Avian Sciences

Graduate Study. The Avian Sciences Graduate Group offers a program of study and research leading to the M.S. and Ph.D. degrees in Avian Sciences. The Ph.D. degree is offered in Avian Sciences. For details, see Graduate Studies, on page 111.

Related Courses. See Agricultural and Resource Economics 130; Animal Science 143; Food Science and Technology 120, 20L, 121; Molecular and Cellular Biology 150, 150L; Nutrition 123, 123L.

Courses in Avian Sciences (AVS)

Lower Division

11. Introduction to Poultry Science (3)
Lecture—3 hours. The mosaic of events that have tue poultry science to other scientific disciplines and poultry to humans. Poultry science techniques and production methods from the time of domestication to the present. One field trip required. GE credit: SciEng, Writ | SE.

12. Birds, Humans and the Environment (3)
Lecture—2 hours; discussion—1 hour. Interrelationships of the worlds of birds and humans. Lectures, discussions, field trips and projects focus on ecology, avian evolution, physiology, reproduction, flight, behavior, folklore, identification, ecotoxicology and conservation. Current environmental issues are emphasized. Half-day field trip. GE credit: SciEng, Writ | SE, SL—I, II, III.

14L. Management of Captive Birds (2)
Fieldwork—3 hours; lecture/discussion—1 hour. Prerequisite: consent of instructor. One weekly discussion and field trip to study practical captive management (housing, feeding, equipment, marketing, diseases). Visit facilities rearing birds such as commercial parrots, hobbyist exotics, aviaries, raptors, waterfowl, game birds, poultry and pigeons. GE credit: SciEng, Writ | SE, SL—II, III.

15L. Captive Raptor Management (2)
Laboratory—3 hours; independent study—3 hours; one field trip. Hands-on experience handling birds of prey. Students are taught all of the skills required to handle and care for raptors, including their husbandry, biology, habitat requirements, cage design, veterinary care, rehabilitation methods, research potential and long-term care requirements. GE credit: SciEng | SE, SL—II.

16LA-16LB-16LC. Raptor Migration and Population Fluctuations (2-2-2)
Fieldwork—3 hours; discussion—1 hour; one Saturday field trip. Prerequisite: consent of instructor. Identify raptors, study effects of weather, crops, agricultural practices on fluctuations in raptor species and numbers. Familiarize with literature; design a project; survey study sites; collect, computerize, analyze data; compare with previous years. Species, observations, emphasis are different each quarter. GE credit: SciEng | SE, SL—I, II, III.

160. Advanced Avian Biology (4)
Lecture/discussion—3 hours; project—1 hour. Experiments in current problems in avian biology. Students choose an area of current research and design a protocol to perform an experiment and report their findings. May be repeated for credit with consent of instructor. GE credit: SciEng, Writ | SE, SL—I, II, III.

172. Internship in the Avian Sciences (1-12)
Internship—36 hours. Prerequisite: sophomore standing preferred; consent of instructor. On and off campus in poultry, game birds or exotic bird production, management and research; or in a business, industry, or agency concerned with these enterprises. Compliance with Internship Approval form essential. (P/NP grading only.)

98. Directed Group Study (1-5)

99. Special Study for Undergraduates (1-5)
Prerequisite: consent of instructor. (P/NP grading only)

Upper Division

100. Avian Biology (3)
Lecture—3 hours. Prerequisite: Biological Sciences 1A, 1B. Survey of avian natural history and study of the diversity, functional morphology, behavior, ecology and evolution of birds. GE credit: SciEng | SE.

103. Avian Development and Genomics (3)
Lecture—3 hours. Prerequisite: Biological Sciences 1A and 1B, or Biological Sciences 2B. Unique features of avian development and biogeography; Incubation; Staging; Egg Structure/Function; Fertilization; Pre-oviposition; Oviposition, Cold Tolerant; Post-ovipositi- Development; Organogenesis; Growth; Sexual Differentiation, Extraembryonic Membranes; Mortal- ity/Hatching; Genome Organization; Comparative Avian Genomics; Tlemore Biology; Sex Chromo- somes/SEX Determination; Advanced Technologies; Genome Manipulation; Mutations. GE credit: SciEng | SE, SL—I, II.

115. Raptor Biology (3)
Lecture—3 hours. Prerequisite: Biological Sciences 1A or the equivalent. Study of birds of prey: classification, distribution, habits and habitats, migration, unique anatomical and physiological adaptations, natural and captive breeding, health and diseases, environmental concerns, conservation, legal consider-ations, rehabilitation, and falconry. Includes two Saturday field trips. GE credit: SciEng | SE.

121. Avian Reproduction (2)
Lecture—2 hours. Prerequisite: Biological Sciences 1A, 1B. Breeding cycles and reproductive strategies, egg and sperm formation and development, implantation, imprinting, hormonal control of reproductive behavior and song. Species coverage includes wild and captive birds. Course has a physiologi- cal orientation. Offered in alternate years. GE credit: SciEng | SE, SL—II.

