

ZOOLOGY (ZOOL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ZOOL 400 - Professional Perspectives in Zoology

Credits: 1

Presentations by departmental faculty provide an informal overview of various zoological topics and professional opportunities. The course acquaints students with faculty, provides information on departmental research projects, and facilitates early research involvement for students. Required for all first-year zoology majors. (Fall only). Cr/F.

ZOOL 401 - Human Biology

Credits: 0 or 4

How does the human body function in the face of constant flux In this introductory biology course you will explore the molecules, cells, and organ systems that keep you healthy through the multidisciplinary lenses of chemistry, genetics, and homeostasis. Hands-on experimentation allows you to investigate common health-related questions such as the effects of caffeine on reaction time and the effects of handwashing on bacterial growth and transmission. Cannot be taken for credit after BMS 507 and BMS 508. Special Fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course

Equivalent(s): ZOOL 507, ZOOL 508

ZOOL 406 - Evolution of Human Behavior

Credits: 4

Have you ever wondered why women and men often have different criteria when looking for sexual partners? Why do we feel compelled to help people in some situations, but not others? This course explores the evolutionary effects on our most basic impulses, abilities, and failings, and illuminates the social and ecological pressures that made us who we are. Fair warning: this course may forever change how you think about your friends, your dates, and yourself!

Attributes: Biological Science(Discovery)

ZOOL 406H - Honors/Evolution of Human Behavior

Credits: 4

Have you ever wondered why women and men often have different criteria when looking for sexual partners? Why do we feel compelled to help people in some situations, but not others? This course explores the evolutionary effects on our most basic impulses, abilities, and failings, and illuminates the social and ecological pressures that made us who we are. Fair warning: this course may forever change how you think about your friends, your dates, and yourself!

Attributes: Biological Science(Discovery); Honors course

ZOOL 518 - Comparative Morphology and Biology of Vertebrates

Credits: 0 or 4

Why are vertebrates so successful on Earth? In this hands-on comparative biology course you will systematically examine the evolutionary history of form and function by exploring key adaptations that allowed vertebrates to diversify and thrive in the aquatic, terrestrial, and arboreal habitats they occupy today. In lab you will hone your dissection skills as you track ancestral and derived characteristics in 5 representative species on the vertebrate tree of life. Prereq: BIOL 411 and BIOL 412 or equivalent. Special fee. Lab.

ZOOL 529 - Developmental Biology

Credits: 0 or 4

Developmental biology explores how organisms construct themselves in each generation, and how those processes interact with ecological and evolutionary forces. The course examines development in various phyla, with an overarching focus on the design and interpretation of experiments using both classical and modern techniques. Labs include student-designed experiments and observation of development in several species of vertebrate embryos. Special fee. Lab. Prereq: BIOL 411 & BIOL 412, or equivalent.

Equivalent(s): ZOOL 629

ZOOL 542 - Ornithology

Credits: 0 or 4

Identification and biology of birds, especially those of northeastern United States. Involves field trips, laboratory work, and lectures. Prereq: one semester of biology. (Spring semester only.)

ZOOL 555 - Introduction to Entomology

Credits: 4

This course is about insects, the animal taxon that represents 50% of all life forms on Earth. During this course students will explore this incredible diversity by studying insects from inside out and learning about major evolutionary events in the last 500 million years that shaped this incredible diversity. This course will also highlight the beneficial and detrimental roles insects play in human society: students will gain insights into medical and veterinary entomology, coastal entomology, principles of sustainable pest management and insect conservation. Throughout the course, students will broadly apply online tools for insect identification and will be exposed to community driven nature conservation and monitoring efforts using online applications, such as iNaturalist and bugguide. Prereq: BIOL 412.

ZOOL 600 - Field Experience

Credits: 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Prereq: permission. Cr/F.

Repeat Rule: May be repeated for a maximum of 8 credits.

ZOOL 610 - Principles of Aquaculture

Credits: 4

Introduces the culture practices employed for production of aquatic organisms. Topics include ecological and environmental considerations, selective breeding, nutrition, diseases, processing, and marketing. Emphasis on finfish. Prereq: BIOL 411 and BIOL 412 or equivalent.

ZOOL 613 - Animal Behavior

Credits: 5

In this course we will first investigate the mechanisms of behavior--how do animals behave the way they do? We'll then spend the bulk of the semester exploring the ecology and evolution of behavior--why do animals behave the way they do? In lab, we will use hands-on activities to complement material from class, and you'll gain first-hand research experience when you design and conduct your own animal behavior study. Special fee. Lab. Prereq: BIOL 412 or equivalent.

Attributes: Writing Intensive Course

Equivalent(s): ZOOL 713

ZOOL 625 - Principles of Animal Physiology**Credits:** 3

Introduces the principles of animal function. The major systems (digestion, metabolism, respiration, circulation, osmotic and ionic regulation, nerve-muscle function, endocrine control) are covered with emphasis on functional mechanisms at the cell and tissue levels. Prereq: one year of introductory biology is required.

Equivalent(s): ANSC 627, ANSC 717, ZOOL 519, ZOOL 627**ZOOL 626 - Animal Physiology Laboratory****Credits:** 2

Basic training in the measurement of function in animals, data analysis and expression, and the development of scientific communication skills. Special fee. Writing intensive.

