ZOOGY (ZOOLOGY)

ZOOGY/BIOLOGY 101 — ANIMAL BIOLOGY
3 credits.
General biological principles. Topics include: evolution, ecology, animal behavior, cell structure and function, genetics and molecular genetics and the physiology of a variety of organ systems emphasizing function in humans.

Requisites: Not recommended for students with credit already in Zoology/Biology/BOTANY/ZOOLOGY 151 or 152
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOGY/BIOLOGY 102 — ANIMAL BIOLOGY LABORATORY
2 credits.
General concepts of animal biology at an introductory level. The general body plans and strategies used to accomplish the basic tasks of staying alive of 9 major animal groups are studied using preserved and live animals. The diversity within each group of animals is studied by integrating the body plans with the lifestyle and ecology of the animals. The evolutionary relationships between the animals is a major part of the course. Dissections of earthworm, freshwater mussel, squid, sea star, and rat also aid the study of these general principles.

Requisites: Not recommended for students with credit already in Zoology/Biology/BOTANY/ZOOLOGY 151/152
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOGY/BIOLOGY/BOTANY 151 — INTRODUCTORY BIOLOGY
5 credits.
First semester of a two semester course designed for majors in biological sciences. Topics include: cell structure and function, cellular metabolism (enzymes, respiration, photosynthesis), information flow (DNA, RNA, protein), principles of genetics and selected topics in Animal Physiology. HS chem or concurrent registration in college chemistry strongly advised.

Requisites: Not recommended for students with credit already in Zoo/Bio 101, 102 or Botany/Bio 130
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOGY/BIOLOGY/BOTANY 152 — INTRODUCTORY BIOLOGY
5 credits.
Second semester of a two semester course designed for majors in biological sciences. Continuation of 151. Topics include: selected topics in plant physiology, a survey of the five major kingdoms of organisms, speciation and evolutionary theory, and ecology at multiple levels of the biological hierarchy. Not recommended for students with credit already in Zoology/BIOLOGY/ZOOLOGY 101,102 or Botany/BIOLOGY/BOTANY 130

Requisites: Biology/Botany/ZOOLOGY/BIOLOGY/BOTANY 151.
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOGY 153 — INTRODUCTORY BIOLOGY
3 credits.
One-semester course designed for engineering majors including chemical and biological engineering. Meets with Zoology/Biology/BOTANY/BIOLOGY/ZOOLOGY 151. Engineering students who need a biology course with a lab component should enroll in Zoology/biology/BOTANY/BIOLOGY/ZOOLOGY 151. Topics include: cell structure and function, cellular metabolism (enzymes, respiration, photosynthesis), information flow (DNA, RNA, protein), principles of genetics, and selected topics in Animal Physiology. Concurrent registration in college chemistry strongly advised. Not recommended for students with credit already in Zoo/Bio 101, 102 or Botany/Bio 130.

Requisites: Declared in an Engineering program
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOGY 199 — DIRECTED STUDY
1-3 credits.
Recommended for Fr and So.

Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOGY/BOTANY/ENVIR ST 260 — INTRODUCTORY ECOLOGY
3 credits.

Requisites: Open to Freshmen.
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOGY 299 — DIRECTED STUDIES IN ZOOLOGY
1-3 credits.
Intermediate level directed study/independent research. The purpose of this course to introduce undergraduate students to research questions and, facilitate their learning in the field of biology by providing them with guidance and mentorship in a research environment.

Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOGY 300 — INVERTEBRATE BIOLOGY AND EVOLUTION
3 credits.
Provides an introduction to invertebrate diversity and biology, with emphasis on anatomy, development, and systematic relationships of the main animal phyla. Phyla are discussed in the context of major themes in animal evolution, such as the origin of tissue layers, the diversity of feeding mechanisms, the evolution of terrestrialization, patterns of diversification through time, and the conservation of transcriptional circuitry. The aim of this course is to understand animal diversity from a phylogenetic and developmental perspective.

