

ANIMAL SCIENCE

Description

General Information

The field of animal science encompasses the sciences related to animals and their contributions and interactions with humans. This program is designed particularly for students who are interested in pursuing careers associated with the livestock, poultry, meat, and companion animal industries. The core curriculum gives students a balanced education in animal science, biological sciences, physical sciences, mathematics, communications, and humanities and social sciences.

Options

Each animal science student studies a core curriculum that provides a comprehensive look at animal biological systems, use of animal products, and current issues and careers in the animal industries. In addition to the core, there are seven different options from which students can choose an area of focus that meets their own individual interests and career objectives. These options include:

- Animal Biology and Biotechnology Option
- Business and Communications Option
- Companion Animal Science Option
- Equine Science Option
- Food Animal Production and Management Option
- Meat Science Option
- Veterinary Animal Science Option

Midwest Poultry Consortium

Students interested in any aspect of poultry science or avian biology may earn up to 24 credits through the Midwest Poultry Consortium's Undergraduate Center of Excellence in Madison, WI. The credits may be applied toward an animal science degree from the University of Nebraska. Further details are available from the Department of Animal Science.

3+2 year Veterinary Medicine/Animal Science B.S. Degree

Students pursuing a DVM degree at an accredited college of veterinary medicine may obtain a BS degree in animal science, granted by the University of Nebraska, upon successful completion of the first two years of the curriculum in veterinary medicine. To be eligible, students must have completed at least 90 credit hours of pre-professional courses, all Achievement-Centered Education course requirements, and 20 credit hours in animal science courses at the University of Nebraska. Students who successfully complete the 3+2 Program, must provide transcripts and complete the Application for Degree form via MyRED. Students without MyRED access may apply for graduation in person at Husker Hub in the Canfield Administration Building, or by mail. Students should discuss the program with their academic advisor.

College Requirements

College Admission

Requirements for admission into the College of Agricultural Sciences and Natural Resources (CASNR) are consistent with general University admission requirements (one unit equals one high school year): 4 units of English, 4 units of mathematics, 3 units of natural sciences, 3 units of social sciences, and 2 units of world language. Students must also meet performance requirements: a 3.0 cumulative high school grade

point average OR an ACT composite of 20 or higher, writing portion not required OR a score of 1040 or higher on the SAT Critical Reading and Math sections OR rank in the top one-half of graduating class; transfer students must have a 2.0 (on a 4.0 scale) cumulative grade point average and 2.0 on the most recent term of attendance.

Admission Deficiencies/Removal of Deficiencies

Students who are admitted to CASNR with core course deficiencies must remove these deficiencies within the first 30 credit hours at the University of Nebraska–Lincoln, or within the first calendar year at Nebraska, whichever takes longer, excluding foreign languages. Students have up to 60 credit hours to remove world language deficiencies. College-level coursework taken to remove deficiencies may be used to meet degree requirements in CASNR.

Deficiencies in the required entrance subjects can be removed by the completion of specified courses in the University or by correspondence.

The Office of Admissions, Alexander Building (south entrance), City Campus, provides information to new students on how deficiencies can be removed.

College Degree Requirements

Curriculum Requirements

The curriculum requirements of the College consist of three areas: ACE (Achievement-Centered Education), College of Agricultural Sciences and Natural Resources Core, and Degree Program requirements and electives. All three areas of the College Curriculum Requirements are incorporated within the description of the Major/Degree Program sections of the catalog. The individual major/degree program listings of classes ensures that a student will meet the minimum curriculum requirements of the College.

World Languages/Language Requirement

Two units of a world language are required. This requirement is usually met with two years of high school language.

Experiential Learning

All undergraduates in the College of Agricultural Sciences and Natural Resources must take an Experiential Learning (EL) designated course. This may include 0-credit courses designed to document co-curricular activities recognized as Experiential Learning.

Minimum Hours Required for Graduation

The College grants the bachelors degree in programs associated with agricultural sciences, natural resources, and related programs. Students working toward a degree must earn at least 120 semester hours of credit. A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation. Some degree programs have a higher cumulative grade point average required for graduation. Please check the degree program on its graduation cumulative grade point average.

Grade Rules

Removal of C-, D, and F Grades

Only the most recent letter grade received in a given course will be used in computing a student's cumulative grade point average if the student has completed the course more than once and previously received a grade or grades below C in that course.

The previous grade (or grades) will not be used in the computation of the cumulative grade point average, but it will remain a part of the academic record and will appear on any transcript.

A student can remove from his/her cumulative average a course grade of C-, D+, D, D-, or F if the student repeats the same course at the University of Nebraska and receives a grade other than P (pass), I (incomplete), N (no pass), W (withdrew), or NR (no report). If a course is no longer being offered, it is not eligible for the revised grade point average computation process.

For complete procedures and regulations, see the Office of the University Registrar website at <http://www.unl.edu/regrec/course-repeats> (<http://www.unl.edu/regrec/course-repeats/>).

Pass/No Pass

Students in CASNR may take any course offered on a Pass/No Pass basis within the 24-hour limitation established by the Faculty Senate. However, a department may specify that the Pass/No Pass status of its courses be limited to non-majors or may choose to offer some courses for letter grades only.

GPA Requirements

A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation. Some degree programs have a higher cumulative grade point average required for graduation. Please check the degree program on its graduation cumulative grade point average.

Transfer Credit Rules

To be considered for admission a transfer student, Nebraska resident or nonresident, must have an accumulated average of C (2.0 on a 4.0 scale) and a minimum C average in the last semester of attendance at another college. Transfer students who have completed less than 12 credit hours of college study must submit either ACT or SAT scores.

Ordinarily, credits earned at an accredited college are accepted by the University. The College, however, will evaluate all hours submitted on an application for transfer and reserves the right to accept or reject any of them. Sixty (60) is the maximum number of hours the University will accept on transfer from a two-year college. Ninety (90) is the maximum number of hours the University will accept from a four-year college. Transfer credit in the degree program must be approved by the degree program advisor on a Request for Substitution Form to meet specific course requirements, group requirements, or course level requirements in the major. At least 9 hours in the major field, including the capstone course, must be completed at the University of Nebraska–Lincoln regardless of the number of hours transferred.

The College will accept no more than 10 semester hours of C-, D+, D, and D- grades from other schools. The C-, D+, D, and D- grades can only be applied to free electives. This policy does not apply to the transfer of grades from UNO or UNK to the University of Nebraska–Lincoln.

Joint Academic Transfer Programs

The College of Agricultural Sciences and Natural Resources has agreements with many institutions to support joint academic programs. The transfer programs include dual degree programs and cooperative degree programs. Dual degree programs offer students the opportunity to receive a degree from a participating institution and also to complete the requirements for a bachelor of science degree in CASNR. Cooperative programs result in a single degree from either the University of Nebraska–Lincoln or the cooperating institution.

Dual Degree Programs

A to B Programs

The A to B Program, a joint academic program offered by the CASNR and participating community colleges, allows students to complete the first two years of a degree program at the participating community college and continue their education and study in a degree program leading toward a bachelor of science degree.

The A to B Program provides a basic knowledge plus specialized coursework. Students transfer into CASNR with junior standing.

Depending on the community college, students enrolled in the A to B Program may complete the requirements for an associate of science at the community college, transfer to the University of Nebraska–Lincoln, and work toward a bachelor of science degree.

