

# ANIMAL SCIENCE & MANAGEMENT, BACHELOR OF SCIENCE

## College of Agricultural & Environmental Sciences

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

## The Major Program

The Animal Science & Management major combines a thorough education in the basic biology of domestic animal species with a strong background in agricultural economics. Graduates of this interdisciplinary major will be well positioned to adjust to our rapidly changing world and job market.

## The Program

The interdisciplinary program in Animal Science and Management combines a fundamental background in the natural sciences (chemistry, biology, physiology, nutrition, genetics, mathematics, and behavior), with an understanding of economics and humanities. After completing preparatory courses, students focus on both the animal species that interest them (horses, cattle, sheep, companion animals, goats, fish, crustaceans or mollusks, among others) and principles of managerial economics (marketing, finance, business organization, or systems analysis). Students preparing for medical or veterinary school can meet professional entrance requirements with those of this major if they plan ahead.

## Career Alternatives

Job opportunities for successful graduates are plentiful and include positions with banking and financial institutions, agribusiness, Peace Corps, and farms of all scales. Most Animal Science and Management graduates are well prepared for professional study (medical, law, veterinary, and graduate business schools) as well as graduate research programs leading to the M.S. or Ph.D. degrees. Advanced degrees open doors to work as extension specialists, farm advisors, and teachers, and prepare students for international service.

## Lead Faculty Advisor

L. Allen Pettet, Ph.D.

Code	Title	Units
<b>Written &amp; Oral Expression</b>		
Choose two; if not chosen for English College Requirement:		8
CMN 130	Group Communication	
CMN 136	Organizational Communication	
CMN 140	Introduction to Mass Communication	
UWP 101	Advanced Composition	
or UWP 101V	Advanced Composition	
or UWP 101Y	Advanced Composition	
UWP 102A	Writing in the Disciplines: Special Topics	
UWP 102B	Writing in the Disciplines: Biology	
UWP 102C	Writing in the Disciplines: History	
UWP 102D	Writing in the Disciplines: International Relations	
UWP 102E	Writing in the Disciplines: Engineering	

UWP 102F	Writing in the Disciplines: Food Science & Technology	
UWP 102G	Writing in the Disciplines: Environmental Writing	
UWP 104A	Writing in the Professions: Business Writing	
or UWP 104AV	Writing in the Professions: Business Writing	
or UWP 104AY	Writing in the Professions: Business Writing	
UWP 104B	Writing in the Professions: Law	
UWP 104C	Writing in the Professions: Journalism	
UWP 104D	Writing in the Professions: Elementary & Secondary Education	
UWP 104E	Writing in the Professions: Science	
UWP 104F	Writing in the Professions: Health	
or UWP 104FV	Writing in the Professions: Health	
or UWP 104FY	Writing in the Professions: Health	
Written & Oral Expression Subtotal		8
<b>Preparatory Subject Matter</b>		
<i>Animal Science</i>		8
ANS 001	Domestic Animals & People	
ANS 002	Introductory Animal Science	
<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</i>		16
CHE 002A	General Chemistry	
CHE 002B	General Chemistry	
CHE 008A	Organic Chemistry: Brief Course	
CHE 008B	Organic Chemistry: Brief Course	
Choose one:		3-4
PLS 021	Application of Computers in Technology	
or PLS 021V	Application of Computers in Technology	
ECS 015	(Discontinued)	
<i>Economics</i>		8
ECN 001A	Principles of Microeconomics	
or ECN 001AV	Principles of Microeconomics	
or ECN 001AY	Principles of Microeconomics	
ECN 001B	Principles of Macroeconomics	
or ECN 001BV	Principles of Macroeconomics	
<i>Management</i>		8
MGT 011A	Elementary Accounting	
MGT 011B	Elementary Accounting	
<i>Mathematics; choose a series:</i>		9-12
MAT 016A & MAT 016B & MAT 016C	Short Calculus and Short Calculus and Short Calculus	
MAT 017A & MAT 017B & MAT 017C	Calculus for Biology & Medicine and Calculus for Biology & Medicine and Calculus for Biology & Medicine	

