

## ANS Depth Subject Matter Courses and Prerequisites

### LAB COURSES: (Only one lab course is required.)

Course	Prerequisites	Units	Qtr	Title
ANG 111	BIS 2C, BIS 101, ABI 103.	4	F, W	Molecular Biology Laboratory Techniques
ANS 106	ANS 104 or NPB 102	3	W	Domestic Animal Behavior Laboratory
ANS 130	ANS 100/NPB 101	3	S	Endocrinology Laboratory
ANS 132	BIS 2AB and CHE 8B/118B	3	F	Microbiology of Animal Systems Laboratory
ANS 133	ABI 102, ABI 103, ANS 100/NPB 101	4	W	Animal Cell Culture Laboratory
ANS 134	ABI 102, ABI 103, ANS 100/NPB 101	3	W	Animal Nutrition Laboratory
ANS 135	ABI 102, ABI 103, ANS 100/NPB 101, STA 100 rec.	3	F	Production Animal Laboratory
ANS 136	ANS 2, BIS 2ABC, CHE 8B/118B	3	F	Techniques and Practices of Fish Culture
ANS 137	ANS 2, BIS 2ABC, CHE 8B/118B	3	S	Techniques and Practices of Avian Culture
ANS 138	ANS 120 Recommended	3	F	Meat Quality and Safety Laboratory
ANS 139	ABI 102, BIS 101	3	W	Experiments in Animal Physiology
ANS (160A + 160B)	ANS 104 OR NPB 102 (conc. ok), NPB 121 (conc. ok)	2 + 2 (4 total)	W&S	Stress and Male Reproduction *Students <u>must</u> take both the winter and spring course to fulfill the lab requirement
MCB 120L	BIS 102/ABI 102, MCB 120 (3 units) (conc. ok) <b>(Pass 1 open to MCB, MIC Majors only)</b>	3	All	Molecular Biology and Biochemistry Laboratory
MCB 160L	BIS 101 ( <b>Pass 1 open to Genetics Majors only</b> )	5	All	Principles of Genetics Laboratory
NPB 101L	NPB 101 (ANS 100 <b>not acceptable, Pass 1 open to NPB, BIS Majors only</b> )	3	All	Systemic Physiology Laboratory
PMI 126L	PMI 126 (3 units) (conc ok)	2	W	Immunology Laboratory

**Integrative Animal Biology Courses - must take 2 courses from the list below**

Course	Prerequisites	Units	Qtr	Title
<b>NPB 130</b>	ANS 100 or NPB 101	4	F	Physiology of the Endocrine Glands
<b>ANS 124</b>	ABI 103 (conc. ok), ANS 100 or NPB 101	4	W	Lactation
<b>NPB 121</b>	ANS 100 or NPB 101	4	W	Physiology of Reproduction **NPB 121L is OPTIONAL
<b>ANS 123</b>	ABI 103 or BIS103, ANS 100 or NPB 101	4	S	Animal Growth and Development

**Aquatics Integrative Animal Biology Courses - must take 2 courses from the list below**

Only use select courses from this list if you are specializing in Aquatics

Course	Prerequisites	Units	Qtr	Title
<b>WFC 120</b>	BIS 2B	3	F	Biology and Conservation of Fishes
<b>NPB 123</b>	BIS2AB	4	F	Comparative Vertebrate Organology
<b>EVE 112</b>	BIS 2BC (courses in systematics, and EVE courses rec)	3	W even	Biology of Invertebrates
<b>ANS 123</b>	ABI 103 or BIS 103 and ANS 100 or NPB 101	4	S	Animal Growth and Development

**Avian and Poultry Integrative Animal Biology Courses - must take 2 courses from the list below**

Only use select courses from this list if you are specializing in Avian or Poultry

Course	Prerequisites	Units	Qtr	Title
<b>NPB 130</b>	ANS 100 or NPB 101	4	F	Physiology of the Endocrine Glands
<b>AVS 103*</b>	BIS 2AB	3	F	Avian Development and Genomics
<b>AVS 100</b>	BIS 2AB	3	S	Avian Biology
<b>ANS 123</b>	ABI 103 or BIS103 and ANS 100 or NPB 101	4	S	Animal Growth and Development

\*AVS 103 is temporarily being used as a replacement course for NPB 117

<b>Prerequisite Sequences</b>	
<b>Course:</b>	<b>Required Preparation:</b>
ABI 102	CHE2AB, CHE8AB or 118AB
ABI 103	ABI 102
ANG 107	BIS 101
ANS 100	BIS 2A, CHE 2AB
BIS 101	BIS 2AB (C- or better) , CHE8A or 118A, STA 100
NPB 101	BIS 2A, CHE 2AB, Physics recommended
STA 100	MAT 16AB

