AGRICULTURAL AND ENVIRONMENTAL SCIENCES

GRADUATE PROGRAMS

- AGRICULTURAL AND ENVIRONMENTAL CHEMISTRY
- AGRICULTURAL AND RESOURCE ECONOMICS
- ANIMAL BIOLOGY
- ATMOSPHERIC SCIENCE
- BIOLOGICAL SYSTEMS ENGINEERING
- ECOLOGY
- ENTOMOLOGY
- ENVIRONMENTAL POLICY AND MANAGEMENT
- FOOD SCIENCE
- GEOGRAPHY
- HORTICULTURE AND AGRONOMY
- HYDROLOGIC SCIENCES
- INTEGRATIVE GENETICS AND GENOMICS
- INTERNATIONAL AGRICULTURAL DEVELOPMENT
- MATERNAL AND CHILD NUTRITION
- MICROBIOLOGY
- NUTRITIONAL BIOLOGY
- PHARMACOLOGY AND TOXICOLOGY
- PLANT BIOLOGY
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- POPULATION BIOLOGY
- PUBLIC HEALTH SCIENCES
- SOILS AND BIOGEOCHEMISTRY
- TRANSPORTATION TECHNOLOGY AND POLICY
- VITICULTURE AND ENOLOGY

APPLICATION DEADLINES: gradstudies.ucdavis.edu/applicationdeadlines

AGRICULTURAL AND ENVIRONMENTAL CHEMISTRY
(530) 752-4516
agchem.ucdavis.edu
Ph.D., M.S.

Students study the chemical and biochemical aspects of foods, wine, fibers/polymers, pesticides, and environmental pollution. Research includes basic and applied problems in analytical, organic, physical, inorganic, or biological chemistry. Group research includes pesticide and toxicant chemistry, food/meat/dairy chemistry, fiber and polymer chemistry, and enzymatic reactions and fermentation chemistry.

AGRICULTURAL AND RESOURCE ECONOMICS
(530) 752-6185
are.ucdavis.edu/graduate
Ph.D., M.S., Joint M.S./M.B.A.

Students in this world-renowned program study the production, distribution, and consumption of food, fiber, and energy in both developed and less-developed countries. To address these issues, the program emphasizes the development and application of rigorous economic theory and quantitative methods. Graduates become leaders in understanding and improving government policy, market performance, environmental quality, the efficiency of natural resource use, and total income and its distribution. The program is rigorous and demanding, but the department fosters a working and social atmosphere in which students and faculty interact as colleagues.

ANIMAL BIOLOGY
(530) 752-2382
animalbiology.ucdavis.edu
Ph.D., M.S.

Animal biology encompasses the discipline-based studies of domesticated and wild animals and animal management systems. Understanding of the multifaceted aspects of organismal biology is a critical context for interpretation of molecular, cellular, and behavioral observations. Much of the innovative research in animal biology is at the intersection of two or more contemporary biological disciplines; this program was designed to train students for this reality. The program of study is individually tailored to meet student needs and includes a limited number of core courses to provide a foundational understanding of the animal as an integrated organism. Graduates then pursue more in-depth study in behavior, biochemistry, ecology, genetics, immunology, nutrition, physiology, reproduction and/or toxicology. Graduates pursue careers in academia, government, industry, and non-governmental organizations.

ATMOSPHERIC SCIENCE
(530) 752-1669
lawr.ucdavis.edu/graduate_atm.htm
Ph.D., M.S.

Atmospheric science is the study of the physics, chemistry and dynamics of the atmosphere and its interrelationship with the hydrosphere and the biosphere. Major emphasis is placed on the following fields: air quality meteorology, atmospheric chemistry, micrometeorology, biometeorology, climate dynamics, mesoscale meteorology, large-scale dynamics and numerical weather prediction.

BIOLOGICAL SYSTEMS ENGINEERING
(530) 752-0102
engineering.ucdavis.edu/graduate/bse
Ph.D., M.S., M.Engr., D.Engr.

The program stresses the use of engineering to efficiently produce, distribute and process biological products for energy, food, feed and fiber while conserving natural resources, preserving environmental quality, and ensuring the health and safety of people. Programs of study include: aquacultural engineering, bioprocess engineering, ecological systems engineering, energy systems engineering, environmental engineering, food engineering, forest and fiber engineering, health and safety engineering, machine systems engineering, postharvest engineering, sensor and control engineering, and soil and water engineering.