123. Management of Birds (3)
Lecture—3 hours. Prerequisite: Biological Sciences 1A, 1B. Captive propagation of birds, including requirements, genetics, nutrition, feeding, artificial incubation, artificial insemination, and related legal aspects, including trade and smuggling. Emphasis on exotic species and the role of captive propagation in conservation. Offered in alternate years. GE credit: SciEng | SE, SL—II.

149. Egg Production Management (2)
Lecture—2 hours. Prerequisite: course 11 or the equivalent, or consent of instructor. Management of commercial table egg flocks as related to environ- ment, nutrition, disease control, economics, housing, equipment, feed processing and raising replacement pullets. One Saturday field trip required. Offered in alternate years. GE credit: SciEng | SE.

150. Nutrition of Birds (1)
Lecture—1 hour. Prerequisite: Animal Biology 103 (may be taken concurrently). Principles of nutrition specific to avian species, including feeding and water requirements, additive metabolism, nutrient metabolism, energy systems, and nutritional support of egg production and growth. Use of computers for feed formulation to support pro-duction. Offered in alternate years. GE credit: QL, SciEng | SE, SL—III.

160. Advanced Avian Biology (4)
Lecture/discussion—3 hours; project—1 hour. Prerequisite: course 100 or Wildlife, Fish, and Conservation Biology 111 or Evolution and Ecology 137 or consent of instructor. Experiments in current problems in avian biology. Introduction to experimental design. Students choose a project, design a protocol and perform an experiment and report their findings. May be repeated for credit with consent of instructor. GE credit: SciEng, Writ | SE, SL—I, II, III.

170. Advanced Avian Biology (4)
Lecture/discussion—3 hours; project—1 hour. Prerequisite: course 100 or Evolution and Ecology 137 or Wildlife, Fish, and Conservation Biology 111. Ecology, behavior, functional morphology and life-history evolution of birds. Emphasis on the import- ance of body size as a principle determinant of most aspects of avian performance from lifespan to reproduction and species abundance. Analytical synthesis and critical thought are needed. Offered in alternate years. GE credit: SciEng | SE.
190. Seminar in Avian Sciences (1)  Seminar—1 hour. Prerequisite: upper division standing in Avian Sciences and consent of instructor. May be repeated three times for credit. (P/NP grading only.)—I, II, III. (I, III)

192. Internship in Avian Sciences (1-12)  Internship—3-36 hours. Prerequisite: completion of a minimum of 84 units, consent of instructor. Internship on and off campus in poultry, game birds or exotic bird production, management and research; or in a business, industry, or agency concerned with these entities. Compliance with Internship Approval form essential. (P/NP grading only.)

195. Topics in Current Research (1-3)  Lecture/discussion—1-3 hours. Prerequisite: consent of instructor. Discussion of topics of current interest in avian sciences. May be repeated three times for credit.—I, II, III. (I, II, III)

197T. Tutoring in Avian Sciences (1-3)  Tutorial—1-3 hours. Prerequisite: Avian Sciences or related major, advanced standing, consent of instructor. Tutoring of students in lower division avian science courses; weekly conference with instructors in charge of courses; written critiques of teaching procedures. (P/NP grading only.)

198. Directed Group Study (1-5)  Prerequisite: consent of instructor. (P/NP grading only.)

199. Special Study for Advanced Undergraduates (1-5)  Prerequisite: consent of instructor. (P/NP grading only.)

Graduate

203. Advanced Avian Development and Genomics (1)  Discussion—1 hour. Prerequisite: graduate standing; concurrent enrollment in course 103. In consultation with the instructor, students develop a lecture and associated instructional materials, i.e., lesson plan, including justification, reading and presentation and evaluation aids. The topic must complement a topic covered in Avian Sciences 103 (Avian Development and Genomics).—I. (I) Delany

290. Seminar (1)  Seminar—1 hour. Reports and discussions of recent advances and selected topics of current interest in avian genetics, physiology, nutrition, and poultry technology.—I. (I)

290C. Research Conference (1)  Discussion—1 hour. Prerequisite: graduate standing and consent of instructor. Major professors lead research discussions with their graduate students. Research papers are reviewed and project proposals presented and evaluated. Format will combine seminar and discussion. (S/U grading only.)—I, II, III. (II, III, III)

297T. Supervised Teaching in Avian Sciences (1-4)  Tutoring—1-4 hours. Prerequisite: graduate standing and consent of instructor. Tutoring of students in lower, upper division, and graduate courses in Avian Sciences; weekly conference with instructor in charge of course; written critiques of teaching methods in lectures and laboratories. (S/U grading only.)