Participating community colleges include:

- Central Community College
- Metropolitan Community College
- Mid-Plains Community College
- Nebraska College of Technical Agriculture
- Nebraska Indian Community College
- Northeast Community College
- Southeast Community College
- Western Nebraska Community College

3+2 Programs

Two specialized degree programs in **animal science** and **veterinary science** are offered jointly with an accredited college or school of veterinary medicine. These two programs permit CASNR animal science or veterinary science students to receive a bachelor of science degree from the University of Nebraska–Lincoln with a degree in animal science or veterinary science after successfully completing two years of the professional curriculum in veterinary medicine at an accredited veterinary school. Students who successfully complete the 3+2 Program, must provide transcripts and complete the Application for Degree form via MyRED. Students without MyRED access may apply for graduation in person at Husker Hub in the Canfield Administration Building, or by mail. Students should discuss these degree programs with their academic advisor.

Cooperative Degree Programs

Academic credit from the University and a cooperating institution are applied towards a four-year degree from either the University of Nebraska–Lincoln (University degree-granting program) or the cooperating institution (non-University degree-granting program). All have approved programs of study.

UNL Degree-Granting Programs

A University of Nebraska–Lincoln degree-granting program is designed to provide students the opportunity to complete a two-year program of study at one of the four-year institutions listed below, transfer to CASNR, and complete the requirements for a bachelor of science degree.

Chadron State College. Chadron State College offers a 2+2 program leading to a grassland ecology and management degree program and a transfer program leading to a bachelor of science in agricultural education in the teaching option.

Wayne State College. Wayne State College offers a 3+1 program leading to a bachelor of science in plant biology in the ecology and management

option and a 3+1 program leading to a bachelor of science in Applied Science.

University of Nebraska at Kearney. Transfer programs are available for students pursuing degree programs leading to a bachelor of science degree.

University of Nebraska at Omaha. Transfer programs are available for students pursuing degree programs leading to a bachelor of science degree.

Non University of Nebraska–Lincoln Degree-Granting Programs

CASNR cooperates with other institutions to provide coursework that is applied towards a degree at the cooperating institution. Pre-professional programs offered by CASNR allow students to complete the first two or three years of a degree program at the University prior to transferring and completing a degree at the cooperating institution.

Chadron State College–Range Science. The 3+1 Program in range science allows Chadron State College students to pursue a range science degree through Chadron State College. Students complete three years of coursework at Chadron State College and one year of specialized range science coursework (32 credit hours) at CASNR.

Dordt College (Iowa)–Agricultural Education: Teaching Option. This program allows students to pursue an Agricultural Education Teaching Option degree leading toward a bachelor of science in agricultural education. Students at Dordt College will complete 90 credit hours in the Agricultural Education: Teaching Option Transfer Program.

Residency

Students must complete at least 30 of the total hours for their degree using University of Nebraska–Lincoln credits. At least 18 of the 30 credit hours must be in courses offered through CASNR¹ (>299) including the appropriate ACE 10 degree requirement or an approved ACE 10 substitution offered through another Nebraska college and excluding independent study regardless of the number of hours transferred. Credit earned during education abroad may be used toward the residency requirement if students register through the University of Nebraska–Lincoln and participate in prior-approved education abroad programs. The University of Nebraska–Lincoln open enrollment and summer independent study courses count toward residence.

¹ Includes courses taught by CASNR faculty through interdisciplinary prefixes (e.g., LIFE, MBIQ, ENVR, SCIL, EAEP, HRTM, ENSC) and CASNR crosslisted courses taught by non-CASNR faculty.

Online and Distance Education

There are many opportunities to earn college credit online through the University of Nebraska–Lincoln. Some of these credits may be applicable not only as elective credits but also toward the fulfillment of the College's education requirements. Credits earned online may count toward residency. However, certain offerings may not be counted toward scholarship requirements or academic recognition criteria.

For further information, contact:

Office of Online and Distance Education
University of Nebraska–Lincoln
305 Brace Labs
Lincoln, NE 68588-0109
402-472-4681
<http://online.unl.edu/>

Independent Study Rules

Students wishing to take part in independent studies must obtain permission; complete and sign a contract form; and furnish copies of the contract to the instructor, advisor, departmental office, and the Dean's Office. The contract should be completed before registration. Forms are available in 103 Agricultural Hall or online at the CASNR website.

Independent study projects include research, literature review or extension of coursework under the supervision and evaluation of a departmental faculty member.

Students may only count 12 hours of independent study toward their degrees and no more than 6 hours can be counted during their last 36 hours earned, excluding senior thesis, internships, and courses taught under an independent study number.

Other College Degree Requirements

Capstone Course Requirement

A capstone course is required for each CASNR degree program. A capstone course is defined as a course in which students are required to integrate diverse bodies of knowledge to solve a problem or formulate a policy of societal importance.

ACE Requirements

All students must fulfill the Achievement Centered Education (ACE) requirements. Information about the ACE program may be viewed at ace.unl.edu (<https://ace.unl.edu/>).

The minimum requirements of CASNR reflect the common core of courses that apply to students pursuing degrees in the college. Students should work with an advisor to satisfy ACE outcomes 1, 2, 3, 4, 6, and 10 with the college requirements.

Catalog Rule

Students must fulfill the requirements stated in the catalog for the academic year in which they are first admitted to the University of Nebraska–Lincoln or when they were first admitted to a Joint Academic Transfer Program. Students transferring from a community college, but without admission to a Joint Academic Transfer Program, may be eligible to fulfill the requirements as stated in the catalog for an academic year in which they were enrolled at the community college prior to attending the University of Nebraska–Lincoln. This decision should be made in consultation with academic advisors, provided the student a) was enrolled in a community college during the catalog year they are utilizing, b) maintained continuous enrollment at the previous institution for 1 academic year or more, and c) continued enrollment at the University of Nebraska–Lincoln within 1 calendar year from their last term at the previous institution. In consultation with advisors, a student may choose to follow a subsequent catalog for any academic year in which they are admitted to and enrolled as a degree-seeking student at the University of Nebraska–Lincoln in the College of Agricultural Sciences and Natural Resources. Students must complete all degree requirements from a single catalog year. The catalog which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

Learning Outcomes

Graduates of animal science will be able to:

1. Understand the biology and chemistry of the life sciences and apply the principles to animal nutrition, growth, reproduction, genetics, and management of animals and their products.
2. Develop animal nutrition, growth, reproduction, genetics, and management recommendations related to the specific animal or animal product in the career paths related to their selected option.
3. Propose solutions to problems in the production and/or management of animals or the animal products specific to their option.
4. Produce professional oral and written communications needed in the careers related to their specific option.

Major Requirements

Core Requirements

The following basic courses are required for majors in animal science. In addition, students must select and meet the requirements of one of the animal science options, depending on their own individual interests and career objectives.

College Integrative Course (ACE 8)

SCIL 101	Science and Decision-Making for a Complex World	3
Credit Hours Subtotal:		3

Departmental Requirements

ASCI 95	Animal Science Major Orientation Seminar	0
ASCI 100 & ASCI 100L	Fundamentals of Animal Biology and Industry and Fundamentals of Animal Biology and Industry Laboratory	4
ASCI 201	Professional Development for Careers in Animal Science	1
ASCI 320	Animal Nutrition and Feeding	3
ASCI 330	Animal Breeding and Genetics	4
ASCI 491	Animal Science Seminar	1
Select one Capstone course (ACE 10) from the following:		3
ASCI 485	Animal Systems Analysis	
ASCI 486	Animal Biological Systems	
Credit Hours Subtotal:		16

Natural Sciences (ACE 4)

Select one of the following:		4
PLAS 215	Genetics	
BIOS 206	General Genetics ¹	
Select one CASNR approved Life Sciences sequence from the following:		4

BIOS 101 & BIOS 101L	General Biology and General Biology Laboratory	
LIFE 120 & LIFE 120L	Fundamentals of Biology I and Fundamentals of Biology I laboratory ²	
Credit Hours Subtotal:		8

