230A. Interdisciplinary Approaches to Animal Behavior (3)
Seminar—3 hours; term paper. Prerequisite: consent of instructor. Interdisciplinary approaches to behavior in animals and an allied discipline or disciplines that offer the potential, in combination, to advance understanding of a topic in animal behavior conceptually and empirically. Topics will vary from year to year.

Animal Biology 161

230B. Interdisciplinary Approaches to Animal Behavior (5)
Workshop—5 days total; discussion—2 hours; term paper. Prerequisite: consent of instructor; 230A the previous quarter. Development of an empirical or theoretical interdisciplinary approach to research on a current topic in animal behavior.

270. Research Conference in Behavioral Ecology (1)
Conference—1 hour. Prerequisite: graduate standing and consent of instructor. Limited enrollment. Critical presentation and evaluation of current literature and ongoing research in behavioral ecology. May be repeated for credit. (S/U grading only.)

287. Advanced Animal Behavior (2)
Seminar—2 hours. Prerequisite: graduate standing and consent of instructor. Advanced animal behavior. Topics may differ from year to year. May be repeated for credit (up to 12 units total). (Same course as Animal Behavior 221.) Offered irregularly.

Appendix A: Units Required for the Major

Preparatory Subject Matter

Mathematics 3A-3B, 3B-3C, and 10A-10B or 18A-18B, or 21A-21B—Fall, Winter, Spring—6-12


Chemistry 2A-2B-2C and 8A-8B—Fall, Winter, Spring—18-24

Environmental Science and Policy 100, 121; Evolution and Ecology 101, 102, 103; and Animal Biology 121—Fall, Winter, Spring—9

Animal Biology 50A-50B-50C—Fall, Winter, Spring—9-12

201. Scientific Approaches to Animal Behavior Research (3)
Lecture—3 hours. Prerequisite: consent of instructor. Philosophical issues, goals, strategies and tools in field and laboratory research. May be repeated for credit when topics differ. —S. (S.) Tucker

203. Advanced Animal Welfare (3)
Lecture—3 hours. Prerequisite: Animal Science 103 or the equivalent course. Advanced animal welfare. Key concepts used when evaluating and understanding the welfare of animals kept by humans. Topics include animal pain, stress, cognition, motivation, and emotions. Critical discussion of primary literature. May be repeated one time for credit. Offered in alternate years. —S. (S.) Tucker

210. History of Animal Behavior (1)
Discussion—1 hour. Prerequisite: consent of instructor. Classic, seminal papers in animal behavior. Discussion of readings and broader historical context in which papers were written. (S/U grading only.)

218A. Fundamentals of Animal Behavior (5)
Lecture/discussion—4 hours; discussion—1 hour. Prerequisite: consent of instructor; upper-division undergraduate introduction to the biology of behavior, such as Psychology 101, 122, 123, Neurobiology, Physiology, and Behavior 102, 150, 152, Wildlife, Fish, and Conservation Biology 141, Entomology 104, or Animal Science 105. Survey of the phenomena and theory of animal behavior from the perspectives of multiple biological disciplines, including evolution, ecology, psychology, genetics, neurobiology, endocrinology, and animal science. (Same course as Psychology 218A.)—F. (F.) Schank

218B. Fundamentals of Animal Behavior (5)
Lecture/discussion—4 hours; discussion—1 hour. Prerequisite: consent of instructor; course 218A or Psychology 218B. Survey of the phenomena and theory of animal behavior from the perspectives of multiple biological disciplines, including evolution, ecology, psychology, genetics, neurobiology, endocrinology, and animal science. (Same course as Psychology 218B.)—W. (W.) Sih

221. Animal Behavior, Ecology and Evolution (3)
Lecture—3 hours. Prerequisite: Neurobiology, Physiology, and Behavior 102, Evolution and Ecology 101, 102, or equivalent, graduate standing, and consent of instructor. Interface between animal behavior, ecology, and evolution. New developments in behavioral ecology and development and testing of hypotheses in this discipline. (Same course as Animal Behavior 221.) Offered irregularly.

Faculty
Edward P. Caswell-Chen, Ph.D., Professor
Joanna Chiu, Ph.D., Assistant Professor
Brian R. Johnson, Ph.D., Assistant Professor
Edward P. Caswell-Chen, Ph.D., Professor
Joanna Chiu, Ph.D., Assistant Professor
Brian R. Johnson, Ph.D., Assistant Professor
Robert Kimsey, Ph.D., Lecturer

The Major Program
The Animal Biology major offers students training in the biological and natural sciences as they apply to animals. The major covers the basic biological sciences that explain animal evolution, systematics, ecology, physiology, and behavior in an integrated manner. Students in the Animal Biology major are encouraged to think beyond partial groups of animals in which they are interested and to consider science as a process and a way of life. Emphasis is on biological principles that can be used in research or in solving societal problems associated with animals in agriculture, urban areas, or natural environments.