298. Group Study (1-5)  Prerequisite: consent of instructor.

299. Research (1-12)  Prerequisite: consent of instructor. (S/U grading only.)

Avian Sciences (A Graduate Group)

Kirk Klasing, Ph.D., Chairperson of the Group

Group Office, 1249 Meyer Hall 530-752-2382; http://aviansciences.ucdavis.edu

Faculty

C. Christopher Calvert, Ph.D., Professor
(Animal Science)

Thomas P. Coombs-Hahn, Ph.D., Associate Professor
(Neurobiology, Physiology, and Behavior)

Mary E. Delany, Ph.D., Professor (Animal Science)

John M. Eidie, Ph.D., Professor
(Wildlife, Fish, and Conservation Biology; Animal Science)

Holly B. Ernest, D.V.M., Ph.D., Associate Professor
(Veterinary Genetics Laboratory and Population Health and Reproduction; School of Veterinary Medicine)

Michelle Hawkins, V.M.D., ABVP, Associate Professor
(Medicine and Epidemiology, School of Veterinary Medicine)

Joshua M. Hull, Ph.D., Assistant Adjunct Professor
(Animal Science)

Annie J. King, Ph.D., Professor (Animal Science)

Kirk C. Kissing, Ph.D., Professor (Animal Science)

Janella E. Loye, Ph.D., Research Associate
(Entomology)

Joy A. Mench, Ph.D., Professor (Animal Science)

James R. Milliam, Ph.D., Professor (Animal Science)

Gabrielle Nevitt, Ph.D., Professor
(Neurology, Physiology, and Behavior)

Joanne R. Paul-Murphy, D.V.M., Ph.D. Professor
(Medicine & Epidemiology; School of Veterinary Medicine)

Lisa A. Tell, D.V.M., Professor
(Medicine and Epidemiology, School of Veterinary Medicine)

Andrea Townsend, Ph.D., Assistant Professor
(Wildlife, Fish, and Conservation Biology)

Emeriti Faculty

Hans Abplanalp, Ph.D., Professor Emeritus

Dan Anderson, Ph.D., Professor

Francine A. Bradley, Ph.D., Specialist Emeritus

Ralph A. Ernst, Ph.D., Specialist Emeritus

Peter Marler, Ph.D., Professor Emeritus

Barry W. Wilson, Ph.D., Professor Emeritus

Graduate Study. The Graduate Group in Avian Sciences offers the M.S. degree program to students who wish to pursue specialized advanced work on avian species. Specializations students may choose include behavior, nutrition, physiology, reproduction, pathology, immunology, toxicology, food chemistry, management, ecology, genetics, comparative incubation, environmental physiology, and cellular and developmental studies using wild and domestic birds as experimental animals. Both master's degree plans, thesis or comprehensive examination, are available.

Preparation. Applicants should have undergraduate preparation in a field appropriate to the course of study selected, including courses in most of the following subjects: general biology, general and organic chemistry, biochemistry, avian biology, genetics, nutrition, physiology, and statistics.


Biochemistry and Molecular Biology

See Biochemistry, Molecular, Cellular and Developmental Biology, on page 177; Molecular and Cellular Biology, on page 430

Biochemistry and Molecular Biology (A Graduate Group)

The Biochemistry and Molecular Biology program has merged with the Cell and Developmental Biology program to form Biochemistry, Molecular, Cellular, and Developmental Biology (BMCDB); see Biochemistry, Molecular, Cellular and Developmental Biology on page 177.

Group Office. 227B Life Sciences 530-752-9091; http://biosci3.ucdavis.edu/GradGroups/BMCDB/

Biological Chemistry

See Medicine, School of, on page 396.

Biochemistry, Molecular, Cellular and Developmental Biology

Mitch Singer, Ph.D., Chairperson of the Group 530-752-9005

Group Office. 227B Life Sciences 530-752-9091; http://biosci3.ucdavis.edu/GradGroups/BMCDB/

Faculty

Iannis, Adamopoulos, Ph.D., Assistant Professor (Medical Division of Internal Medicine)

Jawad AlBassam, Ph.D., Assistant Professor (Molecular and Cellular Biology)

John, Albeck, Ph.D., Assistant Professor

Molecular and Cellular Biology

Peter Armstrong, Ph.D., Professor

Shota Atsumi, Ph.D., Assistant Professor (Chemistry)

Enoch Baldwin, Ph.D., Associate Professor

(Molecular and Cellular Biology)

Peter A Beal, Ph.D., Professor (Chemistry)

Kenneth A Beck, Ph.D., Associate Professor

(Cell Biology and Human Anatomy)

Alan Bennett, Ph.D., Professor (Plant Sciences)

Donald M, Bers, Ph.D., Professor (Pharmacology)

Charles Bevis, Ph.D., Professor

(Medical Microbiology and Immunology)

Linda F. Bisson, Ph.D., Professor

(Viticulture and Enology)

Eduardo Blumwald, Ph.D., Professor (Plant Sciences)

Lara Borodinsky, Ph.D., Assistant Professor

(Animal Science)

Alexander Borowsky, Ph.D., Associate Professor

(Pathology)

Siobhan Mary, Brady, Ph.D., Assistant Professor

(Plant Biology)

Ann B, Brit, Ph.D., Professor (Plant Biology)