Mathematics and Statistics (ACE 3) and Physics

STAT 218	Introduction to Statistics	3
Select one of the following:		3-5
MATH 102	Trigonometry	
MATH 104	Applied Calculus	
MATH 106	Calculus I	
Credit Hours Subtotal:		8

Communications

Oral Communications (ACE 2)

Select one of the following: ³		3
ALEC 102	Interpersonal Skills for Leadership	
COMM 101	Communication in the 21st Century	
COMM 209	Public Speaking	
COMM 210	Communicating in Small Groups	
COMM 215	Visual Communication	
COMM 283	Interpersonal Communication	
COMM 286	Business and Professional Communication	
JGEN 300	Technical Communication II	
MRKT 257	Sales Communication	
TMFD 121	Visual Communication with Animation	

Written Communications (ACE 1)

Select one of the following: ³		3
ENGL 150	Writing and Inquiry	
ENGL 151	Writing and Argument	
ENGL 254	Writing and Communities	
JGEN 120	Basic Business Communication	
JGEN 200	Technical Communication I	
JGEN 300	Technical Communication II	

Communications and Interpersonal Skills

Select one of the following: ⁴		3
Any ACE 1 course (from above listings)		
Any ACE 2 course (from above listings)		
ALEC 202	Foundations of Leadership Theory and Practice ⁵	
ALEC 207 / ADPR 207	Communicating Science with Public Audiences	
ALEC 302	Dynamics of Effective Leadership in Organizations	
ALEC 305	Presentation Strategies to Communicate Agricultural and Environmental Sciences	
ALEC 350	Agriculture, the Environment & Science in the Media	
ALEC 480	Capstone Experience in Agricultural and Environmental Sciences Communication	
COMM 212	Debate	
COMM 325	Interviewing	
JGEN 103	Media Literacy	
MNGT 311	Leadership, Communication and Teams ⁵	
MNGT 365	Managing Diversity in Organizations	
Credit Hours Subtotal:		9

Economics, Humanities and Social Sciences

Select one of the following: ⁶		3
AECN 141	Introduction to the Economics of Agriculture	
ECON 200	Economic Essentials and Issues	
ECON 211	Principles of Macroeconomics	
ECON 212	Principles of Microeconomics	
Select one course each from ACE outcomes 5, 7, and 9		9
Credit Hours Subtotal:		12

Experiential Learning

Select 4 hours from the following:⁷ 4

Internship, Extension, Research or Teaching Experience⁸

ASCI 395A	Experiential Learning for Career Development in Animal Sciences - Industry Experiences
ASCI 395B	Extension and Service Experiences
ASCI 395D	Research Experiences
ASCI 395E	Experiential Learning for Career Development in Animal Sciences - Undergraduate Teaching Experience
ASCI 419 / FDST 419	Meat Investigations
ASCI 490A	Animal Science Internship - Beef Feedlot Management
ASCI 499H	Honors Thesis
AECN 495A	Internship in Agricultural Financing and Banking
AECN 495B	Internship in Food Products Marketing Management
AECN 495C	Internship in Agricultural and Public Policy
EAEP 395	Agribusiness Entrepreneurship Internship
GRAS 490	Internship Experience in Grazing Livestock Systems

Industry Study Tours

ASCI 311A	Equine Industry Study Tour
ASCI 311B	Meat Industry Study Tour
ASCI 311E	Beef Industry Study Tour ⁹
AGRI 310	Study Tours in International Agriculture

Animal & Meat Evaluation Experience

ASCI 300A	Principles of Meat Evaluation, Grading and Judging
ASCI 300B	Principles of Livestock Evaluation and Judging
ASCI 300D	Principles of Meat Animal Evaluation ¹⁰
ASCI 300E	Principles of Horse Evaluation and Judging
ASCI 400A	Advanced Meat Grading and Evaluation ¹⁰
ASCI 400B	Advanced Livestock Evaluation and Judging ¹⁰
ASCI 400E	Advanced Horse Evaluation and Judging ¹⁰
ASCI 361	Equestrian Team Horsemanship/Equitation ¹⁰
ASCI 456	Beef Cattle Merchandising
ASCI 481	Beef Industry Scholars - Beef Summit ⁹
ASCI 482 / AECN 482	Beef Industry Scholars - National Beef Industry Policy ⁹
AGRI 389	Agricultural Concerns Seminar
Academic Quadrathlon ¹¹	

Credit Hours Subtotal: 4

Total Credit Hours 60

¹ BIOS 206 requires both LIFE 120 & LIFE 120L and LIFE 121 & LIFE 121L as prerequisites.

² Students enrolled in the Biology or Veterinary Option are required to take LIFE 120 and LIFE 120L.

³ Pre-veterinary students should check that the selected course will fulfill their college of veterinary medicine admissions requirements.

⁴ Any courses from the above listings not used to fulfill the ACE 1 or ACE 2 requirements.

⁵ Students completing the Business and Communications Option are required to take ALEC 202 or MNGT 311.

⁶ ECON 212 or AECN 141 are preferred for the Food Animal Production and Management option.

⁷ Four (4) hours of experiential learning are required for each of the Animal Science Options. Students may select the 4 hours from any combination of courses on this list.

⁸ A pre-experience learning plan must be completed and approved before the experience begins and an oral or poster presentation is required.

⁹ Part of the Nebraska Beef Industry Scholars Minor.

¹⁰ By permission or invitation only; these are intercollegiate competitive teams.

¹¹ With enrollment in ASCI 496.

Also, select one of the following options:

Animal Biology and Biotechnology Option

This option is designed for students considering careers that deal with basic biological principles of animals and birds. Through careful use of electives, students can develop an emphasis in genetics, growth and muscle biology, nutrition, or physiology as they establish a basic background in biological principles and develop molecular and biotechnology laboratory skills. Completion of this option provides excellent preparation for graduate study, other professional programs including medical or dental school, and many other research-based careers.

Departmental Requirements

ASCI 210	Animal Products	3
ASCI 340	Animal Physiological Systems	4
ASCI 341	Physiology and Management of Reproduction	4

Select 14 hours from the following: 14

ASCI 321	Companion Animal Nutrition
ASCI 322	Equine Nutrition
ASCI 342	Equine Reproduction
ASCI 410	Processed Meats
ASCI 421	Advanced Animal Nutrition
ASCI 431	Advanced Animal Breeding
ASCI 432	Genome Analysis
ASCI 441	New Techniques in Reproductive Biology
ASCI 442 / BIOS 442	Endocrinology
ASCI 443	Physiology of Animal Cells and Tissues
ASCI 445	Equine and Canine Exercise Science
BIOC 432 / BIOS 432 / CHEM 432	Biochemistry II: Metabolism and Biological Information
ASCI 444	Domestic Animal Immunology
BIOC 433 / BIOS 433 / CHEM 433	Biochemistry Laboratory
BIOC 437 / BIOS 437	Research Techniques in Biochemistry

BIOC 442 / STAT 442	Computational Biology	
BIOS 420 / MBIO 420	Molecular Genetics	
BIOS 440 / MBIO 440	Microbial Physiology	
VBMS 408 / BIOS 408	Functional Histology	
VBMS 410	General Pharmacology and Toxicology	
VBMS 424	Basic Molecular Infectious Diseases	
VBMS 441 / BIOS 441	Pathogenic Microbiology	
Credit Hours Subtotal:		25
Natural Science		
CHEM 109A & CHEM 109L	General Chemistry I and General Chemistry I Laboratory	4
CHEM 110A & CHEM 110L	General Chemistry II and General Chemistry II Laboratory	4
CHEM 251 & CHEM 253	Organic Chemistry I and Organic Chemistry I Laboratory	4
BIOC 431 / BIOS 431 / CHEM 431	Biochemistry I: Structure and Metabolism	3
or BIOC 401	Elements of Biochemistry	
LIFE 121 & LIFE 121L	Fundamentals of Biology II and Fundamentals of Biology II Laboratory	4
BIOS 312 & BIOS 314	Microbiology and Microbiology Laboratory	4
PHYS 141	Elementary General Physics I	4-5
or PHYS 151	Elements of Physics	
or AGST 109	Physical Principles in Agriculture and Life Sciences	
Credit Hours Subtotal:		27
Total ASCI Core Requirements		
Complete requirements		57-62
Credit Hours Subtotal:		58
Option Requirements		
Complete requirements		51
Credit Hours Subtotal:		0
Free Electives		
Select 10-15 hours ¹		10-15
Credit Hours Subtotal:		10
Total Credit Hours		120

¹ Students planning to apply for post-graduate or professional programs should consult their academic advisor for specific program requirements.