Requisites: BIOLOGY/ZOOLOGY/BIOLOGY 101 and 102; or BIOLOGY/BOTANY/ZOOLOGY 151 and 152; or BIOCORE 381
Repeatable for Credit: No
Last Taught: Spring 2017
ZOOLOGY 301 — INVERTEBRATE BIOLOGY AND EVOLUTION LAB
2 credits.
Provides an introduction to invertebrate diversity and biology, with emphasis on anatomy, development, and systematic relationships of the main animal phyla, in parallel with the Invertebrate Biology and Evolution lecture course. Phyla are discussed in the context of major themes in animal evolution, such as the origin of tissue layers, the diversity of feeding mechanisms, the evolution of terrestrialization, patterns of diversification through time, and the conservation of transcriptional circuity. The aim of this course is to understand animal diversity from a phylogenetic and developmental perspective.
Requisites: Concurrent enrollment in ZOOLOGY 300
Repeatable for Credit: No
Last Taught: Spring 2017

ZOOLOGY/ENTOM 302 — INTRODUCTION TO ENTOMOLOGY
4 credits.
Principles including morphology and classification; a general collection of insects required of each student.
Requisites: An elem course in zoology
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY 303 — AQUATIC INVERTEBRATE BIOLOGY
3 credits.
This course focuses on the form, function, development, basic physiology and ecology of the freshwater and marine invertebrates in the context of their environment. As a lecture and lab combination students will get a chance to study live invertebrate specimens, their habitat selection, adaptation and diversity.
Requisites: ZOOLOGY/BIOLOGY 101 and ZOOLOGY/BIOLOGY 102 OR BIOLOGY/BOTANY/ZOOLOGY 151 and/or BIOLOGY/BOTANY/ZOOLOGY 152
Repeatable for Credit: No
Last Taught: Summer 2016

ZOOLOGY/ENVIR ST 315 — LIMNOLOGY-CONSERVATION OF AQUATIC RESOURCES
2 credits.
General limnology. Physical, chemical and biological characteristics and processes of lakes. Environmental problems and rehabilitation of lakes.
Requisites: Intro course in biol; intro course in chem recommended
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY 316 — LABORATORY FOR LIMNOLOGY-CONSERVATION OF AQUATIC RESOURCES
2-3 credits.
Biological, physical, and chemical characteristics and their interrelationships in Wisconsin lakes and streams.
Requisites: ENVIR ST/ZOOLOGY/ENVIR ST 315 or concurrent enrollment
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY/F&W ECOL 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
Repeatable for Credit: No
Last Taught: Spring 2015

ZOOLOGY/ENTOM/M M & I/PATH-BIO 350 — PARASITOLOGY
3 credits.
The biology of water-borne, food-borne, soil-borne and vector-borne parasites of animals including humans. Parasites are explored in the context of transmission, associated disease, diagnosis and treatment options, and environmental, cultural and socioeconomic drivers of disease epidemiology.
Requisites: BIOLOGY/ZOOLOGY/BIOLOGY 101 and 102, or BIOLOGY/BOTANY/ZOOLOGY/BIOLOGY/BOTANY 152 or ZOOLOGY 153, or BIOCORE 381
Repeatable for Credit: No
Last Taught: Spring 2017

ZOOLOGY/M M & I/PATH-BIO 351 — PARASITOLOGY LABORATORY
2 credits.
Optional laboratory component of Zoology/Med Micro/AHABS 350. Emphasis on experiments involving live animal parasites, including: trematodes, tapeworms, gapeworms, hookworm, ascarids, trichina, filaria, trypanosomes, coccidia, and malaria.
Requisites: cons reg in Zoo/MMI/AHABS 350
Repeatable for Credit: No
Last Taught: Spring 2011

ZOOLOGY/ENVIR ST/F&W ECOL 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. An intro biology course strongly recommended
Requisites: So st.
Repeatable for Credit: No
Last Taught: Spring 2017

ZOOLOGY/ENTOM 371 — MEDICAL ENTOMOLOGY
3 credits.
Arthropods of medical and veterinary importance, how they affect their hosts and transmit diseases.
Requisites: Intro course in zool or vet sci
Repeatable for Credit: No
Last Taught: Spring 2017
ZOOLOGY 400 — TOPICS IN BIOLOGY
1-3 credits.

Subject matter, credits and prerequisites vary.
Requisites: Varies
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY 405 — INTRODUCTION TO MUSEUM STUDIES IN THE NATURAL SCIENCES
2-3 credits.

Provides an overview of natural history museums, including history, field collecting, specimen preparation, collection preservation, ethics, education and employment opportunities. At the same time, it introduces students to the natural science museums and library collections located on the UW campus.
Requisites: Open to Jr, St, Grads, Adv special stdts
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY/ANTHRO/BOTANY 410 — EVOLUTIONARY BIOLOGY
3 credits.