## SPECIES SPECIALIZATIONS:

*Please Note: **ALL** Species and Disciplinary Focus Specializations must be approved by Faculty Advisor.  
For students interested in the Disciplinary Focus Specializations, please contact the Advising Center at [asac@ucdavis.edu](mailto:asac@ucdavis.edu) for course suggestions or visit our website <https://animalscience.ucdavis.edu>.  
Disciplinary Focus Specialization options: Behavior, Biochemistry, Genetics, Nutrition, Physiology.*

### LIVESTOCK AND DAIRY (20 units minimum)

Course	Prerequisites	Units	Qtr	Title
ANS 112	ANS 1 or BIS 2B, (STA 100 or PLS 120 rec.)	3	S	Sustainable Animal Agriculture (GE SS)
ANS 120	ANS 2 or consent	3	W	Principles of Meat Science
ANS 120L	ANS 2 or consent; ANS 120 (conc. ok)	2	W	Meat Science Laboratory
ANS 129	BIS 2ABC, CHE 2AB, CHE 8AB	3	W odd	Environmental Stewardship in Animal Production Systems
ANS 143	ANS 41, NUT 115, ANS 100/NPB 101	4	F odd	Pig and Poultry Care and Management
ANS 144	ANS 41, NUT 115 or consent (ANG 107 rec)	4	S	Beef Cattle and Sheep Production
ANS 146	NUT 115, or consent	5	S	Dairy Cattle Production
ANS 148	Upper division standing	4	S	Enterprise Analysis in Animal Industries
NUT 115	CHE 8B/118B or consent	4	W	Animal Feeds and Nutrition
NUT 122	ABI 103, (ANS 100/NPB 101, BIS 2C and MAT 16B rec)	4	S	Ruminant Nutrition and Digestive Physiology

### EQUINE SCIENCE (20 units minimum)

Course	Prerequisites	Units	Qtr	Title
ANS 15	None	3	W	Introductory Horse Husbandry
ANS 108	None	3	W	Equine Behavior and Welfare
ANS 115	ANS 15, BIS 101, ANS 100/NPB 101 and any upper division NUT course	4	F	Advanced Horse Production
ANS 125	ANS 100/NPB 101	3	W odd	Equine Exercise Physiology
ANS 126	ANS 15, NUT 115	3	W even	Equine Nutrition
ANS 127	ANS 100/NPB 101, ANS 115	3	S	Advanced Equine Reproduction
ANS 141	ANS 115, (ECN 1AB rec)	4	S	Equine Enterprise Management (GE SS)
ANG 105	ANS 15, BIS 101	3	W odd	Horse Genetics
NUT 115	CHE 8B/118B or consent	4	W	Animal Nutrition
NUT 122	ABI 103, (BIS 2C, MAT 16B, ANS 100/NPB 101 rec)	4	S	Ruminant Nutrition and Digestive Physiology
NUT 123	ABI 103	3	S	Comparative Animal Nutrition
NUT 123L	NUT 123 (conc ok)	1	S	Comparative Animal Nutrition Laboratory

F, W, S, Su: Fall, Winter, Spring, Summer  
 Conc. Ok : Concurrent Enrollment ok  
 Rec.: Recommended  
 NCO: Not Currently Offered

### LABORATORY ANIMALS (23 units minimum)

Course	Prerequisites	Units	Qtr	Title
ANS 42	None	4	W	Introductory Companion Animal Biology
ANS 103	ANS 104 or NPB 102 or equiv	4	W	Animal Welfare
ANS 104	ANS 2 or BIS 2B	4	F, S	Principles and Applications of Domestic Animal Behavior
ANS 140	ANS 100/NPB 101	4	F	Management of Laboratory Animals
NPB 102	BIS 2ABC	3	All	Animal Behavior
NPB 123	BIS 2AB	4	F	Comparative Vertebrate Organology
NUT 123	ABI 103	3	S	Comparative Animal Nutrition
NUT 123L	NUT 123 (conc okay)	1	S	Comparative Animal Nutrition Laboratory