Business and Communications Option

This option is designed for students considering careers with companies, financial institutions, government agencies, and other business entities that support the livestock production and processing industries. Through careful use of electives, students may receive minors in other business-related programs and develop specific expertise for positions in management, marketing, and public relations. Completion of this option provides students with a solid background in both animal science and business.

Departmental Requirements

ASCI 210	Animal Products	3
ASCI 240	Anatomy and Physiology of Domestic Animals	4
or ASCI 340	Animal Physiological Systems	
ASCI 341	Physiology and Management of Reproduction	4
Select one of the following:		2-3
ASCI 200	Animal and Carcass Evaluation	
ASCI 250	Animal Management	
ASCI 251	Introduction to Companion Animals	
ASCI 252	Introduction to the Horse Industry and Management	
ASCI 254	Basic Swine Science	
ASCI 271	Companion Animal and Equine Behavior	
Select 4 hours of 300- and 400-level ASCI courses from the following:		4
ASCI 310	Fresh Meats	
ASCI 321	Companion Animal Nutrition	
ASCI 322	Equine Nutrition	
ASCI 342	Equine Reproduction	
ASCI 354A	Swine Breeding & Gestation ¹	
ASCI 354B	Swine Farrowing Management ¹	
ASCI 354D	Swine Nursery Management ¹	
ASCI 354E	Employee Management for Swine Industry ¹	
ASCI 354F	Swine Environment Management ¹	
ASCI 370	Animal Welfare	
ASCI 410	Processed Meats	
ASCI 411	HACCP and Food Safety Systems for the Food Industry	
ASCI 421	Advanced Animal Nutrition	
ASCI 422	Advanced Feeding and Feed Formulation	
ASCI 431	Advanced Animal Breeding	
ASCI 432	Genome Analysis	
ASCI 441	New Techniques in Reproductive Biology	
ASCI 442	Endocrinology	
ASCI 443	Physiology of Animal Cells and Tissues	
ASCI 450	Horse Management	
ASCI 455	Beef Cow-Calf Management	
ASCI 457	Beef Feedlot Management	
Credit Hours Subtotal:		17

Natural Sciences

Chemistry

Select one chemistry series from the following: ² 8

Series I:

CHEM 105A & CHEM 105L	Chemistry in Context I and Chemistry in Context I Laboratory
CHEM 106A & CHEM 106L	Chemistry in Context II and Chemistry in Context II Laboratory

Series II:

CHEM 109A & CHEM 109L	General Chemistry I and General Chemistry I Laboratory
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CHEM 110A & CHEM 110L	General Chemistry II and General Chemistry II Laboratory	
Credit Hours Subtotal:		8

Business Courses

ACCT 200	Accounting for Business Decisions	3
or ACCT 201	Introductory Accounting I	
or ACCT 202	Introductory Accounting II	
Select a minimum of four courses representing at least three of the following four areas:		12

Finance

AECN 301	Farm Accounting, Analysis, and Tax Management	
AECN 420	International Food and Agricultural Trade	
AECN 452	Agricultural Finance	
AECN 453	Agricultural and Rural Property Appraisal	
ECON 303	An Introduction to Money and Banking	
ENTR 275 / AECN 275 / EAEP 275 / PLAS 275	Agribusiness Entrepreneurial Finance	
ENTR 388 / ABUS 388 / EAEP 388 / PLAS 388	Business Systems in Entrepreneurship	
FINA 260	Personal Finance	
FINA 300	Financial Decision Making	

Management

AECN 201	Farm and Ranch Management	
AECN 265 / NREE 265	Resource and Environmental Economics I	
AECN 316	Agribusiness Management	
AECN 401	Advanced Farm Management and Linear Programming	
AECN 416	Advanced Agribusiness Management	
ENTR 121 / MNGT 121	Introduction to Entrepreneurship and Innovation	
ENTR 321 / MNGT 321	Foundations of Entrepreneurship	
ENTR 322 / MNGT 322	Family Business	
MNGT 300	Management Essentials For Contemporary Organizations	
MNGT 360	Managing Behavior in Organizations	
MNGT 361	Human Resource Management	
MNGT 365	Managing Diversity in Organizations	
SCMA 331	Operations and Supply Chain Management	

Marketing

AECN 225 / EAEP 225 / MRKT 225	Agribusiness Entrepreneurship in Food Products Marketing	
AECN 235 / MRKT 235	Introduction to Commodity Marketing	
AECN 325 / MRKT 325	Marketing of Agricultural Commodities	
AECN 336	Grain Merchandising	

AECN 425	Agricultural Marketing in a Multinational Environment	
AECN 435	Advanced Agricultural Marketing Management	
AECN 436	Commodity Price Forecasting	
ENTR 388 / ABUS 388 / EAEP 388 / PLAS 388	Business Systems in Entrepreneurship	
MRKT 300	Contemporary Marketing	
MRKT 341 / ABUS 341	Marketing ³	
MRKT 345	Market Research	
MRKT 346 / SCMA 346	Marketing Channels Management	
MRKT 347	Marketing Communication Strategy	
MRKT 350	Marketing Analytics	
MRKT 425	Retailing Management	

Law

AECN 256	Legal Aspects in Agriculture	
AECN 345	Policy Issues in Agriculture and Natural Resources	
AECN 357 / NREE 357	Natural Resource and Environmental Law	
AECN 445 / NREE 445	Agricultural and Natural Resource Policy Analysis	
AECN 456 / NREE 456	Environmental Law	
AECN 457 / NREE 457 / WATS 457	Water Law	
BLAW 300	Business, Government & Society	
BLAW 371	Legal Environment ³	

Credit Hours Subtotal: 15

Business Communications and Leadership*Animal Science Core, Communications & Interpersonal Skills*

ALEC 202	Foundations of Leadership Theory and Practice	3
or MNGT 311	Leadership, Communication and Teams	

Additional Communication & Leadership Courses

Select one of the following:		3
ALEC 302	Dynamics of Effective Leadership in Organizations	
ALEC 305	Presentation Strategies to Communicate Agricultural and Environmental Sciences	
MNGT 365	Managing Diversity in Organizations	

Credit Hours Subtotal: 6

Total ASCI Core Requirements

Complete requirements	57-62
Credit Hours Subtotal:	62

Option Requirements

Complete requirements	46-51
Credit Hours Subtotal:	0

Free ElectivesSelect 7-17 hours⁴ 7-17

Credit Hours Subtotal:	12
Total Credit Hours	120

¹ Enrollment in these Swine Science online courses requires completion of ASCI 254.

² Chemistry Series I does not provide adequate preparation for advanced chemistry or graduate school within the life sciences. If you desire this advanced training, Series II and CHEM 251 and CHEM 253 are recommended.

³ Must meet Business Qualified prerequisites.