Evolutionary biology, emphasizing how modern scientists study evolution. Topics include: nature and mechanisms of microevolution, macroevolution, adaptation, speciation, systematics and taxonomy; quantitative genetics and measurement of natural selection; phylogenetic analyses of behavior, physiology, morphology, biochemistry; current controversies in evolution.
Requisites: An elem course in zool or botany So st; Genetics/Botany/Zool 160 or 466 recommended
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY 425 — BEHAVIORAL ECOLOGY
3 credits.

Designed to explore how organisms make decisions and how these decisions affect their survival. These decisions are key aspects of an organism’s life, e.g. foraging behavior, mating behavior, anti-predator behavior, and habitat selection. The course approaches these questions with the perspective that understanding the proximal and ultimate basis of behavior requires understanding the ecological and evolutionary context of behavior.
Requisites: Enrollment limited to students that have taken one of the following courses: Biology/Botany/ZOOLOGY/BIOLOGY/BOTANY 151 AND 152; or Biology/ZOOLOGY/BIOLOGY 101 AND BOTANY/BIOLOGY 130; or Biology/Biocore 301 AND 302.
Repeatable for Credit: No
Last Taught: Spring 2016

ZOOLOGY 430 — COMPARATIVE ANATOMY OF VERTEBRATES
5 credits.

Basic vertebrate anatomical systems and a consideration of variations, using functional embryological and evolutionary approaches. Lab dissection and study of representative vertebrate material. Two evening practical exams.
Requisites: Intro crse in zool So st
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY/BOTANY 450 — MIDWESTERN ECOLOGICAL ISSUES: A CASE STUDY APPROACH
2 credits.

This web course explores how ecological principles can be used to address contemporary environmental issues such as water quality, invasive species, and population growth. Emphasis on midwestern issues, practical approaches, the role of history, and geographic context.
Requisites: Intro biology crse, interest in solving problems
Repeatable for Credit: No
Last Taught: Summer 2017

ZOOLOGY/BOTANY 459 — ECOLOGICAL TECHNIQUES FOR FIELD MONITORING
1-2 credits.

Field techniques to inventory and census plant and animal species and ecological processes and how to assemble these into useful databases. Emphasis on ‘keystone’ and invading exotic species that strongly affect community dynamics. Aimed at science teachers interested in participating in a monitoring network. e.g. BOTANY/ZOOLOGY 460, 460), interest in monitoring, cons inst
Requisites: A crse in ecology (e.
Repeatable for Credit: No
Last Taught: Summer 2006

ZOOLOGY/BOTANY/F&W ECOL 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; lecture and lab.
Requisites: Intro course in botany zoology, or Bot/Zoo 151-152, or Biocore 301 or 333; for biol sci majors only
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY 470 — INTRODUCTION TO ANIMAL DEVELOPMENT
3 credits.

This course introduces students to the major features and mechanisms of early embryonic development in animals, including (1) the major stages of early development, (2) how form arises in the embryo (morphogenesis), (3) how differences arise between cells in the embryo, and (4) how specific genes control these processes.
Requisites: Zoology 101 or Zoology 151/152
Repeatable for Credit: No
Last Taught: Spring 2017

ZOOLOGY/BOTANY/ENTOM 473 — PLANT-INSECT INTERACTIONS
3 credits.

Multiple ways in which arthropods exploit plants, plant traits that deter or augment insects, environmental mediation of these interactions, effects on population dynamics, community ecology and co-evolution, and implications to natural resource management, environmental quality, and sustainable development.
Requisites: One of the following: Bot/For/Zoo 460, Ent/Pl Path/For 500, PI Path/Bot 505, Forestry 550, or ENTOM 342
Repeatable for Credit: No
Last Taught: Spring 2016
ZOOLOGY 500 — UNDERGRADUATE NEUROBIOLOGY SEMINAR  
1 credit.

Neurobiology seminar for undergraduates. A faculty lead lecture/discussion about a wide range of topics in neurobiology research from molecular neurobiology to integrative systems. Topics discussed by invited UW-Madison faculty researchers in any given semester can include: ion channels and synaptic plasticity, neural development, sensory and cognitive physiology, biological basis of behavioral disorders and cognitive decline.  
Requisites: Declared in Neurobiology or Biology with the neurobiology option and ZOOLOGY/PSYCH/NTP 523 or concurrent enrollment  
Repeatable for Credit: Yes, unlimited number of completions  
Last Taught: Fall 2017

ZOOLOGY 504 — MODELING ANIMAL LANDSCAPES  
3-5 credits.

