MAJOR IN ANIMAL SCIENCE

The Animal Science major (food animals) provides students with an industry-oriented, science-based education that prepares them for careers in animal agriculture or one of many industries associated with livestock production. The curriculum focuses on in-depth scientific knowledge of food-producing animal physiology and function and how to relate those scientific principles to animal production. Animal Science majors choose from specialized courses to enhance their technical, practical, and business skills related to production, marketing, and processing of livestock, meat and byproducts to develop a broad understanding of animal agriculture and production.

Learning Outcomes

Successful students will be able to:

- Describe the role of livestock and meat production systems in our global society
- Discuss biological principles and apply these principles into food animal management systems
- Identify business/economic principles and their application to food animal production enterprises
- Critically evaluate livestock industry issues
- Apply problem-solving and leadership skills that enhance professional success

Potential Occupations

- Managers of production units such as ranches, feedlots, meat processing facilities and dairy farms
- Sales representatives for feed companies, pharmaceutical firms, and livestock service organizations
- Meat product development or food safety/quality assurance
- Employment with organizational groups/associations such as breed organizations, clientele groups, and beef companies
- Cooperative extension and other educational positions
- Enrollment in graduate and professional schools

Change of Major

In order to change your major to Animal Science or Equine Science, please sign up for an informational session here:

Animal Science Student Success: Change of Major Session (https://www.signupgenius.com/go/10c094ba9ac2aa6f9c34-change/#/)

Benefits of meeting with an academic success coordinator include:

- Assistance with navigating program requirements.
- Assistance with identifying courses of interest.
- Referrals to on campus resources.

All animal science and equine science majors must meet with an academic success coordinator/advisor to receive an advising code and register for classes. Students may register for classes, check for registration date, and holds, etc. by accessing RamWeb (https://ramweb.colostate.edu/registrar/Public/Login.aspx).

Feel free to email the Student Success Team (cas_ansci_student_success@colostate.edu) with any questions.

Requirements Effective Fall 2023

A minimum grade of 'C' (2.000) is required for BMS 300, MIP 315 and each of the ANEQ courses used to meet requirements for the major.

A maximum of five credits is allowed for the following:
ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364.

A maximum of 12 credits is allowed for any combination of the following:
ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355,ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364,

ANEQ 384, ANEQ 487A, ANEQ 495, and ANEQ 496.

Freshman

		AUCC	Credits
ANEQ 101	Food Animal Science		4
Select one course from the following:			1-4
ANEQ 105	Introduction to Large Animal Anatomy		
BMS 305	Domestic Animal Gross Anatomy		
ANEQ 193	Student Seminar--Exploring Student Success		1
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
Select one group from the following:			5
Group A:			

CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
Select at least three credits from the following:			3-4
MATH 117	College Algebra in Context I (GT-MA1)	1B	
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 126	Analytic Trigonometry (GT-MA1)	1B	
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)		1C	3
	Total Credits		**28-32**

Sophomore

ANEQ 293	Professional Development and Career Success		1
ANEQ 310	Animal Reproduction	4B	3
ANEQ 320	Principles of Animal Nutrition	4B	3
SPCM 200	Public Speaking		3
Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
Select one course from the following:			3-4
ANEQ 230	Farm Animal Anatomy and Physiology		
ANEQ 305	Functional Large Animal Physiology		
BMS 300	Principles of Human Physiology		
Select one course from the following:			3
ANEQ 328	Foundations in Animal Genetics		
SOCR 330	Principles of Genetics		
Select one course from the following:			3
STAT 201	General Statistics (GT-MA1)	1B	
STAT 301	Introduction to Applied Statistical Methods		
STAT 307	Introduction to Biostatistics		
Business/Economics Electives[1]			3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
	Total Credits		**28-29**