The Program. The Animal Biology major consists of core courses in the biological sciences that build an understanding of animal biology from the molecular to the ecological and evolutionary levels of organization. After completing the required core courses, students have the option of specializing in various interdisciplinary aspects of animal biology, and plan their chosen emphasis of study as part of a required discussion course and in consultation with their adviser. The Animal Biology major emphasizes courses on biological principles as opposed to courses on animal care and husbandry. This program includes a senior thesis, which each student designs to bridge the disciplines of the major.

Internships and Career Alternatives. The program and interests of each student in solving societal problems guides him or her to logical internship and career choices. On and off-campus internship opportunities are available in research laboratories, in field situations, with governmental agencies, with private industry, and in international programs. A degree in Animal Biology prepares students for careers in research, teaching, governmental regulation, health or agriculture as relates to the integrative biology or ecology of animals. Careers in veterinary medicine, animal husbandry and animal management are open to Animal Biology majors, however, other preparation may be required. Students in the major gain research experience and may choose to continue their education at the graduate or professional level in a variety of biological disciplines.

B.S. Major Requirements:

Preparatory Subject Matter

Mathematics 1A-1B-1C or 17A-17B-17C—Fall, Winter, Spring—12-18

Biology Sciences 2A, 2B, and 2C—Fall, Winter, Spring—12-18

Chemistry 2A-2B-2C and 8A-8B or 118A-118B—Fall, Winter, Spring—12-18

Mathematics 16A-16B-16C or 17A-17B-17C or 21A-21B-21C—Fall, Winter, Spring—18-24

Physics 7A-7B-7C—Fall, Winter, Spring—12-18

One course from: Statistics 13 or 100 or 102 or Agricultural Management and Rangeland Resources 120

One course from: Animal Biology 50A, 50B, 50C

Depth Subject Matter

Biological Sciences 101-103—Fall, Winter, Spring—12-18

Animal Biology 102 and 103 or Biological Sciences 102 and 103—Fall, Winter, Spring—12-18

One course from: Environmental Science and Policy 100, 121; Evolution and Ecology 101, 102—Fall, Winter, Spring—3-6

One course from: Anatomy, Physiology and Cell Biology 100; Neurobiology, Physiology, and Behavior 123—Fall, Winter, Spring—3-6

Evolution and Ecology 100—Fall, Winter, Spring—4

One course from: Environmental Science and Policy 100, 121; Evolution and Ecology 101, 102—Fall, Winter, Spring—4

Animal Biology 187—Fall, Winter, Spring—3-6

Restricted Electives

One course from: Environmental Science and Policy 100, 121; Evolution and Ecology 101, 102—Fall, Winter, Spring—4

Animal Biology 187—Fall, Winter, Spring—3-6

One course from: Environmental Science and Policy 100, 121; Evolution and Ecology 101, 102—Fall, Winter, Spring—4

Animal Biology 187—Fall, Winter, Spring—3-6

Total Units for the Degree

Advice for Major Advising

Advising Center for the major, including peer advising, is located in 150 and 152 Hitchcock Hall 5307547777, ab advising@ucdavis.edu.

Courses in Animal Biology (ABI)

Lower Division

50A. Animal Biology Laboratory (2)
Lecture/lab—4 hours. Scientific methods for answering questions in animal biology by doing exercises to demonstrate hypothesis testing and reporting, short laboratory, population and field experiments. Maintain notebooks, analyze data, interpret results and write reports. —F. (F.) Kimsey
Animal Biology (A Graduate Group)

Trish Berger, Ph.D., Interim Chairperson of the Group

Group Office. 1249 Meyer Hall 530-752-2382; Fax 530-752-0175
http://animalbiology.ucdavis.edu

