

ANIMAL BEHAVIOR (ANBE)

ANBE 266. Animal Behavior. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

A survey of important theories, issues, and empirical techniques in the interdisciplinary field of animal behavior emphasizing both proximate and ultimate mechanisms and explanations for behavior. Crosslisted as BIOL 266 and PSYC 266.

ANBE 291. Directed Study in Animal Behavior. .5-1 Credits.

Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable

An entry into animal behavior research or other independent study directed by a faculty member. Experiences might include library work, collecting data, hands on experiences, entering and analyzing data, and other activities associated with engagement in research, animal management, and faculty-directed inquiry. Prerequisite: Instructor permission.

ANBE 296. Advanced Methods in Animal Behavior. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3; May require dissection or live animal experimentation

Laboratory and/or field research to accompany ANBE 266, BIOL 266, or PSYC 266. Prerequisites: (MATH 216 or PSYC 215) and (BIOL 201 or BIOL 202 or BIOL 203 or BIOL 204 or PSYC 216) and prerequisite or corequisite (ANBE 266 or BIOL 266 or PSYC 266). Crosslisted as PSYC 296.

ANBE 2NT. Animal Behavior Non-traditional Study. .5-4 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies; Repeatable

Non-traditional course in Animal Behavior. Prerequisite: permission of the instructor.

ANBE 303. Vertebrate Ecology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Vertebrate ecology explores how vertebrates interact with their physical environment from individual to global scales. We will overview the major clades of vertebrates, including a discussion about how environments in which they live shapes their anatomy, physiology and behavior. We will also cover population dynamics and community structures. Prerequisites: (BIOL 203 and BIOL 204) or (ANBE/BIOL/PSYC 266) and instructor permission. Crosslisted as ANBE 603, BIOL 303 and BIOL 603.

ANBE 305. Vertebrate Ecology- with Lab. 1 Credit.

Offered Occasionally; Lecture hours:3,Other:3

An upper-level laboratory course covering topics in Vertebrate Animal Ecology. Subfields of ecology to be determined by the instructor. Prerequisites: (BIOL 203 and BIOL 204) or (ANBE 266/BIOL 266/PSYC 266) and permission of the instructor. Crosslisted as ANBE 605, BIOL 305 and BIOL 605.

ANBE 307. Conservation Genetics. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

As biodiversity has quickly eroded for the past few centuries, some scientists argue that humans are causing the 6th mass extinction event. This course emphasizes the application of population genetics, molecular phylogenetics, and reproductive genetics to answering biological questions in wildlife conservation. Prerequisites: (BIOL 203 and BIOL 204) or (BIOL 207 and BIOL 208). Crosslisted as ANBE 607 and BIOL 307 and BIOL 607.

ANBE 309. Wildlife and Emerging Diseases. 1 Credit.

Offered Alternating Fall Semester; Lecture hours:3

Biology of wildlife diseases, especially zoonoses (infections that jump to humans). Course will integrate popular and scientific sources. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 609, BIOL 309 and BIOL 609.

ANBE 312. Comparative Vertebrate Anatomy. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:3

Gross morphology with emphasis on functional and evolutionary modifications of animal structure. Gross dissection and techniques used in morphology. Prerequisites: BIOL 122 or (BIOL 203 and BIOL 204) and permission of the instructor. Crosslisted as ANBE 612, BIOL 312 and BIOL 612.

ANBE 313. Mammalogy. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:3

Biology of mammals, including evolution, classification, biodiversity, behavior, anatomy, physiology, ecology and conservation. Lab will include specimen identification, preparation and field studies. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 613, BIOL 313 and BIOL 613.

ANBE 314. Amphibian Biology and Conservation. 1 Credit.

Offered Fall Semester Only; Lecture hours:3,Other:3

The biology of amphibians, including classification, physiology, reproduction, ecology, evolution, and conservation. Laboratory section will include identification of amphibians and field work to identify conservation issues surrounding local amphibian populations. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as BIOL 314 and BIOL 614 and ANBE 614.

ANBE 318. Principles of Physiology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Emphasizes the breadth of physiology and explores physiological principles of animals from a cellular, organismal, medical and ecological framework. Laboratory focuses on experimental design and independent research. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 618, BIOL 318 and BIOL 618.

ANBE 319. Topics in Animal Behavior. .5-1 Credits.

Offered Both Fall and Spring; Lecture hours:3; Repeatable

Occasional seminars on selected topics of current interest in animal behavior. Prerequisites: (BIOL 203 and BIOL 204) or (ANBE 266 or BIOL 266 or PSYC 266), junior or senior status and permission of the instructor. Crosslisted as ANBE 619.

ANBE 320. Advanced Topics in Animal Behavior. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

Culminating Experience seminar for senior animal behavior majors covering selected topics of current interest in animal behavior. Prerequisites: open to seniors in animal behavior and 4 or 5-year engineers. Permission of the instructor.

ANBE 321. Behavioral Ecology. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

How have ecological selection pressures (generated by animals' biotic and abiotic environments) shaped the fascinating diversity of animal behaviors? Topics include habitat choice, foraging behavior, defenses against predation, cooperation and competition, sexual selection, and parental care. Heavy emphasis on primary literature and experimental design. Crosslisted as ANBE 621, BIOL 321 and BIOL 621.

ANBE 325. Evolutionary Genomics. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:3

An exploration of evolutionary questions using large sequencing databases, with an emphasis on developing strategies for computational sequence analysis. Includes review of the primary literature. No coding experience. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 625, BIOL 325 and BIOL 625.

ANBE 328. Endocrinology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Problem Session:2

Regulation and function of hormones and their receptors from molecular to organismal levels. Role of hormones in development, physiology, and behavior; endocrine disease. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 628, BIOL 328 and BIOL 628.