ECOLOGY
(530) 752-6752
ecology.ucdavis.edu
Ph.D., M.S., Joint Ph.D. with San Diego State University

The graduate group in ecology is an interdisciplinary graduate program that offers students a combination of both basic and applied ecology within nine organized areas of emphasis, as well as a joint Ph.D. program working with faculty in the biology department at San Diego State University. With more than 100 faculty members, the GGE offers unparalleled diversity and depth in coursework and research opportunities in terrestrial, freshwater and marine systems. The GGE offers excellence in graduate education. In the field of ecology/evolutionary biology, UC Davis has received the nation’s top ranking from U.S. News and World Report for research productivity, and a top five ranking from The National Research Council. The more than 1,000 GGE alumni include leaders in their fields in state and federal natural resource managing agencies, private conservation organizations, environmental consulting firms and biotech companies. In addition, GGE alumni are represented on the faculty of more than 85 universities worldwide.

ENTOMOLOGY
(530) 754-9506
entomology.ucdavis.edu/graduate
Ph.D., M.S.

The program emphasizes the integration of basic and applied aspects of entomology in solving problems in biology,
agriculture and the environment. Students can specialize in a diversity of areas such as biological control, economic entomology, pollination biology, insect chemical ecology, insect olfaction, insect demography, insect physiology, insect toxicology, integrated pest management, ecology and evolution, forensic entomology, medical entomology (human and animal health), and systematics.

FOOD SCIENCE
(530) 752-3250
foodscience.ucdavis.edu/graduate
Ph.D., M.S.
Students study the application of biological, chemical, physical and behavioral sciences to the processing, preservation, quality evaluation, public health aspects, and utilization of foods. For the M.S., there are four areas of specialization: chemistry-biochemistry, microbiology, processing and sensory sciences. Individually designed programs are also accepted. For the Ph.D., there are three areas of emphasis: biochemistry/chemistry, microbiology/fermentation and sensory sciences.

GEOGRAPHY
(530) 752-4119
geography.ucdavis.edu
Ph.D., M.A.
The Geography Graduate Program emphasizes spatial interactions between humans and the biophysical environment. Faculty interests include: landscape change and sustainable resource management; human and physical geography of diverse world environments; domestication and geographical dispersal of plants and animals; biogeography and climate change; acculturation of indigenous peoples and immigrants; indigenous agrosystems, especially in tropical regions; women in development; and medical-nutritional geography. During the past several years, group faculty and graduate students have conducted research in the Caribbean; Central and South America; Western and Eastern Europe; Africa; Mediterranean lands and the Middle East; the former Soviet Union; East, Central, South and Southeastern Asia; and the American West and Southwest, especially California. Master’s students develop professional competence in a topical and a regional specialization and in geographical information system skills. Ph.D. students develop refined skills in the acquisition, analysis and synthesis of information. They specialize in one major region and one topical subfield.

HORTICULTURE AND AGRONYM
(530) 752-7738
ggha.ucdavis.edu
Ph.D., M.S.
The graduate group in horticulture and agronomy offers programs of study leading to the M.S. and Ph.D. degrees for students interested in the science and management of agricultural crops, including their ecology, physiology, genetics, and post-harvest management, as well as the interaction of agricultural crops with the environment. These programs are designed to focus on a cropping system, such as agronomy, environmental horticulture, pomology, vegetable crops, viticulture and weed science. Within that cropping system, the student can specialize in one of a number of areas, including agroecology, biotechnology, breeding and crop improvement, crop physiology, crop production, floriculture, landscape horticulture, mineral nutrition, modeling, nursery production, pest management, plant growth and development, postharvest physiology, revegetation/restoration, and water relations. Research may be conducted within these areas with an applied or basic focus, but in association with a cropping system.

HYDROLOGIC SCIENCES
(530) 752-1669
hydscigrad.ucdavis.edu
Ph.D., M.S.
The hydrologic sciences involve the physical, chemical, and biological processes that affect the circulation of water and solutes on Earth. The graduate group in hydrologic sciences offers numerous programs of study in hydrology, hydrogeology, vadose zone processes, hydrogeochemistry, river restoration, modeling, geographic information systems, water resources management, irrigation and drainage, and climate change, among others. Students with a background in hydrologic sciences, geology, geophysics, engineering, soil science, biology, chemistry, computer science, environmental science, fluid mechanics, mathematics and physics are strongly encouraged to apply for admission to the graduate program. Because of increasing demand for solutions to water and environmental problems such as water pollution and climate change, the job market for highly qualified hydrologic scientists is consistently strong in both the public and private sectors.