Junior

ANEQ 330	Principles of Animal Breeding	4B	3
ANEQ 360	Principles of Meat Science	4B	3
Select one course from the following:			3
RS 300	Rangeland Conservation and Stewardship		
SOCR 320	Sustainable Forage Management for Livestock		
Applied Animal Science Elective (Select a minimum of 4 credits from a minimum of two courses -- see list below)			4
Experience Animal Science Elective (Select a minimum of 2 credits from the following):			2
ANEQ 487A	Internship: Animal		
Department-approved Study Abroad			
Science Electives (Select 5-8 credits from a minimum of two courses below):			5-8

ANEQ 460	Meat Safety		
ANEQ 510	Bovine Reproduction Management		
ANEQ 545	Molecular Methods in Animal Genetics		
ANEQ 522	Animal Metabolism		
BC 351	Principles of Biochemistry		
BC 401	Comprehensive Biochemistry I		
BC 403	Comprehensive Biochemistry II		
BMS 325	Cellular Neurobiology		
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 335	Introduction to Analytical Chemistry		
CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
FTEC 447	Food Chemistry		
LIFE 205	Microbial Biology		
LIFE 206	Microbial Biology Laboratory		
LIFE 220/LAND 220	Fundamentals of Ecology (GT-SC2)	3A	
LIFE 320	Ecology		
MIP 300	General Microbiology		
Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)		2	3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	6
	Total Credits		**29-32**

Senior

Select one course from the following:			3-4
ANEQ 313	Prevention and Control of Livestock Diseases		
ANEQ 346	Equine Disease Management		
Select two courses from the following:			6-7
ANEQ 470	Meat Processing Systems	4A,4C	
ANEQ 472	Sheep Systems	4A,4C	
ANEQ 473	Dairy Systems	4A,4C	
ANEQ 474	Swine Systems	4A,4C	
ANEQ 476	Feedlot Systems	4A,4C	
ANEQ 478	Beef Systems	4A,4C	
Business/Economics Elective[1]			3
Specialization Animal Science Electives (see list below)[2]			9
Electives[3]			3-13
	Total Credits		**26-34**
	Program Total Credits:		**120**

Specialization Animal Science Electives [2]

Code	Title	Credits
No more than 6 credits of Equine courses can be taken.		
ANEQ 334	Principles of Equine Genetics	3
ANEQ 344	Principles of Equine Reproduction	3
ANEQ 345	Principles of Nutrition: Equine Applications	3
May select one advanced judging evaluation course:		1-2
ANEQ 355	Advanced Livestock Evaluation	
ANEQ 357	Advanced Dairy Evaluation	
ANEQ 362	Advanced Meat Product Evaluation	
ANEQ 364	Advanced Wool and Fiber Evaluation	
ANEQ 420	Applied Nutrition--Computer Diet Formulation	3
ANEQ 450	Processed Meats	3
ANEQ 460	Meat Safety	2
ANEQ 470	Meat Processing Systems	4
ANEQ 472	Sheep Systems	3
ANEQ 473	Dairy Systems	3
ANEQ 474	Swine Systems	3
ANEQ 476	Feedlot Systems	3
ANEQ 478	Beef Systems	3
ANEQ 495	Independent Study	Var.
ANEQ 496	Group Study	Var.

ANEQ 505	Microbiome of Animal Systems	3
ANEQ 510	Bovine Reproduction Management	4
ANEQ 522	Animal Metabolism	3
ANEQ 525	Advanced Meat Science	3
ANEQ 531	Applied Bovine Respiratory Disease Management	1
ANEQ 532	Genetics of Bovine Respiratory Disease	1
ANEQ 545	Molecular Methods in Animal Genetics	3
ANEQ 551	Field Necropsy	2
ANEQ 565	Interpreting Animal Science Research	3
ANEQ 567	HACCP Meat Safety	2
ANEQ 575	Computational Biology in Animal Breeding	3
BC 463	Molecular Genetics	3
BC 465	Molecular Regulation of Cell Function	3
BMS 305	Domestic Animal Gross Anatomy	4
BMS 325	Cellular Neurobiology	3
BMS 330	Microscopic Anatomy	4
BMS 409	Human and Animal Reproductive Biology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BSPM 462/BZ 462/ MIP 462	Parasitology and Vector Biology	5
BZ 300	Animal Behavior	3
BZ 310	Cell Biology	4
BZ 311	Developmental Biology	4
BZ 430	Animal Behavior and Conservation	3
BZ 433	Behavioral Genetics	3
FSHN 300	Food Principles and Applications	3
FSHN 301	Food Principles and Applications Laboratory	2
FTEC 400	Food Safety	3
FTEC 447	Food Chemistry	2
GES 450	Global Sustainability and Health	3
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 334	Food Microbiology	3
MIP 335	Food Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
MIP 432/ESS 432	Microbial Ecology	3
MIP 433/ESS 433	Microbial Ecology Laboratory	1
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
RS 452	Rangeland Herbivore Ecology and Management	3
VS 331	Histology	4
VS 333	Domestic Animal Anatomy	4

