertebrates, including marine mammals, seabirds, and fishes. Students will explain these groups contribute to marine ecosystems through their ecological functions and interactions and summarize methods used to study marine invertebrates. Students will also describe how human activities affect marine vertebrates and the approaches used to monitor, manage, and mitigate impacts. Prerequisite(s): BY 191 or BY 192.

WB 244. Marine Ecology and Conservation. 3 Hours.
In this course, students study the ecological structure and function of marine ecosystems across coastal and open-ocean environments. Students will explain how physical, chemical, and biological processes shape marine communities and drive patterns of productivity, trophic interactions, and species distributions. The course also examines how human activities affect marine ecosystems and introduces proposed solutions to support their protection. Prerequisite(s): WB 210.

WB 301. Population Biology. 3 Hours.
This course examines the biological principles governing population dynamics in ecological and evolutionary contexts. Students will explore models of population growth, species interactions, and their applications to real-world scenarios. Topics include demographic analysis, life history strategies, competition, predation, and conservation biology. Emphasis will be placed on quantitative tools and practical applications in population management. Prerequisite(s): BY 240.

WB 317. Oceanography: From Currents to Climate. 3 Hours.
This course introduces students to the physical, chemical, geological, and biological processes that drive ocean circulation and shape marine and coastal environments. Students will examine how these processes regulate global climate, influence the distribution and movement of marine life, and contribute to large-scale patterns of ocean variability. Students will also explore how changes in ocean conditions affect marine ecosystems and the practice of marine conservation. Prerequisite(s): WB 244.

WB 323. Dendrology and Field Botany. 3 Hours.
This course explores the biology, ecology, and identification of woody and non-woody plant species within diverse ecosystems. Students will study how anatomical and physiological characteristics of plants interact with environmental factors to influence their growth, distribution, and ecological roles. Emphasis will be placed on identifying and classifying trees, shrubs, and herbaceous plants, while considering how plant communities provide critical habitat components for wildlife. Prerequisite(s): BY 240.

WB 324. Vertebrate Biology. 3 Hours.
This course explores the biology of vertebrates, emphasizing their anatomy, physiology, evolution, and ecological roles. Students will examine the diversity of vertebrate groups, including fish, amphibians, reptiles, birds, and mammals, with a focus on their adaptations to various environments. Topics include vertebrate evolution, behavior, and conservation, highlighting the ecological and functional importance of vertebrates in ecosystems. Prerequisite(s): BY 192.

WB 405. Marine Policy and Resource Management. 3 Hours.
This course examines the structures, principles, and decision-making processes that shape marine policy and resource management. Students will analyze how governance systems guide resource management practices and how scientific information, regulatory frameworks, management priorities, and human dimensions influence policy processes. Students evaluate approaches used to sustain the marine environment and ecosystems, as well as the human communities that rely on the sea. Prerequisite(s): WB 244.

WB 425. Habitat Assessment and Management. 3 Hours.
Sustaining wildlife populations in the face of climate change and other threats requires a thorough understanding of habitat concepts and adaptive management approaches. This course examines the principles, concepts, and methods used to understand how wildlife interact with their habitat and how managers assess and implement habitat management strategies. Students will explore approaches to measuring, evaluating, and managing habitat in terrestrial and aquatic environments. Prerequisite(s): GS 101 and WB 301.

WB 440. Marine Research and Field Techniques. 3 Hours.
In this course, students learn about the research approaches and data collection tools used to investigate marine environments. Students investigate how different research tools, analytical methods, and data sources are applied to address questions in marine science. Students will construct a research plan appropriate for advanced undergraduate work. Prerequisite(s): WB 244.

WB 480. Wildlife Biology and Conservation Capstone. 3 Hours.
This course serves as the capstone for Wildlife Biology and Conservation students, allowing them to synthesize knowledge and skills gained throughout their program. Students will develop and execute an independent project aligned with wildlife biology, conservation, or related fields. Project types may include research, internships, management plans, outreach initiatives, or literature reviews. Students are expected to propose a project during the first week of the course, refine it with instructor guidance, and carry it out independently. The course culminates in a written thesis and an oral presentation to peers and faculty. Prerequisite(s): WB 425.

