

ANIMAL SCIENCE, BACHELOR OF SCIENCE

College of Agricultural & Environmental Sciences

Anne Todgham, Ph.D., Chairperson of the Department

The Animal Science major is devoted to the sciences central to understanding biological function of domestic and captive animals, their care, management, and utilization by people for food, fiber, companionship, work, and recreation. Advances in science and technology, and an ever-growing human population, have increased the complexity of issues surrounding the care and management of animals. Specializations within the major allow students to develop a scientific appreciation of animals and their relationship to their environment. Graduates in Animal Science are able to advance the science and technology of animal care and management in an objective and effective manner for the betterment of animals and society.

The Program

The curriculum provides depth in the biological and physiological sciences and allows students to specialize within the broad field of applied animal science. Study begins with introductory courses in animal science, biology, chemistry, mathematics, and statistics. Students undertake advanced courses in animal behavior, animal welfare, biochemistry, genetics, nutrition, and physiology and the integration of these sciences to animal growth, production, and performance. Students complete the curriculum by choosing a specialization in either an animal science discipline (behavior, biochemistry, genetics, nutrition, or physiology) or in the sciences particular to a class of animals (aquatic, avian, companion and captive, equine, laboratory, livestock and dairy, or poultry).

Career Alternatives

A wide range of career opportunities are available to graduates. The primary goal of the major is to prepare students for graduate study leading to M.S. and Ph.D. degrees; for continued study in a professional school such as veterinary medicine, human medicine, or dentistry; for careers in research, agricultural production, farm and ranch management, or positions in business, sales, financial services, health care, agricultural extension, consulting services, teaching, journalism, or laboratory technology.

Graduate Study

The Animal Biology Graduate Group offers a program of study and research leading to M.S. or Ph.D. degrees in Animal Biology. See Animal Biology (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/animal-biology-graduate-group/>); see also Graduate Studies (<http://gradstudies.ucdavis.edu/>).

Lead Faculty Advisor

Russ Hovey, Ph.D., Professor

The major requirements below are in addition to meeting University Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/>) & College Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/>); unless otherwise noted. The minimum

number of units required for the Animal Science Bachelor of Science is 117.

Code	Title	Units
Preparatory Subject Matter		
<i>Animal Science</i>		12
ANS 001	Domestic Animals & People ¹	
ANS 002	Introductory Animal Science	
ANS 041	Domestic Animal Production ²	
ANS 041L	Domestic Animal Production Laboratory ²	
<i>Biological Science</i>		15
BIS 002A	Introduction to Biology: Essentials of Life on Earth	
BIS 002B	Introduction to Biology: Principles of Ecology & Evolution	
BIS 002C	Introduction to Biology: Biodiversity & the Tree of Life	
<i>Chemistry; choose 002 series & 008 series or 118 series:</i>		16-18
CHE 002A & CHE 002B	General Chemistry and General Chemistry	
AND		
CHE 008A & CHE 008B	Organic Chemistry: Brief Course and Organic Chemistry: Brief Course	
OR		
CHE 118A & CHE 118B	Organic Chemistry for Health & Life Sciences and Organic Chemistry for Health & Life Sciences	
<i>Mathematics; choose a series:</i>		6-8
MAT 016A & MAT 016B DISCC	and (Discontinued for spring 2025) ^{**}	
MAT 017A & MAT 017B	Calculus for Biology & Medicine and Calculus for Biology & Medicine	
MAT 019A & MAT 019B	Calculus for Data-Driven Applications and Calculus for Data-Driven Applications	
MAT 021A & MAT 021B	Calculus and Calculus	
Choose one:		4
PLS 120	Applied Statistics in Agricultural Sciences	
STA 100	Applied Statistics for Biological Sciences	
Note: Some professional and graduate schools may require additional preparatory subject matter; consult the Advising Center.		
Preparatory Subject Matter Subtotal		53-57
Depth Subject Matter		
Biology		
BIS 101 or BIS 101V	Genes & Gene Expression Genes & Gene Expression	44
ANG 107	Genetics & Animal Breeding	
ABI 102	Animal Biochemistry & Metabolism	
ABI 103	Animal Biochemistry & Metabolism	
NPB 101 or ANS 100	Systemic Physiology Animal Physiology	
ANS 104	Principles & Applications of Domestic Animal Behavior	

ANS 150	Animal Health & Disease
ANS 170	Ethics of Animal Use
NUT 115	Animal Nutrition
NUT 141	Comparative Animal Nutrition & Metabolism

Integrative Animal Biology Restricted Electives:

For Companion & Captive, Disciplinary Focus-Behavior, Disciplinary Focus-Biochemistry, Disciplinary Focus-Genetics, Disciplinary Focus-Nutrition, Disciplinary Focus-Physiology, Equine Science, Laboratory Animals, and Livestock & Dairy specializations: must take two from the following list:	6-8
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ANS 123	Animal Growth & Development
ANS 124	Lactation
NPB 121	Physiology of Reproduction
NPB 130	Physiology of the Endocrine Glands