Applied Animal Science Electives (Select a minimum of 4 credits from a minimum of 2 courses)

Code	Title	Credits
ANEQ 250	Live Animal and Carcass Evaluation	3
ANEQ 286	Livestock Practicum	2
ANEQ 300A	Topics in Animal Sciences: Livestock Handling	1
ANEQ 300E	Topics in Animal Sciences: Family Ranching	1
ANEQ 300L	Topics in Animal Sciences: Quality Assurance	2
ANEQ 300N	Topics in Animal Sciences: Seedstock Management and Merchandising	3
ANEQ 300R	Topics in Animal Sciences: Calving and Calf Care	2
ANEQ 300U	Topics in Animal Sciences: Seedstock Sale Management--Sale Planning	1
ANEQ 300V	Topics in Animal Sciences: Seedstock Sale Management--Sale Management	1
ANEQ 312	Animal Ultrasonography	2
ANEQ 322	Pet Nutrition	2
ANEQ 323	Zoo Nutrition	2
ANEQ 352	Introduction to Horse Evaluation	2
ANEQ 354	Introduction to Livestock Evaluation	3
ANEQ 356	Introduction to Dairy Evaluation	3
ANEQ 361	Introduction to Meat Product Evaluation	3
ANEQ 363	Introduction to Wool and Fiber Evaluation	1
ANEQ 366	Animal Welfare Evaluation	2
ANEQ 384	Supervised College Teaching	1-5
ANEQ 410	Applied Food Animal Behavior	3
A maximum of one course, 1-3 credits, may be selected from the following courses):		1-3
ANEQ 200	Applied Horsemanship and Equitation	
ANEQ 201A	Preparation of Horses for Competition: Western	
ANEQ 201B	Preparation of Horses for Competition: English	
ANEQ 203	Equine Management	
ANEQ 204	Equine Facilities Management	
ANEQ 205	Equine Assessment, Evaluation and Retraining	
ANEQ 249	Introduction to the Trail Riding Industry	
ANEQ 303	Equine Digital Photography	
ANEQ 315	Equine Behavior	
ANEQ 325	Equine Exercise Physiology	
ANEQ 340	Horse Training and Sale Preparation I	
ANEQ 341	Horse Training and Sale Preparation II	
ANEQ 349	Packing and Outfitting	
ANEQ 351	Techniques in Therapeutic Riding	
ANEQ 353	Advanced Horse Evaluation	
ANEQ 358	Equine Event and Sales Management	
ANEQ 359	Equine Sales Production	
ANEQ 365	Principles of Teaching Therapeutic Riding	
ANEQ 386B	Equine Practicum: Equine Reproductive Management	
ANEQ 386C	Equine Practicum: Equine Farrier Management	
ANEQ 442	Riding Instructor Training	
ANEQ 445	Foaling Management	

ANEQ 486	Therapeutic Riding Instructor Practicum
GES 201	Systems Thinking in Sustainability
LSPA 340	Spanish for Animal Health and Care Fields
SOCR 210	Microbiome Roles in a Sustainable Earth (GT-SC2)

[1] Select credits from any AREC, ECON, or business course, of which 3 credits may be a computer course. AREC 202, ECON 202, and CS 110 will not be accepted. Access granted for the following business courses: ACT 205, BUS 205, FIN 305, MGT 305, MKT 305.