Co-requisite: ZOOL 625**Attributes:** Writing Intensive Course**ZOOL 690 - Evolution****Credits:** 4

Evolutionary biology is about uncovering the past, understanding the present, and predicting the future of animals, plants, and microbes. It also offers insight into how scientific ideas change through time. This course covers natural selection and adaptation, phylogeny, population genetics and structure, origins and extinction of species, domestication, and evolutionary medicine. Additional topics may include human evolution and evolutionary impacts, biogeography, and social evolution, as well as the intersections between evolution, ecology and development.

Attributes: Writing Intensive Course**ZOOL 708 - Stream Ecology****Credits:** 4

Ecological relationships of organisms in flowing water; streams as ecosystems. Lectures on physical and chemical features of streams, floral and faunal communities, and factors controlling populations and behavior of stream organisms. Lab exercises employ both field and laboratory experimental techniques. Special fee. Lab. (Not offered every year.)

ZOOL 710 - Sharks and Bony Fishes**Credits:** 0 or 4

Some fish swimming today are hundreds of years old, whereas others complete their life cycle in two months! This course provides an introduction to the diversity of fishes found across the globe, including elasmobranchs (sharks, skates, and rays) and teleosts (bony fishes). Particular attention will be paid to fishes local to New Hampshire and New England. Students will learn about fish anatomy, physiology, and ecology. Prereq: BIOL 411, BIOL 412, or equivalent. Lab. (Offered in alternative years.) Special Fee.

Equivalent(s): ZOOL 734**ZOOL 726 - Conservation Behavior****Credits:** 4

What's the best way to deter an elephant from raiding crops? Is it with chili peppers? Bees? This is one example from the new interdisciplinary field of "conservation behavior," which uses the study of animal behavior to inform how we manage wildlife populations. This course targets students well-versed in either animal behavior or wildlife ecology who wish to learn more about the other side. We will focus heavily on reading, writing, discussion, and career preparation. Prereq: ZOOL 613, NR 433, or NR 640.

Attributes: Writing Intensive Course**ZOOL 733 - Behavioral Ecology****Credits:** 0 or 4

Behavioral ecology is the evolution of animal behavior played out on the stage of ecology—why might a certain behavior be adaptive in a certain context? In this course, we will pursue in-depth, high-level explorations of the central topics of animal behavior, all through the lens of evolution. We will also focus heavily on improving reading, writing, and presentation skills. Prereq: ZOOL 613.

Attributes: Writing Intensive Course**ZOOL 736 - Genes and Behavior****Credits:** 4

Genes and behavior examines the genetic underpinnings of animal behavior, and how behavior evolves on a genetic level. The course primarily relies on readings from the primary literature, using examples from laboratory model organisms, animals in their natural habitats, and humans. Topics include aggressiveness, social behavior, personality, parental care, communication, mating behavior, novelty seeking behavior, and foraging. This interdisciplinary course examines these behaviors at multiple levels, including genomics, population genetics, molecular genetics, epigenetics, endocrinology, and neurobiology. Prereq: GEN 604 and ZOOL 713 or equivalent.

ZOOL 770 - Senior Capstone in Zoology**Credits:** 2

Explore and synthesize your undergraduate zoological knowledge and skills through an integrated outlook at a topic relating to your professional future. Each semester revolves around a different overarching topic on which students read assigned topical papers, prepare critical analyses, and give presentations to the class.

ZOOL 777 - Neuroethology**Credits:** 4

Students taking this course will discover how some of the most remarkable behavioral adaptations in animals can be understood by examining specialized sensory systems and neural circuits. By exploring the complex interactions between animal behavior, neural systems, evolutionary relationships, anatomy, physiology and ecology, students will be better equipped to understand the neural basis of behavior. A culminating writing project will help sharpen students' scientific writing skills, and the ability to understand the primary neuroethology literature. Prereq: BIOL 411, BIOL 412.

Attributes: Writing Intensive Course**ZOOL 795 - Special Investigations****Credits:** 1-4

Independent study in various areas including but not limited to animal behavior, developmental biology, ecology, endocrinology, evolution, ichthyology, genetics, history of biology, invertebrate biology, neurobiology and behavior, protozoology, teaching practices, underwater research, vertebrate biology, and biological techniques. Course sections for advanced work, individual or group seminar. May include reading, laboratory work, organized seminars, and conferences. Prereq: permission of instructor needed.

Repeat Rule: May be repeated for a maximum of 12 credits.

ZOOL 795W - Special Investigations**Credits:** 1-4

Independent study in various areas including but not limited to animal behavior, developmental biology, ecology, endocrinology, evolution, ichthyology, genetics, history of biology, invertebrate biology, neurobiology and behavior, protozoology, teaching practices, underwater research, vertebrate biology, and biological techniques. Course sections for advanced work, individual or group seminar. May include reading, laboratory work, organized seminars, and conferences. Prereq: permission of instructor needed.

Attributes: Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**ZOOL 799 - Honors Senior Thesis****Credits:** 1-4

Working under the direction of a faculty sponsor, the student plans and carries out independent research resulting in a written thesis. Limited to students entering their senior year; required for students in the honors program or working toward honors-in-major. Prereq: permission. A two-semester sequence. 2-4 credits each semester. IA (continuous grading) given at the end of the first semester.

Attributes: Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.