This course uses computer and GIS-based modeling to explore how climate, topography, vegetation type, and key animal properties all interact to specify from first principles the energetics and activity constraints of animals on any landscape. It links individual, population and community variables at landscape scales.

Requisites: Jr st  
Course Designation: Honors - Accelerated Honors (!)  
Repeatable for Credit: No  
Last Taught: Spring 2016

ZOOLOGY/ENVIR ST 510 — ECOLOGY OF FISHES  
3 credits.

Interactions of fishes with their physical, chemical, and biotic environment; physiological ecology, community ecology and fisheries sciences. Lake Mendota perch fishery and Shedd Aquarium field trips.

Requisites: 1 yr biol chem Jr st  
Repeatable for Credit: No  
Last Taught: Spring 2017

ZOOLOGY/ENVIR ST 511 — ECOLOGY OF FISHES LAB  
2 credits.

Anatomy and taxonomy of Wisconsin fishes and projects in fish ecology.

Requisites: Zoo 511 - needs Zoo 510 or concurrent enrollment  
Repeatable for Credit: No  
Last Taught: Spring 2017

ZOOLOGY/AN SCI/F&W ECOL 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: BIOLOGY/ZOOLOGY/BIOLOGY 101 and 102, BIOLOGY/BOTANY/ZOOLOGY/BIOLOGY/BOTANY 151 and 152 or BIOCORE 381 and 382  
Repeatable for Credit: No  
Last Taught: Spring 2017

ZOOLOGY/AN SCI/F&W ECOL 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: BIOLOGY/ZOOLOGY/BIOLOGY 101 and 102, BIOLOGY/BOTANY/ZOOLOGY/BIOLOGY/BOTANY 151 and 152 or BIOCORE 381 and 382  
Repeatable for Credit: No  
Last Taught: Spring 2017

ZOOLOGY/PSYCH 523 — NEUROBIOLOGY  
3 credits.

Basic mechanisms in cellular neurophysiology: electrophysiology and chemistry of nerve signals, mechanisms in integration, simple nervous pathways and their behavioral correlates. We highly recommend entering students have a strong background in the principles of basic electricity (charge, voltage, current, resistance, capacitance), as provided by PHYSICS 104, 202, 208, or a strong high school physics program.

Requisites: (ZOOLOGY/BIOLOGY/BOTANY/BIOLOGY/ZOOLOGY 151 or ZOOLOGY/BIOLOGY 101 or BIOCORE 485) and (CHEM 103/104 or CHEM 109)  
Repeatable for Credit: No  
Last Taught: Fall 2017

ZOOLOGY/NT/PHYS/PSYCH 524 — NEUROBIOLOGY II: AN INTRODUCTION TO THE BRAIN AND BEHAVIOR  
3 credits.

An introduction to studies of the human nervous system covering neuroanatomy of the brain, neuronal coding, sensory and motor systems, biological rhythms, arousal, attention, physiological regulation, reward, aversion, learning and memory.

Requisites: Zool 523, equiv crse in physiol, or cons inst  
Repeatable for Credit: No  
Last Taught: Spring 2016

ZOOLOGY 525 — TROPICAL HERPETOLOGY  
1 credit.

This course introduces students to perhaps the least known but most threatened groups of tropical vertebrates, the amphibians and reptiles ("herps"). The course consists of a series of eight two hours lectures that introduce students to the range of tropical habitats and the amphibians and reptiles to be found there, using the current extinction crisis among these animals as an underlying theme.

Requisites: ZOOLOGY/BIOLOGY 101 and ZOOLOGY/BIOLOGY 102 or BIOLOGY/BOTANY/ZOOLOGY/BOTANY 152 or equivalent  
Repeatable for Credit: No  
Last Taught: Spring 2016

ZOOLOGY/ENTOM 530 — INSECT BEHAVIOR  
3 credits.

Comparative behavior of insects. Function and evolution.

Requisites: ENTOM/ZOOLOGY 302 or equiv; Zool 330 or cons inst  
Repeatable for Credit: No  
Last Taught: Spring 2009
ZOOLOGY 535 — ECOSYSTEM ANALYSIS
3 credits.