### COMPANION AND CAPTIVE ANIMALS (20 units minimum)

Course	Prerequisites	Units	Qtr	Title
ANG 185	Upper Division Standing	1	S	The Science of Captive Breeding and Reintroduction
ANS 42	None	4	W	Introductory Companion Animal Biology
ANS 142	ANS 42, BIS 101, ANS 100/NPB 101, (ABI 103 rec.)	4	F	Companion Animal Care and Management
ANS 104	ANS 2 or BIS 2B	4	F, S	Principles and Applications of Domestic Animal Behavior
ANS 107	BIS 2B	3	SuII	Zoo Biology and Research
ANT 154C	ANT 54 or ANT 154A or NPB 102, STA 100, and ANT 154CL (conc. ok)	2	S	Primate Behavior: Methods & Experimental Design
ANT 154CL	ANT 54 or ANT 154A or NPB 102, STA 100, and ANT 154C (conc. ok)	4	S	Laboratory in Primate Behavior
ANT 155	ANT 1 or ANT 54 rec.	4	S	Primate Conservation Biology
NUT 115	CHE 8B/118B or consent	4	W	Animal Nutrition
NUT 123	ABI 103	3	S	Comparative Animal Nutrition
NUT 123L	NUT 123 (conc ok)	1	S	Comparative Animal Nutrition Laboratory
NUT 142	ABI 102, ANS 42, NUT 115 rec.	4	S	Companion Animal Nutrition
PHR 106	Upper Division Standing	2	W	Human-Animal Interactions: Benefits and Issues
VME 158	BIS 2ABC (EVE 100 recommended)	3	W, S	Disease Ecology
WFC 110	BIS 2ABC; EVE 101 or ESP 100	3	S	Biology and Conservation of Wild Animals
WFC 110L	WFC110 (conc ok)	3	S	Laboratory in Biology and Conservation of Wild Animals
WFC 134	BIS2ABC (EVE 100 recommended)	3	W	Herpetology
WFC 134L	WFC 134 (conc. ok)	3	W	Herpetology Lab

### AQUATIC ANIMALS (20 units minimum)

Course	Prerequisites	Units	Qtr	Title
<b>ANS 18</b>	None	4	F	Introductory Aquaculture
<b>ABT 161</b>	BIS 2B, CHE 2B, MAT 16B	3	W even	Water Quality Management for Aquaculture
<b>ENT 116</b>	BIS 2B or equivalent	3	S	Freshwater Macroinvertebrates
<b>ESP 116N</b>	GEL 001 or GEL 002 or GEL 016 or GEL 050	3	W	Oceanography
<b>ESP 155</b>	BIS 2A (ESP 100 or EVE 101 rec.)	4	F	Wetland Ecology
<b>ETX 120</b>	BIS 2A, CHE 8B	4	W odd	Perspectives in Aquatic Toxicology
<b>EVE 112L</b>	BIS 1B or BIS 2BC, EVE 112 (conc. ok)	2	W even	Biology of Invertebrates Laboratory
<b>EVE 115</b>	BIS 2B, ESP 100/EVE 101	4	W odd	Marine Ecology
<b>NPB 123</b>	BIS 2AB	4	F	Comparative Vertebrate Organology
<b>MCB 150</b>	<b>BIS 101</b>	<b>4</b>	<b>W</b>	Developmental Biology

\*\*Students interested in fulfilling the Aquatic Animals specialization through the Bodega Bay Marine Laboratory may visit their undergraduate course website for more information: <http://bml.ucdavis.edu/education/courses/>

### AVIAN SCIENCES (20 units minimum)

Course	Prerequisites	Units	Qtr	Title
<b>AVS 13</b>	Lower Division Students Only	3	F	Birds, Humans, and the Environment
<b>AVS 115</b>	BIS 2A	3	Su II	Raptor Biology
<b>NPB 102</b>	BIS 2ABC	3	All	Animal Behavior
<b>NUT 123</b>	ABI 103	3	S	Comparative Animal Nutrition
<b>NUT 123L</b>	ABI 103, NUT 123 (conc ok)	1	S	Comparative Animal Nutrition Laboratory
<b>WFC 111</b>	BIS 2ABC (upper division ecology course rec.)	3	F	Biology and Conservation of Wild Birds
<b>WFC 111L</b>	WFC 111 (conc ok)	3	F	Laboratory in Biology and Conservation of Wild Birds
<b>WFC 136</b>	WFC 111 (WFC 111L rec.)	4	W even	Ecology of Waterfowl and Game Birds