⁴ Students are encouraged to consult the Undergraduate Catalog for details regarding agribusiness and agricultural economics minors.

Companion Animal Science Option

Designed for students with a specific interest in companion animals. For students interested in pursuing a career in the companion animal industry, this option provides an overview of the general animal sciences in combination with a concentrated study of animal behavior and human interactions along with companion animal breeding and genetics, nutrition, reproduction, care, and management.

Departmental Requirements

ASCI 240	Anatomy and Physiology of Domestic Animals	4
or ASCI 340	Animal Physiological Systems	
ASCI 341	Physiology and Management of Reproduction	4
ASCI 321	Companion Animal Nutrition	3
Select one animal management course from the following:		3
ASCI 250	Animal Management	
ASCI 251	Introduction to Companion Animals	
ASCI 252	Introduction to the Horse Industry and Management	
Select a minimum of 7 hours from the following:		7
FDST 367 / AGST 367	Pet Food Manufacturing	
ASCI 171	Human-Companion Animal Interactions	
ASCI 210	Animal Products	
ASCI 271	Companion Animal and Equine Behavior	
ASCI 322	Equine Nutrition	
ASCI 342	Equine Reproduction	
ASCI 370	Animal Welfare	
ASCI 445	Equine and Canine Exercise Science	
BIOS 462	Animal Behavior	
NRES 211	Introduction to Conservation Biology	
NRES 220 & NRES 222	Principles of Ecology and Ecology Laboratory	
NRES 311	Wildlife Ecology and Management	
PSYC 461	Animal Learning & Cognition	
Credit Hours Subtotal:		21

Natural Sciences

Chemistry

Select one chemistry series from the following:¹ 8

Series I:

CHEM 105A & CHEM 105L	Chemistry in Context I and Chemistry in Context I Laboratory	
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CHEM 106A & CHEM 106L	Chemistry in Context II and Chemistry in Context II Laboratory	
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Series II:

CHEM 109A & CHEM 109L	General Chemistry I and General Chemistry I Laboratory	
CHEM 110A & CHEM 110L	General Chemistry II and General Chemistry II Laboratory	
Select one of the following:		3-4
BIOS 111	Introduction to Microbiology and Human Health	
BIOS 312	Microbiology	
VBMS 303	Principles and Prevention of Livestock Diseases	

Credit Hours Subtotal:	11
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Business Courses

Select 9 hours from the "Business Courses" category listed in the Animal Science Business Option 9

Credit Hours Subtotal: 9

Total ASCI Core Requirements

Complete requirements 57-62

Credit Hours Subtotal: 62

Option Requirements

Complete requirements 41-46

Credit Hours Subtotal: 0

Free Electives

Select 12-22 hours 12-22

Credit Hours Subtotal: 17

Total Credit Hours 120

¹ Chemistry Series I does not provide adequate preparation for advanced chemistry or graduate school within the life sciences. If you desire this advanced training, Series II and CHEM 251 and CHEM 253 are recommended.

Equine Science Option

Designed for students with a specific interest in the equine area. For students interested in pursuing a career in the equine industry this option provides a combination of general animal sciences with a concentrated study of equitation, evaluation, nutrition, reproduction, and management of equines.

Departmental Requirements

ASCI 240	Anatomy and Physiology of Domestic Animals	4
or ASCI 340	Animal Physiological Systems	
ASCI 260	Basic Equitation	2
or ASCI 360	Advanced Equitation	
ASCI 341	Physiology and Management of Reproduction	4
ASCI 450	Horse Management	3
Select one animal management course from the following:		3
ASCI 250	Animal Management	
ASCI 251	Introduction to Companion Animals	
ASCI 252	Introduction to the Horse Industry and Management	

Select a minimum of 7 hours from the following:	7
ASCI 210 Animal Products	
ASCI 271 Companion Animal and Equine Behavior	
ASCI 322 Equine Nutrition	
ASCI 342 Equine Reproduction	
Credit Hours Subtotal:	23
Experiential Learning (From the Animal Science Core)	
ASCI 300E Principles of Horse Evaluation and Judging	2
or ASCI 400E Advanced Horse Evaluation and Judging	
Credit Hours Subtotal:	0
Natural Sciences	
<i>Chemistry</i>	
Select one chemistry series from the following: ¹	8
Series I:	
CHEM 105A Chemistry in Context I & CHEM 105L and Chemistry in Context I Laboratory	
CHEM 106A Chemistry in Context II & CHEM 106L and Chemistry in Context II Laboratory	
Series II:	
CHEM 109A General Chemistry I & CHEM 109L and General Chemistry I Laboratory	
CHEM 110A General Chemistry II & CHEM 110L and General Chemistry II Laboratory	
Select one of the following:	3-4
BIOS 111 Introduction to Microbiology and Human Health	
BIOS 312 Microbiology	
VBMS 303 Principles and Prevention of Livestock Diseases	
Credit Hours Subtotal:	11
Business Courses	
Select courses from the "Business Courses" category listed in the Animal Science Business Option	9
Credit Hours Subtotal:	9
Total ASCI Core Requirements	
Complete requirements	57-62
Credit Hours Subtotal:	62
Option Requirements	
Complete requirements	43-48
Credit Hours Subtotal:	0
Free Electives	
Select 10-20 credits	10-20
Credit Hours Subtotal:	15
Total Credit Hours	120

¹ Chemistry Series I does not provide adequate preparation for advanced chemistry or graduate school within the life sciences. If you desire this advanced training, Series II and CHEM 251 and CHEM 253 are recommended.

Meat Science Option

This option is designed for students seeking careers associated with the meat and food industry, including research and product development, quality assurance, food safety, fresh meat processing, meat product manufacturing, equipment and ingredient technology, and government

service. Students will build a solid foundation in product characteristics, product development, production, food safety, and marketing of fresh and processed meats.

Departmental Requirements

ASCI 210 Animal Products	3
ASCI 240 Anatomy and Physiology of Domestic Animals	4
or ASCI 340 Animal Physiological Systems	
ASCI 310 Fresh Meats	3
ASCI 341 Physiology and Management of Reproduction	4
ASCI 410 Processed Meats	3
ASCI 411 HACCP and Food Safety Systems for the Food Industry	3
Credit Hours Subtotal:	20

Natural Sciences

<i>Chemistry</i>	
Select one chemistry series from the following: ¹	8-12

Series I:	
CHEM 105A Chemistry in Context I & CHEM 105L and Chemistry in Context I Laboratory	
CHEM 106A Chemistry in Context II & CHEM 106L and Chemistry in Context II Laboratory	

Series II:	
CHEM 109A General Chemistry I & CHEM 109L and General Chemistry I Laboratory	
CHEM 110A General Chemistry II & CHEM 110L and General Chemistry II Laboratory	
CHEM 251 Organic Chemistry I & CHEM 253 and Organic Chemistry I Laboratory	

BIOS 312 Microbiology	3-4
or BIOS 111 Introduction to Microbiology and Human Health	
Credit Hours Subtotal:	11

Supporting Courses

Select 3 hours of ASCI or FDST courses at the 200 level or above:	3
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Suggested courses:

ASCI 200 Animal and Carcass Evaluation	
ASCI 213 / Meat Specifications and Procurement	
NUTR 213	
FDST 205 Food Composition and Analysis	

Select 6 hours of ASCI or FDST courses at the 300/400 level or above:	6
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Suggested courses:

ASCI 300A Principles of Meat Evaluation, Grading and Judging ²	
ASCI 300B Principles of Livestock Evaluation and Judging ²	
ASCI 300D Principles of Meat Animal Evaluation ²	
ASCI 311B Meat Industry Study Tour	
ASCI 419 Meat Investigations	
FDST 301 Chemistry of Food	
FDST 363 / Heat and Mass Transfer	
AGST 363	

FDST 403	Food Quality Assurance	
FDST 405 / BIOS 445	Food Microbiology	
FDST 406 / BIOS 446	Food Microbiology Laboratory	
FDST 460	Food Product Development Concepts I	
NUTR 372	Food Safety and Sanitation	
Credit Hours Subtotal:		9
Business Courses		
Select 3-6 hours ³		3-6
Credit Hours Subtotal:		3
Total ASCI Core Requirements		
Complete requirements		57-62
Credit Hours Subtotal:		61
Option Requirements		
Complete requirements		45-48
Credit Hours Subtotal:		0
Free Electives		
Select 10-18 hours		10-18
Credit Hours Subtotal:		16
Total Credit Hours		120

¹ *Chemistry Series I* does not provide adequate preparation for advanced chemistry or graduate school within the life sciences. If you desire this advanced training, *Series II* is recommended.