Introduction to current quantitative approaches for analyzing ecosystems. Includes hand-on experience with ecosystem modeling and parameter estimation.
Requisites: 1 yr calculus a majors course in ecology; or Grad st
Repeatable for Credit: No
Last Taught: Spring 2010

ZOOLOGY/ENTOM 540 — THEORETICAL ECOLOGY
3 credits.

Introduction to theoretical ecology, including hands-on experience in computer modeling. For students with ecology background; does not require a strong math background. 3-credit option requires project and consent of instructor.
Requisites: 1 year calculus, Zoo/Bot 260, Zoo/Bot/For 460 or equiv. Jr st
Repeatable for Credit: No
Last Taught: Fall 2016

ZOOLOGY/GEOSCI 541 — PALEOBIOLOGY
3 credits.

The evolutionary process as interpreted from the fossil record. Topics include: the study of form; tempo and mode of evolution; levels and mechanisms of evolutionary change; extinction in the fossil record; trends and patterns in the history of life; macroevolution.
Requisites: GEOSCI 304 or 540 or course in introductory biology
Repeatable for Credit: No
Last Taught: Spring 2016

ZOOLOGY/GEOSCI 542 — INVERTEBRATE PALEONTOLOGY
3 credits.

The evolutionary history, morphology, and ecology of fossil invertebrates. Labs emphasize fossil identification and recognition of basic morphological features.
Requisites: GEOSCI 107, 110, 204, or a course in introductory biology
Repeatable for Credit: No
Last Taught: Fall 2014

ZOOLOGY/PSYCH 550 — ANIMAL COMMUNICATION AND THE ORIGINS OF LANGUAGE
3 credits.

Signals, contexts, and mechanism of social communication in animals. Speech and non-verbal communication in human beings and possible arguments for the evolution of speech and language.
Requisites: PSYCH 449 or 450 or Zoology 531 or 532
Repeatable for Credit: No
Last Taught: Spring 2012

ZOOLOGY 555 — LABORATORY IN DEVELOPMENTAL BIOLOGY
3 credits.

Developmental anatomy and laboratory manipulations of representative animal embryos used extensively for analysis of developmental phenomena (sea urchins, amphibia, annelids, molluscs, ascidians, insects, chicks, fish, mice).
Requisites: ZOOLOGY 470 or PSYCH/ZOOLOGY/PSYCH 523 or ZOOLOGY 625 or BIOCORE 587 (or NTP 523 prior to Fall 2017)
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY/GENETICS/MD GENET 562 — HUMAN CYTOGENETICS
2 credits.

Fundamental principles of cytogenetics and special problems of human cytogenetics for biology and medical students.
Requisites: GENETICS 466, 468, BIOCORE 587, or BMOLCHEM/MD GENET 721
Repeatable for Credit: No
Last Taught: Spring 2017

ZOOLOGY/F&W ECOL/LAND ARC 565 — PRINCIPLES OF LANDSCAPE ECOLOGY
2 credits.

Landscape ecology emphasizes the importance of spatial patterns at broad scales. Concepts and applications are emphasized, especially for seniors and graduate students in applied natural resource fields. The course is also a prerequisite for Zoology/Forest Ecology 665, Advanced Landscape Ecology. Lecture format with discussion.
Requisites: Botany/Zoology/Forest 460, or Forest 550, a crse in stats, cons inst
Repeatable for Credit: No
Last Taught: Spring 2017

ZOOLOGY 570 — CELL BIOLOGY
3 credits.

Comprehensive course on modern aspects of cell biology.
Requisites: One yr college biol, one yr chem
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY 603 — ENDOCRINOLOGY
3-4 credits.