### POULTRY (20 units minimum)

Course	Prerequisites	Units	Qtr	Title
<b>AVS 13</b>	Lower Division Students Only	3	F	Birds, Humans, and the Environment
<b>ANS 143</b>	NUT 115, ANS 100/NPB 101	4	F odd	Pig and Poultry Care and Management
<b>ANS 120</b>	ANS 2 or consent	3	W	Principles of Meat Science
<b>ANS 120L</b>	ANS 2 or consent; ANS 120 (conc. ok)	2	W	Meat Science Laboratory
<b>NUT 123</b>	ABI 103	3	S	Comparative Animal Nutrition
<b>NUT 123L</b>	ABI 103, NUT 123 (conc okay)	1	S	Comparative Animal Nutrition Laboratory
<b>WFC 136</b>	WFC 111 (WFC 111L rec.)	4	W even	Ecology of Waterfowl and Game Birds

F, W, S, Su: Fall, Winter, Spring, Summer  
 Conc. Ok : Concurrent Enrollment ok  
 Rec.: Recommended  
 NCO: Not Currently Offered

## COURSES THAT MAY BE USED TOWARDS ANY SPECIALIZATION:

Course	Prerequisites	Units	Qtr	Title
ANS 103	ANS 104 or NPB 102	4	W	Animal Welfare
ANS 104	ANS 2 or BIS 2B	4	F, S	Principles and Applications of Domestic Animal Behavior
ANS 112	ANS 1 or BIS 2B, (STA 100 or PLS 120 rec)	3	S	Sustainable Animal Agriculture (GE SS)
ANS 120	ANS 2 or consent	3	W	Principles of Meat Science
ANS 120L	ANS 2 or consent, ANS120 (conc. ok)	2	W	Meat Science Laboratory
ANS 128	Upper Div. Standing, PLS 21 or ECS 15	4	W	Agricultural Applications of Linear Programming
ANS 129	BIS 2ABC, CHE 2AB, CHE 8AB	3	W odd	Environmental Stewardship in Animal Production Systems
ANS 148	Upper division standing	4	S	Enterprise Analysis in Animal Industries (GE SS)
ANS 150	ANS 2 rec.	4	S	Health and Disease Issues in Animals
ANS 170	Writing course	4	F, S	Ethics of Animal Use (GE SS)
EVE 107	BIS 2B	4	F odd	Animal Communication
EVE 181	BIS 2B, BIS 2C (conc ok)	4	F	Ecology and Evolution of Plant-Animal Interactions
MCB 120	ABI 102/BIS 102	3	All	Molecular Biology and Biochemistry Laboratory Lecture
NPB 102	BIS 2ABC	3	All	Animal Behavior
NPB 123	BIS 2AB	4	F	Comparative Vertebrate Organology
NPB 152	ANS 100/NPB 101, 102	3	S, Su I	Hormones and Behavior
NUT 115	CHE 8B/118B or consent	4	W	Animal Feeds and Nutrition
NUT 122	ABI 103, (BIS 2C, MAT 16B, ANS 100/NPB 101 rec)	4	S	Ruminant Nutrition and Digestive Physiology
NUT 123	ABI 103	3	S	Comparative Animal Nutrition
NUT 123L	NUT 123 (conc ok)	1	S	Comparative Animal Nutrition Laboratory
NUT 141	ABI 103 and NUT 115	4	S	Comparative Nutrition and Metabolism
PMI 126	ABI 102/BIS 102 or consent	3	W	Fundamentals of Immunology
PMI 127	Microbiology course w/lab	5	S	Medical Bacteria and Fungi
PMI 128	BIS 102 or ABI 102	3	S	Biology of Animal Viruses
VMB 101V, 101Y	Upper Div. Standing, BIS 2ABC, CHE 8AB	3	F, S	Principles of Pharmacology and Toxicology
VME 158	BIS 2ABC	3	W, S	Infectious Disease in Ecology and Conservation
WFC 160	BIS 2ABC	3	W odd	Animal Coloration

**\*\*If students use any of these substitutions, it MUST be approved by their faculty advisor.**

### Companion Animal Specialization 198 Courses:

<b>Courses</b>	<b>Course Title</b>	<b>Course Description</b>	<b>Units</b>	<b>Qtr</b>	<b>Prerequisites</b>
<b>ANS 198 (159)</b>	Animal Conservation Genetics	Genetic principles taught in the context of their application to animal conservation. More specifically, how genetic concepts and information can be used to help conserve and manage threatened or endangered animal species. Topics include but are not limited to population genetic structure, genetic drift and effective population size, mutation and genetic load, population subdivision and defining conservation units, captive breeding and restoration, inbreeding/outbreeding depression and genetic rescue, natural and artificial insemination.	3	NCO	BIS 101

**\*For ANS 198 courses, contact ASAC in order to obtain a CRN to register for the course.**