MAT 021A & MAT 021B & MAT 021C	Calculus and Calculus and Calculus		Choose at least two additional courses with approval of advisor; minimum 8 units; duplicate from Depth Subject Matter courses not counted:	8-10
Choose one:		4	ARE 018	Business Law
PLS 120	Applied Statistics in Agricultural Sciences		ARE 112	Fundamentals of Organization Management
STA 100	Applied Statistics for Biological Sciences		ARE 113	Fundamentals of Marketing Management
STA 103	Applied Statistics for Business & Economics		ARE 118	Tax Accounting
Or other courses in quantitative skills with prior approval of the Master Advisor.			ARE 120	Agricultural Policy
Preparatory Subject Matter Subtotal		71-75	ARE 130	Agricultural Markets
<b>Depth Subject Matter</b>			ARE 132	Cooperative Business Enterprises
<i>Biological Science</i>		4	ARE 136	Managerial Marketing
BIS 101	Genes & Gene Expression		ARE 138	International Commodity & Resource Markets
<i>Nutrition</i>		4	ARE 140	Farm Management
NUT 115	Animal Nutrition		ARE 142	Personal Finance
Choose one:		5	ARE 143	Investments
NPB 101	Systemic Physiology		ARE 144	Real Estate Economics
ANS 100	Animal Physiology		ARE 145	Farm & Rural Resources Appraisal
<i>Business Management</i>		16	ARE 150	Agricultural Labor
<i>Agricultural &amp; Resource Economics</i>			ARE 155	Operations Research & Management Science
ARE 100A	Intermediate Microeconomics: Theory of Production & Consumption		ARE 157	Analysis for Operations & Production Management
Choose one:			ARE 176	Environmental Economics
ARE 113	Fundamentals of Marketing Management		ANS 103	Animal Welfare
ARE 130	Agricultural Markets		ANS 104	Principles & Applications of Domestic Animal Behavior
ARE 136	Managerial Marketing		ANS 106	Domestic Animal Behavior Laboratory
ARE 138	International Commodity & Resource Markets		ANS 115	Advanced Horse Production
Choose one:			ANS 118	Fish Production
ARE 120	Agricultural Policy		ANS 119	Invertebrate Aquaculture
ARE 132	Cooperative Business Enterprises		ANS 120	Principles of Meat Science
ARE 140	Farm Management		ANS 120L	Meat Science Laboratory
ARE 145	Farm & Rural Resources Appraisal		ANS 123	Animal Growth & Development
ARE 157	Analysis for Operations & Production Management		ANS 124	Lactation
Choose one:			ANS 125	Equine Exercise Physiology
ANS 128	Agricultural Applications of Linear Programming		ANS 126	Equine Nutrition
ARE 155	Operations Research & Management Science		ANS 127	Advanced Equine Reproduction
Depth Subject Matter Subtotal		29	ANS 128	Agricultural Applications of Linear Programming
<b>Area of Specializations</b>			ANS 129	Environmental Stewardship in Animal Production Systems
Choose one area of specialization below:		14-16	ANS 131	Reproduction & Early Development in Aquatic Animals
Aquatic Animals (p. 3)			ANS 136	Techniques & Practices of Fish Culture
Companion Animals (p. 3)			ANS 137	Techniques & Practices of Avian Culture
Dairy (p. 3)			ANS 140	Management of Laboratory Animals
Equine (p. 3)			ANS 141	Equine Enterprise Management
Livestock (p. 3)			ANS 142	Companion Animal Care & Management
Poultry (p. 3)			ANS 143	Pig & Poultry Care & Management
Individualized (p. 3)			ANS 144	Beef Cattle & Sheep Production
Area of Specializations Subtotal		14-16	ANS 145	Meat Processing & Marketing
<b>Restricted Electives</b>			ANS 146	Dairy Cattle Production