² Only one allowed for credit here.

³ If student completes **CHEM Series I**: Select two courses from the "Business Courses" category listed in the *Animal Science Business Option* (6 hr).
If student completes **CHEM Series II**: Select one course from the "Business Courses" category listed in the *Animal Science Business Option* (3 hr).

NOTE: Experiential learning courses suggested from the following:
ASCI 300A, ASCI 300D, ASCI 311B, ASCI 395A (meat section), ASCI 400A, ASCI 419

Food Animal Production and Management Option

This option is designed for students interested in careers related to the production and management of beef cattle, dairy cattle, horses, poultry, and swine. Although students may emphasize a particular industry or production system, the option provides a balanced study of animal nutrition, meat animal products, reproductive physiology, breeding and genetics, and business management of animal production systems. Completion of this option provides excellent preparation for those wishing to be involved in production agriculture and the abundance of allied industries that support animal agriculture.

Departmental Requirements

ASCI 200	Animal and Carcass Evaluation	3
ASCI 210	Animal Products	3
ASCI 240	Anatomy and Physiology of Domestic Animals	4
or ASCI 340	Animal Physiological Systems	
ASCI 250	Animal Management	3
or ASCI 252	Introduction to the Horse Industry and Management	
ASCI 341	Physiology and Management of Reproduction	4

Select a minimum of 4 hours of ASCI Management courses from the following:

4

ASCI 254	Basic Swine Science
ASCI 354A	Swine Breeding & Gestation
ASCI 354B	Swine Farrowing Management
ASCI 354D	Swine Nursery Management
ASCI 354E	Employee Management for Swine Industry
ASCI 354F	Swine Environment Management
ASCI 450	Horse Management
ASCI 451	Livestock Management on Range and Pasture
ASCI 455	Beef Cow-Calf Management
ASCI 457	Beef Feedlot Management

Select two supporting courses from the following:

6-7

AECN 301	Farm Accounting, Analysis, and Tax Management
AECN 325	Marketing of Agricultural Commodities
ASCI 310	Fresh Meats
ASCI 370	Animal Welfare
ASCI 410	Processed Meats
ASCI 411	HACCP and Food Safety Systems for the Food Industry
ASCI 421	Advanced Animal Nutrition
ASCI 422	Advanced Feeding and Feed Formulation
ASCI 432	Genome Analysis
ASCI 441	New Techniques in Reproductive Biology
ASCI 442	Endocrinology
ASCI 443	Physiology of Animal Cells and Tissues
AGST 342	Animal Housing Systems
AGST 475 / CIVE 475 / CRPL 475 / GEOL 475 / PLAS 475 / NRES 475 / POLS 475 / SOIL 475 / WATS 475	Water Quality Strategy
PLAS 153 / SOIL 153	Soil Resources
PLAS 240 / GRAS 240 / RNGE 240	Forage Crop and Pasture Management
PLAS 245 / NRES 245	Introduction to Grassland Ecology and Management
PLAS 340 / GRAS 340 / RNGE 340	Range Management and Improvement
PLAS 440 / GRAS 440 / NRES 440 / RNGE 440	Great Plains Ecosystem

Credit Hours Subtotal:

27

Natural Sciences

Chemistry

Select one chemistry series from the following:¹

8

Series I:

CHEM 105A Chemistry in Context I
& CHEM 105L and Chemistry in Context I Laboratory

CHEM 106A Chemistry in Context II
& CHEM 106L and Chemistry in Context II Laboratory

Series II:

CHEM 109A General Chemistry I
& CHEM 109L and General Chemistry I Laboratory

CHEM 110A General Chemistry II
& CHEM 110L and General Chemistry II Laboratory

Select one of the following:

3-4

BIOS 111 Introduction to Microbiology and Human Health

BIOS 312 Microbiology

VBMS 303 Principles and Prevention of Livestock Diseases

Credit Hours Subtotal:

11

Business Courses

AECN 201 Farm and Ranch Management

4

AECN 235 / Introduction to Commodity Marketing
MRKT 235

3

Select one additional business course from the following:

3

AECN 256 Legal Aspects in Agriculture

AECN 265 / Resource and Environmental Economics I
NREE 265

AECN 301 Farm Accounting, Analysis, and Tax Management

AECN 325 / Marketing of Agricultural Commodities
MRKT 325

AECN 336 Grain Merchandising

AECN 345 Policy Issues in Agriculture and Natural Resources

AECN 357 / Natural Resource and Environmental Law
NREE 357

AECN 435 Advanced Agricultural Marketing Management

Credit Hours Subtotal:

10

Total ASCI Core Requirements

Complete requirements

57-62

Credit Hours Subtotal:

62

Option Requirements

Complete requirements

48-54

Credit Hours Subtotal:

0

Free Electives

Select 4-15 hours

4-15

Credit Hours Subtotal:

10

Total Credit Hours

120

¹ Chemistry Series I does not provide adequate preparation for advanced chemistry or graduate school within the life sciences. If you desire this advanced training, Series II and CHEM 251 and CHEM 253 are recommended.

Veterinary Animal Science Option

This option is designed for students planning a career in veterinary medicine and provides for completion of the pre-veterinary course requirements for application to the joint University of Nebraska/Iowa State University program for the doctorate of veterinary medicine (DVM) degree. However, it can easily be adapted to meet specific requirements for other colleges of veterinary medicine. Courses in animal management, nutrition, physiology and related areas complement the foundational science courses and provide a comprehensive background for careers in veterinary medicine. Completion of the option also provides excellent preparation for graduate study or other professional programs in the biological sciences. Students admitted to veterinary college after three years of undergraduate study may earn a bachelor of science degree through a 3+2 program (three years of undergraduate study plus two years of veterinary school).