An introduction to the role that hormones play in a variety of physiological processes and behaviors from a molecular to a systems level. Topics include hormonal involvement in growth, development, homeostasis, reproduction, and behavior, with an emphasis on vertebrate systems.
Requisites: Background in biochem cell-molecular biol recommended, but not required
Repeatable for Credit: No
Last Taught: Fall 2016
ZOOLOGY 604 — COMPUTER-BASED GENE AND DISEASE/DISORDER RESEARCH LAB
2 credits.
In recent years, a large number of open access biological and biomedical databases have become available for on-line, computer based research. Among these databases are the National Center for Biotechnology Information, Allen Brain Atlas, NIH DAVID, Genemania, ToppClusterPhenopedia, GeneNetwork, GWAS Central, and Broad Institute’s MSigDB. Within these and other sites is a wealth of information regarding genes, gene expression, gene pathways, behavioral characteristics, and disorders or diseases, such as autism, arthritis, bipolar disorder, and schizophrenia. Learning to navigate the various sites to take advantage of the information and push scientific discovery forward is a valuable skill to develop for any student interested in a career in science or medicine. In the early part of this laboratory course, students will be guided through a range of databases and shown how to extract information to develop new ideas. A key part of the course is that each student will pick a disease or disorder of interest (e.g., autism, arthritis, epilepsy, schizophrenia) and use multiple databases to develop new ideas on which genes may be playing important, but previously underappreciated or unknown roles.
Requisites: BIOLOGY/ZOOLOGY/BIOLOGY 101 OR BIOLOGY/BOTANY/ZOOLOGY/BIOLOGY/BOTANY 151 OR BIOCORE 381
Repeatability for Credit: No
Last Taught: Spring 2017

ZOOLOGY 611 — COMPARATIVE AND EVOLUTIONARY PHYSIOLOGY
3 credits.
Course examines general physiological principles by comparing taxa from diverse evolutionary histories and ecological adaptations. Examples include adaptation to environments differing in salinity, temperature, altitude, pressure, or pollution, and examines how nervous and endocrine systems evolved to support the adaptations.
Requisites: Elem crse in Botany or Zoology
Repeatability for Credit: No
Last Taught: Spring 2015

ZOOLOGY 612 — COMPARATIVE PHYSIOLOGY LABORATORY
2 credits.
Recommended for majors.
Requisites: Zoo 612 - needs Zoo 611 or concurrent enrollment
Repeatability for Credit: No
Last Taught: Spring 2015

ZOOLOGY/NEURODPT/NTP/PHYSIOL 616 — LAB COURSE IN NEUROBIOLOGY AND BEHAVIOR
4 credits.
Students will do three independent experimental modules exploring neurophysiology and behavior, each taking 4-5 weeks. Students will work in groups of 2 or 3 and will learn techniques and then develop their own short investigations into each of three separate areas of neurobiology. There will be continual interaction between students and faculty.
Requisites: ZOOLOGY/NTP/PSYCH/ZOOLOGY 523 and NTP/PHYSIO/PSYCH/ZOOLOGY/NTP/PHYSIO/PSYCH 524 or NTP/PHMCOL-M/PHYSIO/NTP/PHMCOL-M 610 and ANATOMY/NTP/PHMCOL-M/PHYSIO/PSYCH/ANATOMY/NTP/PHMCOL-M/PHYSIO 611
Repeatability for Credit: No
Last Taught: Spring 2017

ZOOLOGY/ANTHRO/NTP/PSYCH 619 — BIOLOGY OF MIND
3 credits.
Requisites: Jr st; college level elem crse in biology or psych
Repeatability for Credit: No
Last Taught: Fall 2012

ZOOLOGY/NTP 620 — NEUROETHOLOGY SEMINAR
2 credits.
A group discussion of primary literature articles relevant to the neural basis of behavior with a purpose to understand the neural basis of behavior in animals, to learn to read papers critically and improve discussion leading skills. Background in neuroscience strongly recommended
Requisites: Introductory biology
Repeatability for Credit: Yes, unlimited number of completions
Last Taught: Fall 2012

ZOOLOGY/ENTHRO/GENETICS 624 — MOLECULAR ECOLOGY
3 credits.
Basic principles of molecular ecology. Lecture topics include population genetics, molecular phylogenetics, rates and patterns of evolution, genome evolution, and molecular ecology.
Requisites: BOTANY/GENETICS/ZOOLOGY 466, GENETICS 467 or BIOCORE 383 or graduate student standing
Repeatability for Credit: No
Last Taught: Spring 2017

ZOOLOGY 625 — DEVELOPMENT OF THE NERVOUS SYSTEM
2 credits.
Survey of the principles guiding neuronal development. Course will cover descriptive and experimental analyses of developmental mechanisms underlying the formation of both vertebrate and invertebrate nervous systems.
Requisites: One intermed level crse in biol; background in development neurobiol recommended
Repeatability for Credit: No
Last Taught: Spring 2017

