

Biology (BIOLOGY)

Courses

BIOLOGY 510. Plant Biodiversity. 4 Credits.

An introduction to the diversity of vascular plants, with an emphasis on flowering plants. Lectures cover both organismal and phylogenetic/evolutionary perspectives on plant systematics, including the use of genetic and genomic data for understanding plant evolution. The laboratory presents a survey of vascular plant diversity, covering structural characteristics of major plant families and the identification of seed plants of Wisconsin to the species level.

P: graduate status
Spring Even.

BIOLOGY 511. Plant Physiology. 4 Credits.

General physiology of vascular plants within the context of a plant life cycle: seed dormancy and germination, metabolism, transport systems, mineral nutrition, patterns of plant growth and development, growth regulators, reproduction and senescence.

P: gr st.
Fall Only.

BIOLOGY 512. Mycology. 4 Credits.

Broad taxonomic survey of fungi. Morphology, reproduction, physiology, genetics, evolution, and ecology. Role in nutrient cycling, plant disease, human welfare and biotechnology. Techniques in collection, identification, pure culture isolation, and nucleic acid applications.

P: gr student
Fall Odd.

BIOLOGY 520. Field Botany. 4 Credits.

Identification and natural history of plants indigenous to northeastern Wisconsin.

P: graduate status
Fall Even.

BIOLOGY 522. Environmental Microbiology. 4 Credits.

This course will focus on the diversity and role of microorganisms in diverse and complex environments, including the use and management of these organisms for the benefit of ecosystems and society.

P: graduate status
Spring.

BIOLOGY 541. Ichthyology. 4 Credits.

An examination of the biology of fishes including classification, phylogeny, functional morphology and population characteristics. Aspects of the ecology of the fishes will be studied in relation to behavior, distribution, diversity and production in freshwater environments

Spring Even.

BIOLOGY 542. Ornithology. 4 Credits.

Overview of avian biology, emphasizing adaptation and ecology. Identification of North American bird species and other avian families. Region's most interesting birding areas.

P: graduate status
Spring Even.

BIOLOGY 543. Mammalogy. 4 Credits.

Comprehensive study of mammals, including systematics, anatomy, physiology, behavior, and ecology. Laboratory studies include work with specimens from the Richter Natural History Museum.

P: graduate status
Spring Odd.

BIOLOGY 555. Entomology. 4 Credits.

Structure, function, diversity, and ecology of insects, as well as their impact on human society. Lab develops ability to identify Wisconsin insects, both in the field and by examining microscopic anatomy.

P: graduate status
Fall Odd.

BIOLOGY 557. Marine Biology. 4 Credits.

The Ocean covers about 71% of the Earth's surface and so is obviously a huge part of the functioning biosphere. Life emerged in the Ocean but since we are terrestrial beings, Ocean life remains less well known than terrestrial life. This course serves as an overview of marine biodiversity and marine ecosystems in which the concepts learned in general biology courses can be applied to marine life. We will cover the abiotic functioning of the Ocean in order to understand the unique challenges that marine organisms face, and we will focus on an understanding of the diverse array of marine organisms, how they interact ecologically, and how humans are affecting marine ecosystems worldwide.

Spring Odd.

BIOLOGY 565. Aquatic Invertebrates. 4 Credits.

An exploration of the biology, ecology and importance of freshwater invertebrates, with an emphasis on aquatic insects.

P: BIOLOGY 201 & BIOLOGY 202 with at least a C grade and BIOLOGY 203 & BIOLOGY 204 with at least a C grade
Spring Odd.

BIOLOGY 601. Fish and Wildlife Population Dynamics. 4 Credits.

The course will introduce students to principles of population ecology and how such principles relate to basic models of wildlife and fish population dynamics. This course will also give students practical experience manipulating population dynamics models using computer applications.

P: BIOLOGY 203. REC: ENV SCI 302
Spring Odd.

BIOLOGY 602. Advanced Microbiology. 4 Credits.

Detailed study of microorganisms from viruses to fungi in their environment. Study of both free-living and pathogenic organisms and their degrading abilities.

P: gr st.
Spring Even.

BIOLOGY 607. Molecular Biology. 3 Credits.

Molecular approaches to biological problems, emphasizing study of informational macro molecules. Topics include replication, control, expression, organization, and manipulation of genes; RNA processing; protein processing; transposons; oncogenes, growth factors; genetic control of development and the immune system.

P: graduate status
Spring Odd.

BIOLOGY 608. Molecular Biology Laboratory. 1 Credit.

Molecular biology of nucleic acids and the techniques that form the basis of biotechnology. Topics include electrophoresis, restriction mapping, hybridization, plasmid analysis, and DNA cloning (recombinant DNA library construction, screening, and mapping).

P: graduate status
Spring Odd.

BIOLOGY 649. Wetland Ecology. 3 Credits.

This course explores the ecology and conservation of wetlands, including biological, physical, chemical and hydrological attributes of wetland ecosystems. The curriculum will survey major wetland types in both freshwater and marine environments, the general biogeochemical dynamics of wetland ecosystems, and the ecological diversity of wetland vegetation and fauna. Field trips and in-class exercises will provide training in the identification of wetland types and features, including biological and physical characteristics of wetlands in the western Great Lakes. A field project will focus on wetland delineation and assessment of wetland quality, including analysis of restoration methods and conservation management.

P: BIOLOGY 306 or equivalent course in ecology
Spring Even.

BIOLOGY 650. Ecological Restoration. 3 Credits.

Overview of how ecological and biological processes can inform and guide restoration of degraded systems. What can the science of ecology bring to the practice of restoration? Exploration of case studies and on-the-ground field experiences.

P: BIOLOGY 306 or equivalent course in ecology
Spring Even.

BIOLOGY 669. Conservation Biology. 4 Credits.

Overview of the major issues and ecological principles underlying the field of conservation of biology, including patterns and measurement of biological diversity from genetic to community scales.

P: BIOLOGY 306 (ENV SCI 302) with at least a C grade or consent of instructor
Fall Only.

BIOLOGY 699. Travel Course. 1-6 Credits.

Travel courses are conducted to various parts of the world and are led by one or more faculty members. May be repeated to different locations.

P: cons of instr & prior trip arr & financial deposit.