ANS 147	Dairy Processing & Marketing	
ANS 149	Farrier Science	
ANS 170	Ethics of Animal Use	
ANS 192	Internship in Animal Science	
ANS 194	Research in Animal Science	
ANS 194HA	Undergraduate Honors Thesis in Animal Science <sup>1</sup>	
ANS 194HB	Undergraduate Honors Thesis in Animal Science <sup>1</sup>	
ANS 194HC	Undergraduate Honors Thesis in Animal Science <sup>1</sup>	
AVS 100	Avian Biology	
AVS 103	Avian Development & Genomics	
AVS 115	Raptor Biology	
AVS 121	Avian Reproduction	
AVS 123	Management of Birds	
AVS 149	Egg Production Management	
AVS 150	Nutrition of Birds	
ANG 101	Animal Cytogenetics	
ANG 105	Horse Genetics	
ANG 107	Genetics & Animal Breeding	
ANG 111	Molecular Biology Laboratory Techniques	
NUT 122	(Discontinued)	
NUT 123	(Discontinued)	
NUT 123L	(Discontinued)	
NUT 124	Nutrition & Feeding of Finfishes	
ABI 102	Animal Biochemistry & Metabolism (strongly recommended)	
ABI 103	Animal Biochemistry & Metabolism	
ECS 124	Theory & Practice of Bioinformatics	
MGT 100	Introduction to Financial Accounting	
NPB 117	Avian Physiology	
NPB 121	Physiology of Reproduction	
NPB 121L	Physiology of Reproduction Laboratory	
NPB 130	Physiology of the Endocrine Glands	
WFC 120	Biology & Conservation of Fishes	
WFC 120L	Laboratory in Biology & Conservation of Fishes	
WFC 130	Physiological Ecology of Wildlife	
Restricted Electives Subtotal		8-10
Total Units		130-138

<sup>1</sup> Only one quarter of ANS 194H series may be used.

## Aquatic Animals Specialization

Code	Title	Units
ANS 018	Introductory Aquaculture	4
Choose one:		4
ANS 118	Fish Production	
ANS 119	Invertebrate Aquaculture	
ANS 131	Reproduction & Early Development in Aquatic Animals	4

ANS 148	Enterprise Analysis in Animal Industries	4
<b>Total Units</b>		<b>16</b>

## Companion Animals Specialization

Code	Title	Units
ANS 042	Introductory Companion Animal Biology	4
ANS 140	Management of Laboratory Animals	4
ANS 142	Companion Animal Care & Management	4
ANS 148	Enterprise Analysis in Animal Industries	4
<b>Total Units</b>		<b>16</b>

## Dairy Specialization

Code	Title	Units
ANS 041	Domestic Animal Production	2
ANS 041L	Domestic Animal Production Laboratory	2
ANS 146	Dairy Cattle Production	5
ANS 147	Dairy Processing & Marketing	3
ANS 148	Enterprise Analysis in Animal Industries	4
<b>Total Units</b>		<b>16</b>

## Equine Specialization

Code	Title	Units
ANS 015	Introductory Horse Husbandry	3
ANS 115	Advanced Horse Production	4
ANS 141	Equine Enterprise Management	4
ANS 148	Enterprise Analysis in Animal Industries	4
<b>Total Units</b>		<b>15</b>

## Livestock Specialization

Code	Title	Units
ANS 041	Domestic Animal Production	2
ANS 041L	Domestic Animal Production Laboratory	2
Choose one:		4
ANS 143	Pig & Poultry Care & Management	
ANS 144	Beef Cattle & Sheep Production	
ANS 145	Meat Processing & Marketing	4
ANS 148	Enterprise Analysis in Animal Industries	4
<b>Total Units</b>		<b>16</b>

## Poultry Specialization

Code	Title	Units
AVS 011	Introduction to Poultry Science	3
ANS 143	Pig & Poultry Care & Management	4
ANS 145	Meat Processing & Marketing	4
ANS 148	Enterprise Analysis in Animal Industries	4
<b>Total Units</b>		<b>15</b>

## Individualized Specialization

Students may, with prior approval of their advisor and the Master Advisor, design their own individualized specialization within the major. The specialization will consist of four to six courses with one of the courses being ANS 148. The other courses will include an introduction, care and

management, and processing and/or marketing aspects of the animal of interest.