For Aquatic Animal specialization; must take two from the following list:	
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ANS 123	Animal Growth & Development
EVE 112	Biology of Invertebrates

NPB 123/APC 100	Comparative Vertebrate Organology
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WFC 120	Biology & Conservation of Fishes
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For Avian Sciences & Poultry specializations; must take two from the following list:	
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ANS 123	Animal Growth & Development
AVS 100	Avian Biology
NPB 117	Avian Physiology
NPB 130	Physiology of the Endocrine Glands

<i>Laboratory</i>	
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Choose one:	2-6
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ANG 111	Molecular Biology Laboratory Techniques
ANS 106	Domestic Animal Behavior Laboratory
ANS 133	Animal Cell Culture Laboratory
ANS 134	Animal Nutrition Laboratory
ANS 135	Production Animal Laboratory

ANS 136	Techniques & Practices of Fish Culture
ANS 137	Techniques & Practices of Avian Culture
ANS 139	Experimental Animal Physiology
MCB 120L	Molecular Biology & Biochemistry Laboratory

MCB 160L	Principles of Genetics Laboratory
NPB 101L	Systemic Physiology Laboratory
NPB 104L	Cellular Physiology/Neurobiology Laboratory (Discontinued for winter 2026)

PMI 126L	Immunology Laboratory
Depth Subject Matter Subtotal	52-58

Area of Specialization	
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Choose one area of specialization below:	12
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The program of study must be approved in advance by your faculty advisor. Courses must be taken for a letter grade.	
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Aquatic Animals (p. 2)	
Avian Sciences (p. 2)	

Companion & Captive Animals (p. 2)	
Disciplinary Focus—Behavior (p. 2)	

Disciplinary Focus—Biochemistry (p. 2)	
Disciplinary Focus—Genetics (p. 2)	
Disciplinary Focus—Nutrition (p. 3)	
Disciplinary Focus—Physiology (p. 3)	
Equine Science (p. 3)	
Laboratory Animals (p. 3)	
Livestock & Dairy (p. 3)	
Poultry (p. 3)	

Area of Specialization Subtotal	12
Total Units	117-127

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ANS 001	will be waived for junior transfer students.
2	
ANS 041, ANS 041L	will be waived for junior transfer students.

** Course(s) discontinued; see your advisor for course options.

Aquatic Animals Specialization

Code	Title	Units
ANS 018	Introductory Aquaculture	4
Select additional upper division units with approval from your faculty advisor, to form a coherent series of courses.		8

Avian Sciences Specialization

Code	Title	Units
AVS 013	Birds, Humans & the Environment	3
Select additional upper division units with approval from your faculty advisor, to form a coherent series of courses.		9

Companion & Captive Animals Specialization

Code	Title	Units
ANS 042	Introductory Companion Animal Biology	4
ANS 142	Companion Animal Care & Management	4
Select additional upper division units with approval from your faculty advisor, to form a coherent series of courses.		4

Disciplinary Focus—Behavior Specialization

Code	Title	Units
Select upper division units with approval from your faculty advisor, to form a coherent series of courses.		12

Disciplinary Focus—Biochemistry Specialization

Code	Title	Units
Select upper division units with approval from your faculty advisor, to form a coherent series of courses.		12

Disciplinary Focus—Genetics Specialization

Code	Title	Units
Select upper division units with approval from your faculty advisor, to form a coherent series of courses.		12

Disciplinary Focus—Nutrition Specialization

Code	Title	Units
Select upper division units with approval from your faculty advisor, to form a coherent series of courses.		12

Disciplinary Focus—Physiology Specialization

Code	Title	Units
Select upper division units with approval from your faculty advisor, to form a coherent series of courses.		12

Equine Science Specialization

Code	Title	Units
ANS 015	Introductory Horse Husbandry	3
ANS 115	Advanced Horse Production	4
Select additional upper division units with approval from your faculty advisor, to form a coherent series of courses.		5

Laboratory Animals Specialization

Code	Title	Units
ANS 042	Introductory Companion Animal Biology	4
ANS 140	Management of Laboratory Animals	4
Select additional upper division units with approval from your faculty advisor, to form a coherent series of courses.		4

Livestock & Dairy Specialization

Code	Title	Units
Choose two:		8-9
ANS 143	Pig & Poultry Care & Management	
ANS 144	Beef Cattle & Sheep Production	
ANS 146	Dairy Cattle Production	
Select additional upper division units with approval from your faculty advisor, to form a coherent series of courses.		3-4

Poultry Specialization

Code	Title	Units
AVS 011	Introduction to Poultry Science	3
ANS 143	Pig & Poultry Care & Management	4
Select additional upper division units with approval from your faculty advisor, to form a coherent series of courses.		5