[2] Select a total of 9 credits from the Specialization Animal Science List, or students may satisfy the requirement by completing a second major (Equine Science, Agricultural Business, Agricultural Education) or a minor (Agricultural Business or Business Administration).

[3] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: A maximum of five credits is allowed for ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364. A maximum of 12 credits is allowed for any combination of the following: ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487A, ANEQ 495, and ANEQ 496.

A minimum grade of 'C' (2.000) is required for BMS 300, MIP 315 and each of the ANEQ courses used to meet requirements for the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 101	Food Animal Science	X			4
ANEQ 193	Student Seminar--Exploring Student Success	X			1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Select at least three credits from the following:		X			3-4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	
MATH 126	Analytic Trigonometry (GT-MA1)	X		1B	
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)			X	1C	3
	Total Credits				**15-16**

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			1-4
ANEQ 105	Introduction to Large Animal Anatomy				
BMS 305	Domestic Animal Gross Anatomy				
CO 150	College Composition (GT-CO2)	X		1A	3
CS 110	Personal Computing	X			4
Select one group from the following:		X			5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
	Total Credits				**13-16**

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3-4
ANEQ 230	Farm Animal Anatomy and Physiology				
ANEQ 305	Functional Large Animal Physiology		X		
BMS 300	Principles of Human Physiology				
Select one course from the following:		X			3

AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
Select one course from the following:		X			3
STAT 201	General Statistics (GT-MA1)			1B	
STAT 301	Introduction to Applied Statistical Methods		X		
STAT 307	Introduction to Biostatistics		X		
Business/Economics Elective		X			3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)			X	3D	3
	Total Credits				**15-16**
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 293	Professional Development and Career Success	X			1
ANEQ 310	Animal Reproduction	X		4B	3
ANEQ 320	Principles of Animal Nutrition	X		4B	3
SPCM 200	Public Speaking	X			3
Select one course from the following:		X			3
ANEQ 328	Foundations in Animal Genetics		X		
SOCR 330	Principles of Genetics				
	Total Credits				**13**
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 360	Principles of Meat Science	X		4B	3
Select one course from the following:		X			3
RS 300	Rangeland Conservation and Stewardship				
SOCR 320	Sustainable Forage Management for Livestock				
Experience Animal Science Elective (Select a minimum of 2 credits from the following):		X			2
ANEQ 487A	Internship: Animal				
Department-approved Study Abroad					
Science Elective (See list on Program Requirements tab)		X			2
Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)			X	2	3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			X	3B	3
	Total Credits				**16**
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 330	Principles of Animal Breeding	X		4B	3
Applied Animal Science Electives (See list on Program Requirements tab)		X			4
Science Elective (See list on Program Requirements tab)		X			3-6
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			X	3B	3
	Total Credits				**13-16**
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3-4
ANEQ 313	Prevention and Control of Livestock Diseases	X			
ANEQ 346	Equine Disease Management	X			
Select one course from the following:		X			3-4
ANEQ 470	Meat Processing Systems			4A,4C	
ANEQ 472	Sheep Systems			4A,4C	
ANEQ 473	Dairy Systems			4A,4C	
ANEQ 474	Swine Systems			4A,4C	
ANEQ 476	Feedlot Systems			4A,4C	

ANEQ 478	Beef Systems			4A,4C	
Specialization Animal Science Electives (See list on Program Requirements tab)		X			3
Elective			X		3
	Total Credits				**12-14**

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course not previously taken:		X			3-4
ANEQ 470	Meat Processing Systems	X		4A,4C	
ANEQ 472	Sheep Systems	X		4A,4C	
ANEQ 473	Dairy Systems	X		4A,4C	
ANEQ 474	Swine Systems	X		4A,4C	
ANEQ 476	Feedlot Systems	X		4A,4C	
ANEQ 478	Beef Systems	X		4A,4C	
Business/Economics Elective		X			3
Specialization Animal Science Electives (See list on Program Requirements tab)		X			6
Electives			X		0-11
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				**14-20**
	Program Total Credits:				**120**