Departmental Requirements

ASCI 210	Animal Products	3
ASCI 340	Animal Physiological Systems	4
ASCI 341	Physiology and Management of Reproduction	4

Select one of the following:

3

ASCI 250 Animal Management

ASCI 251 Introduction to Companion Animals

ASCI 252 Introduction to the Horse Industry and Management

ASCI 254 Basic Swine Science

& ASCI 354A and Swine Breeding & Gestation

or ASCI 354B Swine Farrowing Management

or ASCI 354D Swine Nursery Management

or ASCI 354E Employee Management for Swine Industry

or ASCI 354F Swine Environment Management

Select 3 hours of additional courses from the following:

3

ASCI 321 Companion Animal Nutrition

ASCI 322 Equine Nutrition

ASCI 342 Equine Reproduction

ASCI 410 Processed Meats

ASCI 421 Advanced Animal Nutrition

ASCI 431 Advanced Animal Breeding

ASCI 432 Genome Analysis

ASCI 441 New Techniques in Reproductive Biology

ASCI 442 / Endocrinology

BIOS 442

ASCI 443 Physiology of Animal Cells and Tissues

ASCI 444 Domestic Animal Immunology

ASCI 445 Equine and Canine Exercise Science

BIOC 432 / Biochemistry II: Metabolism and Biological Information

BIOS 432 /

CHEM 432

BIOC 433 / Biochemistry Laboratory

BIOS 433 /

CHEM 433

BIOC 437 / Research Techniques in Biochemistry

BIOS 437

BIOC 442 / Computational Biology

STAT 442

BIOS 420 / MBIO 420	Molecular Genetics	
BIOS 440 / MBIO 440	Microbial Physiology	
VBMS 408 / BIOS 408	Functional Histology	
VBMS 410	General Pharmacology and Toxicology	
VBMS 424	Basic Molecular Infectious Diseases	
VBMS 441 / BIOS 441	Pathogenic Microbiology	
Credit Hours Subtotal:		17
Natural Sciences		
CHEM 109A & CHEM 109L	General Chemistry I and General Chemistry I Laboratory	4
CHEM 110A & CHEM 110L	General Chemistry II and General Chemistry II Laboratory	4
CHEM 251 & CHEM 253	Organic Chemistry I and Organic Chemistry I Laboratory	4
Select one of the following:		3
BIOC 401	Elements of Biochemistry	
BIOC 431 / BIOS 431 / CHEM 431	Biochemistry I: Structure and Metabolism	
Organismic Biology		
LIFE 121 & LIFE 121L	Fundamentals of Biology II and Fundamentals of Biology II Laboratory	4
BIOS 312 & BIOS 314	Microbiology and Microbiology Laboratory	4
PHYS 141	Elementary General Physics I ¹	5
Credit Hours Subtotal:		23
Business Courses		
Select one course from the "Business Courses" category listed in the Animal Science Business Option.		3
NOTE: Two ACE 1 courses (6 hr) and one ACE 2 communications course (3 hr) are required. Communications elective must be an ACE 1 course. Select appropriate course from listing given under "Core Requirements."		0
Credit Hours Subtotal:		3
Total ASCI Core Requirements		
Complete requirements		62
Credit Hours Subtotal:		62
Option Requirements		
Complete requirements		46
Credit Hours Subtotal:		0
Free Electives		
Select 15 hours		15
Credit Hours Subtotal:		15
Total Credit Hours		120

¹ From the core curriculum—math and physics, students *MUST* take PHYS 141.
PHYS 141 is a required course for admittance to most colleges of veterinary medicine, including the ISU CVM. Although PHYS 142 is not

required for admission to the ISU CVM, it is required by other colleges of veterinary medicine including KSU.

Additional Major Requirements

Animal science requirements are the same as outlined for the College of Agricultural Sciences and Natural Resources.

Requirements for Minor Offered By Department

Animal Science Minor (18 credits)

Requirements for Minor

ASCI 240	Anatomy and Physiology of Domestic Animals ¹	4
Select one 100-level ASCI course from the following:		3
ASCI 100	Fundamentals of Animal Biology and Industry ¹	
Select one 200-level animal management course from the following:		2-3
ASCI 250	Animal Management	
ASCI 251	Introduction to Companion Animals	
ASCI 252	Introduction to the Horse Industry and Management	
ASCI 254	Basic Swine Science ¹	
Select one additional 200-level course from the following:		2-3
ASCI 200	Animal and Carcass Evaluation	
ASCI 210	Animal Products ¹	
ASCI 213 / NUTR 213	Meat Specifications and Procurement ¹	
ASCI 260	Basic Equitation	
ASCI 271	Companion Animal and Equine Behavior ¹	
Select 5-7 hours of ASCI courses at the 300/400 level. ²		5-7
Two (2) hours from Animal Science (ASCI) experiential learning courses may be used.		
The following are online courses at the 300/400 level for the minor.		
ASCI 310	Fresh Meats ¹	
ASCI 321	Companion Animal Nutrition ¹	
ASCI 322	Equine Nutrition ¹	
ASCI 342	Equine Reproduction ¹	
ASCI 354A	Swine Breeding & Gestation ¹	
ASCI 354B	Swine Farrowing Management ¹	
ASCI 354D	Swine Nursery Management ¹	
ASCI 354E	Employee Management for Swine Industry ¹	
ASCI 354F	Swine Environment Management ¹	
ASCI 370	Animal Welfare ¹	
ASCI 422	Advanced Feeding and Feed Formulation ¹	
Credit Hours Subtotal:		18
Total Credit Hours		18

¹ Available online courses for those wishing to complete the minor online.

² Independent study courses, ASCI 399 and ASCI 496 are excluded.

Animal Science Minor (12 credits)

Twelve (12) credits of ASCI courses at the 300 level or above- excluding ASCI 399 Independent Study in Animal Science and ASCI 496 Independent Study in Animal Science.

Companion Animal and Equine Science Minor (18 credits)

The companion animal and equine science minor provides a specialized minor for students looking to work in those areas. This minor would be beneficial to students interested in working with companion animals and horses but with different majors such as veterinary medicine and biomedical sciences, agriculture education, and more.

The courses in the Companion Animal and Equine Science minor will develop the following skills:

1. Apply handling and training skills related to companion animals and/or horses.
2. Develop animal nutrition, growth, reproduction, behavior, and management recommendations related to companion animal and/or equine science.
3. Develop skills to evaluate companion animals and horses.
4. Propose solutions to problems in the companion animal and/or equine science fields.

This minor will be open to any University of Nebraska–Lincoln undergraduate who is not in the Animal Science majors.

Students must complete a minimum of 18 hours in Companion Animal and Equine courses. A minimum of 8 hours should be at the 300-level or above.

NOTE: Some courses have prerequisites that may not be included in the minor. Students should work with the instructor to determine if they are prepared to take courses without the prerequisites or if they need to choose a different course option.

Core Requirements

ASCI 171 or ASCI 260	Human-Companion Animal Interactions Basic Equitation	2
ASCI 202	Exploring Companion Animal Nonprofits and Businesses	1
ASCI 251 or ASCI 252	Introduction to Companion Animals Introduction to the Horse Industry and Management	3
ASCI 271	Companion Animal and Equine Behavior	3
ASCI 320 or ASCI 321 or ASCI 322	Animal Nutrition and Feeding Companion Animal Nutrition Equine Nutrition	2-3
Choose 7-8 additional hours from the following:		7-8
ASCI 240 or ASCI 340	Anatomy and Physiology of Domestic Animals Animal Physiological Systems	
ASCI 300E	Principles of Horse Evaluation and Judging	
ASCI 311A	Equine Industry Study Tour	
ASCI 342	Equine Reproduction	
ASCI 360	Advanced Equitation	
ASCI 370	Animal Welfare	
ASCI 450	Horse Management	

ASCI 399	Independent Study in Animal Science (Exploring Companion Animal Nonprofits and Business)
ASCI 445	Equine and Canine Exercise Science
ASCI 399	Independent Study in Animal Science (Dog Training and Behavior Laboratory)
PSYC 461	Animal Learning & Cognition

Credit Hours Subtotal:

19

Nebraska Beef Industry Scholars (NBIS) Minor (20-21 credits)

The Nebraska Beef Industry Scholars minor is designed to develop graduates to become future leaders of the beef industry as they will:

- Understand issues that affect beef production and have the ability to develop solutions to beef industry problems.
- Understand interactions of the animal, plant, and social sciences affecting beef production and management.
- Develop a unique network with leaders of the beef industry.
- Have exceptional oral and written communication skills.
- Have exceptional leadership skills.
- Have outstanding technical knowledge in at least one area of expertise (beef production economics, beef feedlot engineering, live beef animal and carcass evaluation, beef nutrition, beef animal physiology, meat science, genetic improvement of beef cattle, beef products, pre-veterinary animal science, range and forage science, etc.).