ANBE 341. Evolution. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Survey of evolutionary processes, phenomena, and mechanisms. Topics covered may include natural selection, sexual selection, adaptation, evolutionary constraints, speciation, evolution and development, coevolution, behavioral evolution, and macroevolution. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 641 and BIOL 341 and BIOL 641.

ANBE 342. Neuroethology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

A course that integrates neurobiology and behavior in natural contexts. Emphasis on signal detection, recognition, discrimination, localization, orientation, and the control of complex acts. Neuronal and hormonal mechanisms, ontogeny and evolution of behavior will be considered. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 642 and BIOL 342 and BIOL 642.

ANBE 353. Ecosystem Ecology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Recitation:1

Interactions between organisms and the physical and chemical environment including nutrient cycling and energy flow, biogeochemistry, and temporal and spatial dynamics of ecosystems. Prerequisites: (BIOL 203 and BIOL 204) or ENST 208, junior or senior status, and permission of the instructor. Crosslisted as ANBE 653, BIOL 353, BIOL 653, ENST 353.

ANBE 354. Tropical Ecology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Introduction to tropical ecology including life history strategies of vertebrates and invertebrates, biodiversity management and conservation. Emphasis on class and individual projects, data collection and journal keeping. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 654 and BIOL 354 and BIOL 654.

ANBE 355. Social Insects. 1 Credit.

Offered Fall Semester Only; Lecture hours:3,Other:3; May require dissection or live animal experimentation

Evolution and genetics of social behavior, caste, communication in foraging and colony defense, queen and worker control over reproduction, social homeostasis, and population dynamics. Occasionally may be taught as a laboratory science. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as BIOL 355.

ANBE 357. Ornithology. 1 Credit.

Offered Occasionally; Lecture hours:3,Other:3

The biology of birds, including evolution, behavior, anatomy, physiology, ecology, and conservation; lab trips focus on identification of birds in the field. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 657 and BIOL 357 and BIOL 657.

ANBE 358. Invertebrate Zoology. 1 Credit.

Offered Alternating Fall Semester; Lecture hours:3,Other:3

A survey of the animal phyla covering phylogenetic relationships, functional morphology, ecology, life histories, symbiosis, ontogeny and behavior. Includes hands-on study of organisms in lab and field. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 658, BIOL 358 and BIOL 658.

ANBE 364. Advanced Data Analysis in Biology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

Data exploration and visualization using state-of-the-art computational techniques. Using “big data” from their own research projects or public transcriptomic datasets, students will learn to analyze/visualize complex biological datasets. Lab includes hands-on work with R/virtual reality. No prior programming experience required. Prerequisites: BIOL 203 and BIOL 204 and MATH 216 and permission of the instructor. Crosslisted as ANBE 664, BIOL 364 and BIOL 664.

ANBE 370. Primatology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; May require dissection or live animal experimentation**

Introduction to research on prosimians, monkeys and apes with emphasis on the evolutionary origin of diversity, habitat use, social structure, social behavior, cognitive abilities and management. Prerequisites: (ANBE 266 or BIOL 266 or PSYC 266) or (BIOL 203 and BIOL 204) and permission of the instructor. Crosslisted as ANBE 670 and BIOL 370 and BIOL 670 and PSYC 370 and PSYC 670.

ANBE 371. Primate Minds. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An investigation into the cognitive abilities and capacities of nonhuman primates emphasizing a comparative perspective. Prerequisites: PSYC 216 or (ANBE 296 or PSYC 296) or permission of the instructor. Crosslisted as ANBE 671, PSYC 371 and PSYC 671.

ANBE 372. Comparative Cognition. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Advanced seminar exploring cognition and behavior from evolutionary and comparative perspectives. Topics will include social behavior, memory, communication, spatial cognition, learning, and meta-cognition. Prerequisite: (ANBE 266 or BIOL 266 or PSYC 266) or (PSYC 203 or PSYC 204). Crosslisted as ANBE 672 and PSYC 372 and PSYC 672.

ANBE 376. Animal Nutrition. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the science of nutrition, emphasizing biochemical, physiological and metabolic processes. We'll examine physiological properties of macronutrients, assess health impacts of popular diets and discuss the physiological role of micronutrients. While touching on human health, the focus will be general principles of nutrition that apply to all animals. Prerequisites: BIOL 203 and BIOL 204 and permission of instructor. Crosslisted as ANBE 676, BIOL 376 and BIOL 676.

ANBE 380. SciComm: Communicating Science to Non-Scientists. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Seminar covering effective strategies for communicating science to a non-scientific audience. We will use an active community-based approach to gain hands-on experience developing, implementing, and disseminating scientific information to the public. This course is open to all upper level natural science majors. Crosslisted as ANBE 681.

ANBE 382. Mass Extinctions. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An upper-level course investigates the past five mass extinctions and the on-going sixth mass extinction of organisms from the perspective of ecology, evolution and conservation biology. Prerequisites: BIOL 203 and BIOL 204 and permission of the instructor. Crosslisted as ANBE 682, BIOL 382 and BIOL 682.

ANBE 391. Research. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies; Repeatable; May require dissection or live animal experimentation**

Independent research, with faculty supervision, in the study of animal behavior. Crosslisted as ANBE 691. Prerequisite: permission of the instructor.

ANBE 399. Senior Thesis. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:2,Other:10; Repeatable; May require dissection or live animal experimentation**

Original research leading to a thesis presentation on a topic related to the study of animal behavior. Prerequisite: permission of the instructor.

ANBE 3NT. Animal Behavior Non-traditional Study. 1-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in Animal Behavior. Prerequisite: permission of the instructor.