ZOOLOGY/BIOCHEM/PHMCOL-M 630 — CELLULAR SIGNAL TRANSDUCTION MECHANISMS
3 credits.
Lecture-discussion. Comprehensive coverage of human hormones, growth factors and other mediators; emphasis on hormone action and biosynthesis, cell biology of hormone-producing cells.
Requisites: Intro biochem (BIOCHEM 501 or 507 508) cell biology (Biocore 303 or Zool 570 or Path750) or cons inst
Repeatability for Credit: No
Last Taught: Fall 2017
ZOOLOGY/BOTANY/GENETICS 645 — MODELING IN POPULATION GENETICS AND EVOLUTION
3 credits.

Introduction to mathematical techniques and approaches for predicting evolutionary change within populations. Concentrates on classic population genetic models and results, including selection on one and several loci; mutation; non-random mating; drift. Evaluation based on periodic problem sets and independent projects.

Requisites: Intro evolution, intro genetics, calculus, or cons inst
Repeatable for Credit: No
Last Taught: Fall 2010

ZOOLOGY/BOTANY/ENVIR ST/F&W ECOL 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: An ecology crse (eg, Botany/ZOOLOGY/BOTANY/F&W ECOL 460)
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY/F&W ECOL 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. In this class, students will be introduced to climate change and its ecological impacts through engaging class discussions, online climate exercises, and group projects aimed at developing climate change adaptation plans.

Requisites: Junior or Senior standing as a Forest Science or Wildlife Ecology major; graduate student standing; FW Ecol/Zoology/BOTANY/F&W ECOL/ZOOLOGY 460; or consent of instructor
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY/BOTANY/F&W ECOL 672 — HISTORICAL ECOLOGY
2 credits.

Historical Ecology is an area of ecology that considers the importance of past events for current ecosystems. Concepts and applications are emphasized. Multidisciplinary emphasis, for seniors and graduate students in biological sciences, social studies, and humanities. Discussion format.

Requisites: Graduate or senior standing and consent of instructor
Repeatable for Credit: No
Last Taught: Spring 2016

ZOOLOGY/NEURODPT/PSYCH 674 — BEHAVIORAL NEUROENDOCRINOLOGY SEMINAR
2 credits.

Behavior results from a complex interplay among hormones, the brain, and environmental factors. Behaviors and their underlying neural substrates have evolved in response to specific environmental conditions, resulting in vast species diversity in behavioral and neuroendocrine solutions to environmental problems. This seminar is designed to explore the primary literature on the neuroendocrine underpinnings of behavior spanning from feeding to sex differences in complex social behaviors. A range of taxonomic groups will be discussed, including (but not limited to) mammals, birds, and fish. A background in neuroscience and/or endocrinology is strongly recommended.

Requisites: BIOLOGY/ZOOLOGY/BIOLOGY 101 or BIOLOGY/BOTANY/ZOOLOGY/BIOLOGY/BOTANY 151 or BIOCORE 383
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY 677 — INTERNSHIP IN ECOLOGY
2 credits.

A seminar course to provide support and structure for undergraduates interested in gaining hands-on experience working as a volunteer with local environmental, ecological or conservation groups.

Requisites: Recommended for Jr Sr; graded on a letter basis
Repeatable for Credit: No
Last Taught: Spring 2009

ZOOLOGY 681 — SENIOR HONORS THESIS
1-6 credits.

Independent research. Topic selected, if possible, before the close of the junior year.

Requisites: Senior standing
Course Designation: Honors - Honors Only Courses (H)
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY 682 — SENIOR HONORS THESIS
1-4 credits.

Independent research. Topic selected, if possible, before the close of the junior year.

Requisites: Senior standing
Course Designation: Honors - Honors Only Courses (H)
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY 691 — SENIOR THESIS
1-6 credits.

Independent research. Topic selected, if possible, before the close of the junior year.

Requisites: Senior standing
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017
ZOOLOGY 692 — SENIOR THESIS
1-4 credits.

Independent research. Topic selected, if possible, before the close of the junior year.
Requisites: Senior standing
Repeatable for Credit: No
Last Taught: Spring 2016

ZOOLOGY 698 — DIRECTED STUDY
1-6 credits.

Selected research projects. Recommended for Jr and Sr.
Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY/BOTANY 725 — ECOSYSTEM CONCEPTS
3 credits.