INTEGRATIVE GENETICS AND GENOMICS
(530) 752-4863
igg.ucdavis.edu
Ph.D., M.S.
Students in the integrative genetics and genomics graduate program have the opportunity to apply genomic, molecular, and classical genetic approaches to study model organisms, a broad range of native and agricultural species, humans, and companion animals. The group integrates genetic research across campus and unites over 100 faculty members from more than 25 departments spanning the College of Biological Sciences, the College of Letters and Science, the College of Agricultural and Environmental Sciences, the School of Medicine, and the School of Veterinary Medicine. Students experience an unsurpassed breadth of research and instructional opportunities from the most fundamental to the most applied aspects of integrative genetics and genomics.

INTERNATIONAL AGRICULTURAL DEVELOPMENT
(530) 752-4839
iad.ucdavis.edu
M.S.
This interdisciplinary graduate group provides students with knowledge and skills to implement, facilitate, and manage programs that enhance agricultural development, resource management, and rural life, particularly in developing and less-industrialized regions of the world. The program provides both breadth and depth components. The required breadth components provide students with an understanding of international development issues related to agriculture and the environment. These include the history and philosophy of development, leadership and management techniques, fundamentals of crop and livestock farming systems, and agricultural economics. The depth component is acquired through a student's area of specialization. These may include agricultural and resource economics, agricultural engineering, agronomy, animal science, anthropology, aquaculture, avian sciences, community development, ecology, economics, entomology, environmental design, environmental toxicology, food science, gender, geography, horticulture, nutrition, plant pathology, plant biology, plant protection and pest management, political science, pomology, preventive veterinary medicine, range
science, sociology, soil science, sustainable agriculture, vegetable crops, viticulture, and water science. In addition to the Master of Science, the program offers a Certificate in Development Practice. This program is available to registered students in any UC Davis graduate program and includes coursework in international development, energy production and use in developing countries, entrepreneurship, human nutrition, and a development practicum.

ENVIRONMENTAL POLICY AND MANAGEMENT
Contact information TBA
M.S.
Ideal for students interested in professional careers in environmental policy and management in either governmental or non-governmental positions, the Environmental Policy and Management program combines a background in scientific preparation with training in diverse social science, management and professional disciplines. A focus of this program will be interdisciplinary training on the roles of science that is directly relevant to real-world environmental policy and management issues.

MATERNAL AND CHILD NUTRITION
(530) 757-8734
textension.ucdavis.edu/nutrition
M.A.S.
During the last decade, the need for nutrition specialists in public health and maternal and child health programs has increased, along with the recognition that low birth weight, diabetes, and childhood overweight and obesity are important national health concerns. There is also an increasing demand for lactation specialists, as greater numbers of women choose to breast-feed their infants. In response, private and public health agencies have focused on improving the nutrition of mothers and children. The UC Davis Master of Advanced Study in Maternal and Child Nutrition Program is designed to provide a strong scientific background in these topics, and to train professionals to design, implement, and evaluate nutrition intervention programs for mothers and children from a wide variety of cultural, ethnic, and social backgrounds.

MICROBIOLOGY
(530) 752-0262
myhs.ucdmc.ucdavis.edu/web/microbiology-graduate-group
Ph.D., M.S.
Although an M.S. degree may be obtained while pursuing a Ph.D. degree, only Ph.D. applications will be accepted.
The microbiology graduate group offers interdisciplinary, interdepartmental training leading to the Ph.D. The program combines academic and experimental training in modern molecular approaches to microbiological problems. The group is composed of more than 60 faculty members from 24 departments. Areas of research span fundamental, applied, and pathogenic microbiology, including bacterial and viral pathogenesis, eukaryotic microbiology, microbial genomics and genetics, microbial physiology and development, microbial ecology and environmental microbiology, cancer biology, and bioengineering and bioremediation. During the first year, they complete core courses and a series of laboratory rotations, and then begin their dissertation research. Additional elective courses and seminars are part of the second year curriculum. All students receive financial support.

NUTRITIONAL BIOLOGY
(530) 754-7684
ggnb.ucdavis.edu
Ph.D., M.S.
The great diversity of research interests represented by the faculty members allows students to choose from a wide variety of themes: nutritional biochemistry, animal nutrition, nutrition and development, nutrient bioavailability, human/clinical nutrition, nutrition and behavior, nutritional energetics, community nutrition, maternal and child nutrition, nutrition and endocrinology, international nutrition, obesity/body composition, physiology of digestion, nutrition and chronic disease, culture and nutrition, nutrition and gene expression, nutrition and aging, food preferences, nutrition and immunity, diet and exercise, dietary assessment, protein and lipid metabolism, food intake regulation, and nutrition education.