WB 611. Wildlife Conservation and Management. 3 Hours.
This course provides a conceptual foundation in wildlife conservation and management, emphasizing ecological theory, biodiversity conservation, and the frameworks guiding the sustainable management of wildlife populations and habitats. Students will examine the evolution of conservation thought, ecological processes, and applied case studies involving species recovery, protected areas, and policy-driven management strategies.

WB 621. Wildlife Ecology and Behavior. 3 Hours.
This course explores behavioral ecology and its application to wildlife management. Students will examine how behavioral adaptations influence species interactions, habitat selection, foraging strategies, reproductive systems, and responses to environmental change. Emphasis is placed on understanding the ecological context of behavior and applying behavioral data to conservation and management challenges such as habitat design, human—wildlife conflict, and species recovery.

WB 631. Spatial Analysis for Wildlife Management. 3 Hours.
Spatial Analysis for Wildlife Management introduces geographic information systems (GIS) and spatial analytical frameworks used to understand ecological patterns and support conservation decisions. The course emphasizes spatial thinking, landscape interpretation, and the integration of environmental and biological data to assess species distributions, habitat function, and management scenarios. Students develop applied competencies in spatial analysis, interpretation, and communication to support evidence-based decision-making in wildlife conservation and management.

WB 651. Conservation Genetics. 3 Hours.
Conservation Genetics examines the fundamental and applied genetic principles that guide contemporary wildlife conservation and management. Students will explore how genetics informs conservation strategies for threatened and endangered species, population recovery, captive breeding, reintroduction, and the maintenance of evolutionary potential. Emphasis is placed on developing analytical reasoning, interpreting genetic data in conservation contexts, and communicating findings to conservation stakeholders.

WB 681. Wildlife Population Modeling. 3 Hours.
Wildlife Population Modeling introduces quantitative methods used to analyze and forecast wildlife population dynamics to support conservation and management decisions. Students will apply population models, interpret ecological drivers of change, and communicate results to scientific and professional audiences. Prerequisite(s): WB 611.

WB 710. Landscape Ecology. 3 Hours.
Landscape Ecology explores how spatial patterns, ecological processes, and human activities interact to influence ecological dynamics and wildlife management decisions. This course emphasizes the relationships between landscape structure, habitat connectivity, disturbance regimes, and biodiversity conservation. Students will examine conceptual foundations, analytical tools, and applied case studies relevant to wildlife populations and ecosystem management to integrate spatial thinking into wildlife conservation and management. Prerequisite(s): WB 631.

WB 721. Human Dimensions of Wildlife Management. 3 Hours.
Human Dimensions of Wildlife Management explores the social, cultural, economic, and political drivers that shape wildlife conservation outcomes. This course emphasizes how values, attitudes, behaviors, governance structures, and community relationships influence management decisions across local, regional, and global contexts. Students will examine theories and applied tools used to assess public perceptions, resolve conflicts, integrate diverse knowledge systems, and improve participation in conservation processes. Prerequisite(s): WB 631.

WB 724. Research Design for Wildlife Studies. 3 Hours.
This course provides a comprehensive foundation in the design and planning of research in wildlife conservation and management. Students will develop research questions and testable hypotheses, identify suitable research designs, construct sampling strategies, identify analytical needs, and integrate ethical and policy considerations into a defensible research plan.

WB 751. Wildlife Research Methods. 3 Hours.
This applied course provides students with direct experience conducting wildlife research through structured sampling, data collection, and documentation. Building on previously developed study plans, students will implement their sampling strategy to collect wildlife data using professional research techniques, tools, and protocols. Emphasis is placed on sampling methods, data quality and reliability, ethical and legal compliance, field safety, and adaptive problem solving in real-world environments. As a practice-based capstone preparation course, students will produce a complete dataset and accompanying documentation suitable for use in later analysis, reporting, or applied management contexts. Prerequisite(s): WB 724.

WB 780. Wildlife Conservation and Management Capstone. 3 Hours.
In this capstone course, students will analyze, interpret, and present wildlife data to produce a deliverable that contributes to wildlife conservation and management practice. Emphasis is placed on selecting appropriate analytical techniques, interpreting data within ecological and management contexts, and communicating results effectively to scientific and professional audiences. Students refine their previously collected datasets, conduct advanced analyses, evaluate management implications, and synthesize findings into a comprehensive written project and presentation. Prerequisite(s): WB 751.