Scope and objectives of ecosystem ecology; roles of theory, long-term studies, comparative studies, and large-scale experiments; scaling problems; ecosystem services and ecological economics; adaptive ecosystem assessment and management. Experience in modeling, programming, or stats
Requisites: Grad st.
Repeatable for Credit: No
Last Taught: Spring 2017

ZOOLOGY/ATM OCN/ENVIR ST/GEOSCI 750 — PROBLEMS IN OCEANOGRAPHY
3 credits.

Introduction to techniques used in the study of the biology, chemistry, geology, and physics of the marine environment.
Requisites: Graduate or professional standing
Repeatable for Credit: No
Last Taught: Spring 2016

ZOOLOGY/ANATOMY/NTP 765 — DEVELOPMENTAL NEUROSCIENCE
3 credits.

Analysis of neural development with emphasis on experimental approaches. Combination of lectures and discussions of primary literature. Topics include neural induction, patterning, mechanisms of axon guidance, neural crest cell migration and differentiation, cortical development, and synapse formation and elimination.
Requisites: Grad st in biol sci; undergrads with cons inst
Repeatable for Credit: No
Last Taught: Spring 2016

ZOOLOGY 799 — INDEPENDENT STUDY
1-6 credits.

Advanced zoology, project related; not covered in regular courses.
Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2011

ZOOLOGY/BOTANY/ENTOM/GENETICS 820 — FOUNDATIONS OF EVOLUTION
2 credits.

Through reading and analysis of the primary literature, this course will explore some of the most important themes and debates that have permeated evolutionary biology over the last 50 years. Students will read key papers related to each controversial topic, will debate the pros and cons of competing viewpoints, and will reflect on the relevance of the issues to contemporary evolutionary biology. Students will also write a paper that analyzes one topic in more detail. This course is intended for graduate students who plan to specialize in evolutionary biology, broadly construed.
Requisites: Graduate or professional standing
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY/BOTANY/F&W ECOL 879 — ADVANCED LANDSCAPE ECOLOGY
3 credits.

Landscape ecology emphasizes spatial patterning—its development and importance for ecological processes—and often focuses on large regions. Concepts, methods, and applications of landscape ecology will be learned through lectures, readings, exercises in quantitative approaches, and an independent project.
Requisites: Graduate or professional standing
Repeatable for Credit: No
Last Taught: Spring 2016
ZOOLOGY/AGRONOMY/ATM OCN/BOTANY/ENTOM/ENVIR ST/F&W ECOL/GEOG 953 — INTRODUCTION TO ECOLOGY RESEARCH AT UW-MADISON
1-2 credits.

This seminar course will introduce new graduate students to the diversity of ecologists across the UW-Madison campus. Course meetings will include discussions of key topics in professional development, research presentations by faculty members, and discussions of assigned papers with senior graduate students.

Requisites: Graduate or professional standing
Repeatable for Credit: No
Last Taught: Fall 2017

ZOOLOGY/AN SCI/OBS&GYN 954 — SEMINAR IN ENDOCRINOLOGY-REPRODUCTIVE PHYSIOLOGY
1 credit.

Requisites: Graduate or professional standing
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY 955 — SEMINAR-LIMNOLOGY
1 credit.

Sections in various fields of zoological research.

Requisites: Graduate or professional standing
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY 956 — SEMINAR-ECOLOGY
1 credit.

Sections in various fields of zoological research.

Requisites: Graduate or professional standing
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY 957 — SEMINAR-EVOLUTION
1 credit.

Sections in various fields of zoological research.

Requisites: Graduate or professional standing
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY 958 — SEMINAR-BIOPHYSICAL AND PHYSIOLOGICAL ECOLOGY
1 credit.

Sections in various fields of zoological research.

Requisites: Graduate or professional standing
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2017

ZOOLOGY 960 — SEMINAR IN CELLULAR BIOLOGY
1 credit.

Sections in various fields of zoological research.

Requisites: Graduate or professional standing
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY 962 — SEMINAR-ETHOLOGY
1 credit.

Sections in various fields of zoological research.

Requisites: Graduate written cons inst
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

ZOOLOGY/ATM OCN/BOTANY/ENVIR ST/F&W ECOL/GEOG/GEOSCI 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 or professional standing
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2016

ZOOLOGY 990 — RESEARCH
1-9 credits.

Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017