Faculty

Danika L. Bannasch, Ph.D., Associate Professor (Population Health and Reproduction; School of Veterinary Medicine)
Rebecca Bellone, Ph.D., Associate Adjunct Professor (Population Health and Reproduction; School of Veterinary Medicine)
Trish Berger, Ph.D., Professor (Animal Science)
Chris C. Calvert, Ph.D., Professor, Emeriti Faculty (Animal Science)
Bruce W. Christensen, D.V.M., Assistant Professor (Population Health and Reproduction; School of Veterinary Medicine)
Alan J. Conley, Ph.D., Professor (Population Health and Reproduction; School of Veterinary Medicine)
Edward J. DePeters, Ph.D., Professor, (Animal Science)
James G. Fadel, Ph.D., Professor (Animal Science)
Nann A. Fanger, Ph.D., Assistant Professor (Wildlife, Fish, and Conservation Biology)
Andrea J. Fassetti, V.M.D., Ph.D., Professor (Molecular Biosciences; School of Veterinary Medicine)
Carrie Finno, Ph.D., Assistant Professor (Population Health and Reproduction; School of Veterinary Medicine)
Janet Foley, Ph.D., Professor (Medicine & Epidemiology; School of Veterinary Medicine)
Rodrigo Gallardo, Ph.D., Assistant Professor (Poultry Medicine; School of Veterinary Medicine)
Matthias Hess, Ph.D., Assistant Professor (Animal Science)
Russell C. Howe, Ph.D., Professor (Animal Science)
Amy S. Kapokkin, D.V.M., Professor (Surgeal & Radiological Sciences; School of Veterinary Medicine)
Ermias Kebreab, Ph.D., Professor (Animal Science)
Kirk C. Klassing, Ph.D., Professor (Animal Science)
Dietmar Kuziel, Ph.D., Professor (Animal Science)
Yanhang Liu, Ph.D., Assistant Professor (Animal Science)
Elizabeth Maya, Ph.D., Associate Researcher and Lecturer (Animal Science)
Brenda J. McCowan, Ph.D., Professor (Veterinary Medicine Teaching and Research Center and California National Primate Research Center)
Juan F. Medrano, Ph.D., Professor (Animal Science)
Joy A. Mench, Ph.D., Professor (Animal Science)
Deanne Meyer, Ph.D., Specialist in Cooperative Extension and Lecturer (Animal Science)
Stuart Meyers, Ph.D., Professor (Anatomy, Physiology and Cell Biology; School of Veterinary Medicine)
Mike Miennalowski, Ph.D., Assistant Professor (Animal Science)
Michael R. Miller, Ph.D., Assistant Professor (Animal Science)
Frank M. Milloeker, Ph.D., Associate Professor (Animal Science)
James D. Murray, Ph.D., Professor (Animal Science)
Anita M. Oberbauer, Ph.D., Professor (Animal Science)
James W. Olfflen, Ph.D., Specialist in Cooperative Extension and Lecturer (Animal Science)
Peter H. Robinson, Ph.D., Specialist in Cooperative Extension and Lecturer (Animal Science)
Jan F. Roser, Ph.D., Professor, Emeriti Faculty (Animal Science)
Pablo J. Ross, Ph.D., Associate Professor (Animal Science)
Heidi A. Rossaw, Ph.D., Assistant Professor (Population, Health, and Reproduction; School of Veterinary Medicine)
Benjamin N. Sacks, Ph.D., Associate Adjunct Professor (Population, Health, and Reproduction; School of Veterinary Medicine)
Roberto D. Sainz, Ph.D., Professor (Animal Science)
Susan A. Stover, D.V.M., Ph.D., Professor (Anatomy, Physiology, and Cell Biology; School of Veterinary Medicine)
Brian D. Todd, Ph.D., Associate Professor (Wildlife, Fish, and Conservation Biology)
Anne Todgham, Ph.D., Assistant Professor (Animal Science)
M. Cecilia Torres-Penedo, Ph.D., Associate Research Geneticist (Veterinary Genetics Laboratory; School of Veterinary Medicine)
Cassandra B. Tucker, Ph.D., Associate Professor (Animal Science)
Alison L. Van Eenennaam, Ph.D., Specialist in Cooperative Extension and Lecturer (Animal Science)
Jason Watters, Ph.D., Associate Adjunct Professor (Animal Science)
Hsuijiong Zhou, Ph.D., Associate Professor (Animal Science)
Richard A. Zinn, Ph.D., Professor (Animal Science; located at Desert Research and Extension Center)

Graduate Study.

The Graduate Group in Animal Biology offers programs of study and research leading to the M.S. and the Ph.D. degrees. The Animal Biology Graduate Group focuses on integrated animal biology. Each student individually tailors her/his program of study to meet individual needs. The Animal Biology Graduate Group is unique in encouraging a multidisciplinary or interdisciplinary approach involving physiology, nutrition, genetics, ecology, and/or behavior within the context of organismal animal biology.

Preparation. Applicants should have undergraduate preparation in a field appropriate to the course of study selected, including upper division coursework in most of the following subjects: biochemistry, genetics, nutrition, physiology, and integrative animal biology such as animal management.

Graduate Advisers. R.C. Hovey, E.A. Maga, C.B. Tucker, J.D. Murray, E.Kebreab, P.J. Ross

Courses in Animal Biology (ABG)

Graduate

200A. Integrated Animal Biology I (3) Lecture/discussion—3 hours. Prerequisite: graduate standing; Biological Sciences 101 or equivalent or consent of instructor. Class size limited to 20 students; Pass One restricted to Animal Biology Graduate Group students. Natural history, management, historical and current uses, and specialized disciplinary features of model and novel animal systems used in research. Development of conceptual approaches in organismal biology to improve experimental design and interpretation of interdisciplinary research studies. —F (F). Sainz

200B. Integrated Animal Biology II (3) Lecture/discussion—3 hours. Prerequisite: course 200A. Limited enrollment; Pass One restricted to Animal Biology Graduate Group students. Natural history, management, historical and current uses, and specialized disciplinary features of model and novel animal systems used in research. Development of