PLANT BIOLOGY
(530) 752-2981
pbi.ucdavis.edu
Ph.D., M.S.
The graduate program offers training in the breadth of plant biology and in specialized topics represented by the following four research areas: cell and developmental biology; environmental and integrative biology; molecular biology, biochemistry and genomics; and systematics and evolutionary biology. This framework allows students to conduct research on plants through the disciplines of anatomy, biochemistry, biophysics, biotechnology, cell biology, developmental biology, evolutionary biology, genetics, genomics, molecular biology, morphology, paleobotany, pathology, physiology, population biology, proteomics, systematics, systems biology, and weed science. UC Davis has one of the largest groups of plant biologists of any institution internationally. Graduate students have the opportunity to carry out research in basic and/or applied sciences in the labs of more than 60 faculty members, spanning three colleges and nine departments.

PLANT PATHOLOGY
(530) 754-9506
graduatestudies.plantpathology.ucdavis.edu
Ph.D., M.S.
The department offers study in plant pathology, including emphasis on diseases caused by viruses, bacteria, fungi, and nematodes. Graduate students may specialize in the physiology, biochemistry, and molecular biology of plant pathogens
or host-pathogen interactions; the biology and ecology of plant pathogens; epidemiology and modeling of plant diseases; and the diagnosis and control of plant diseases, including chemical, biological and integrated methods of control.

**POPULATION BIOLOGY**

(530) 752-1274
ev.e.ucdavis.edu/eve/pbg
Ph.D., M.S.

*Although an M.S. degree may be obtained while pursuing a Ph.D. degree, only Ph.D. applications will be accepted.*

The program concentrates on population biology as the broad discipline that blends ecology, evolution, population genetics and systematics into a unified field. The course curriculum consists of first-year core courses, seminars, and advanced courses in population biology, mathematics, and statistics, chosen in consultation with a guiding committee. Area specializations range from paleontology and systematics to community ecology, genomics, and molecular population genetics.

**PUBLIC HEALTH SCIENCES**

(530) 754-4992
mph.ucdavis.edu
M.P.H., Ph.D. (Pending approval)

The public health sciences programs include instruction in epidemiology, biostatistics, environmental and occupational health, health services and administration, and social and behavioral science, and they prepare students for an expanding range of professional opportunities and roles in public health and medicine. The Master of Public Health program is designed for people interested in disease prevention and community health. The program’s mission is to develop the public health leaders of the future by providing a high-quality master’s degree curriculum in partnership with the public health community. The Ph.D. in public health sciences is designed to create graduates who will be experts in generating and disseminating new knowledge about health and disease prevention and effective programs in public health. The doctoral students in this program will be educated in research design, implementation and analysis as well as public health practice. These programs promote a practical public health focus through a historically strong partnership with federal, state, and local public health communities, including the California Department of Public Health.

**SOILS AND BIOGEOCHEMISTRY**

(530) 752-1669
soils.ucdavis.edu
Ph.D., M.S.

The soils and biogeochemistry graduate program focuses on the study of physical, chemical and biological processes that occur in the soils of different landforms and ecosystems. These studies assess the impacts and implications of natural processes and anthropogenic effects, such as climate change, on soil and ecosystem behavior and development. Topics include: pesticide and trace element adsorption on surfaces; mineral weathering; fate and transport of native and applied chemicals; soil microbial ecology; fate and emission of greenhouse gases; soil carbon sequestration; nutrient uptake and management; nutrient cycling through managed and wildland ecosystems; organic agriculture; bioavailability of toxic substances; soil erosion; conservation; ecosystem productivity and sustainability; and the study of soil evolution on the landscape. These studies are carried out within a framework of integrating applied chemical, physical, mathematical and biological sciences. The soils and biogeochemistry program offers a unique opportunity to learn about soil processes in the diverse regions of California, and their role in agricultural, forest, coastal, desert, wetland and urban ecosystems.

**TRANSPORTATION TECHNOLOGY AND POLICY**

(530) 752-0247
engineering.ucdavis.edu/tp
Ph.D., M.S.

The transportation technology and policy, or TTP, program is an interdisciplinary graduate group designed to meet the world’s growing need for highly qualified, thoughtful and dedicated leaders in sustainable transportation. Our students come from a variety of disciplines and can pursue either a technology or policy track. The curriculum includes courses in civil engineering, mechanical engineering, environmental engineering, economics, policy sciences, statistics, travel behavior, management, technology assessment and environmental studies. The TTP degree gives students the tools and ability to pursue leadership roles in government, academia, nongovernmental organizations and industry.