The NBIS minor is inherently multidisciplinary and actively engages faculty from animal science, agricultural economics, and agricultural leadership, education and communication (ALEC).

NBIS Minor Requirements

A minimum cumulative GPA of 3.0 for all minor related coursework must be obtained in order to complete the minor.

Total Requirements

ASCI 181	Beef Industry Scholars - Freshman Seminar	1
ASCI 281	Beef Industry Scholars - Issues	1
AECN 235 / MRKT 235 or AECN 225 / EAEP 225 / MRKT 225	Introduction to Commodity Marketing Agribusiness Entrepreneurship in Food Products Marketing	3
ASCI 311E	Beef Industry Study Tour	2
ALEC 350 or ALEC 207 / ADPR 207	Agriculture, the Environment & Science in the Media Communicating Science with Public Audiences	3
ASCI 381	Beef Industry Scholars - Practicum	1
ASCI 481	Beef Industry Scholars - Beef Summit	1
ASCI 482 / AECN 482	Beef Industry Scholars - National Beef Industry Policy	1
Select 2 hours of internship experience from the following:		2
ASCI 395A	Experiential Learning for Career Development in Animal Sciences - Industry Experiences	
ASCI 395B	Extension and Service Experiences	

GRAS 490	Internship Experience in Grazing Livestock Systems	
AECN 495C	Internship in Agricultural and Public Policy	
Select one course from two of the following subject areas:		5-6
<i>Animal Science</i>		
ASCI 310	Fresh Meats	
ASCI 370	Animal Welfare	
ASCI 410	Processed Meats	
ASCI 455	Beef Cow-Calf Management	
ASCI 457	Beef Feedlot Management	
<i>Agricultural Economics</i>		
AECN 220	International Agricultural Trade	
AECN 301	Farm Accounting, Analysis, and Tax Management	
AECN 401	Advanced Farm Management and Linear Programming	
AECN 452	Agricultural Finance	
<i>Agricultural Leadership, Education and Communication</i>		
ALEC 407	Supervisory Leadership	
ALEC 455	Dynamics of Effective Leadership in Groups & Teams	
Credit Hours Subtotal:		20-21
Total Credit Hours		20-21

Animal Science Management Certificate

The courses in the Animal Science Management Undergraduate Certificate program will develop certificate awardees who:

1. Understand the biology and chemistry of the life sciences and apply the principles to animal nutrition, growth, reproduction, genetics and management of animals and their products.
2. Develop animal nutrition, growth, reproduction, genetics, and management recommendations related to the specific animal or animal product in the career paths related to their selected area of interest.
3. Propose solutions to problems in the production and/or management of animals or animal products specific to their area of interest.

This certificate program will be open to degree-seeking students at other two- and four-year institutions, University of Nebraska–Lincoln undergraduates who are not Animal Science majors and associate degree holders. The primary delivery of this program will be online. For current University of Nebraska–Lincoln students (not Animal Science majors) to be accepted into this undergraduate certificate program a student must have at least one semester of college-level biology and one semester of college-level chemistry credit. Courses must meet the University of Nebraska–Lincoln CASNR transfer guidelines to be accepted. Current students wishing to add this certificate to their Nebraska undergraduate degree program, should contact one of the certificate advisors and complete the application form. Upon verification of completion of the prerequisite requirements with the appropriate grade, the department will admit them into the certificate program.

Students must complete 18 credit hours of Animal Science from the required and optional courses listed below. At least 10 credit hours must be completed at the 300 level or higher. Students should complete two

credits in an experiential learning project (ASCI 395A, ASCI 395B, or ASCI 395D) in order to complete the certificate.

Required Courses

Choose two from the following 100/200 level courses:		6-8
ASCI 100	Fundamentals of Animal Biology and Industry	
ASCI 210	Animal Products	
ASCI 213	Meat Specifications and Procurement	
ASCI 240	Anatomy and Physiology of Domestic Animals	
ASCI 250	Animal Management	
ASCI 251	Introduction to Companion Animals	
ASCI 252	Introduction to the Horse Industry and Management	
ASCI 271	Companion Animal and Equine Behavior	
Choose three or four from the following 300/400 level courses:		8-10
ASCI 310	Fresh Meats	
ASCI 321	Companion Animal Nutrition	
ASCI 322	Equine Nutrition	
ASCI 342	Equine Reproduction	
ASCI 370	Animal Welfare	
ASCI 410	Processed Meats	
ASCI 411	HACCP and Food Safety Systems for the Food Industry	
ASCI 421	Advanced Animal Nutrition	
ASCI 422	Advanced Feeding and Feed Formulation	
ASCI 450	Horse Management	
Choose one of the following experiential learning courses:		2
ASCI 395A	Experiential Learning for Career Development in Animal Sciences - Industry Experiences	
ASCI 395B	Extension and Service Experiences	
ASCI 395D	Research Experiences	
Credit Hours Subtotal:		18
Total Credit Hours		18

ASCI 42 Animal Science Professional Development Experience

Prerequisites: Permission

Description: Cooperative education in an established or organized international or professional development experience program in Animal Science.

Credit Hours: 0

Max credits per semester:

Max credits per degree:

Grading Option: Pass No Pass

ASCI 95 Animal Science Major Orientation Seminar

Prerequisites: Animal Science Major

Description: The Animal Science Major Orientation Seminar provides Animal Science majors an opportunity to interact with Animal Science Faculty and other Animal Science students in an encouraging and supportive environment during their first semester in the major. Weekly topics will include discussions with Animal Science faculty, academic success resources, intrapersonal and leadership development and academic and co-curricular planning. The course is required for all Animal Science majors regardless of when the major is declared.

Credit Hours: 0

Max credits per semester:

Max credits per degree:

Grading Option: Pass No Pass

Prerequisite for: ASCI 201

Groups: Introductory

ASCI 100 Fundamentals of Animal Biology and Industry

Description: Overview of the industries in animal science; fundamentals of animal biology related to their application in those industries; and trends and current issues related to production and consumption of animal products important for human welfare.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Prerequisite for: ASCI 100L; ASCI 271

Course and Laboratory Fee: \$20

ASCI 100L Fundamentals of Animal Biology and Industry Laboratory

Prerequisites: Previous or concurrent enrollment in ASCI 100

Description: Introductory animal science laboratory designed to introduce basic principles of animal biology and management.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded with Option

ASCI 150 Animal Production Skills

Description: Introductory course in skills related to proper care and management of production animals. Laboratory sessions develop fundamental skills of animal husbandry.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Course and Laboratory Fee: \$30

ASCI 171 Human-Companion Animal Interactions

Description: Roles of companion animals in society (therapy, research, and entertainment). The responsibilities of humans in these relationships.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

ASCI 181 Beef Industry Scholars - Freshman Seminar

Notes: Letter grade only.

Description: Introduction to the Nebraska and United States beef industry. Discussion of issues by invited beef industry leaders and on-site visits of industry organizations.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded

Offered: SPRING

Prerequisite for: ASCI 281

ASCI 200 Animal and Carcass Evaluation

Description: Comparative evaluation of animals and their carcasses and products. Basic animal growth and development and characteristics of beef, pork, lamb, and goat used to determine carcass value. Federal and industry product standards. Introduction to the usage and interpretation of USDA market reports used to determine market value of animals and their products.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: FALL

Course and Laboratory Fee: \$25

ASCI 201 Professional Development for Careers in Animal Science

Prerequisites: ASCI 95

Description: Identify potential careers related to animals and develop career goals and experiential learning plans.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded

Offered: SPRING

ASCI 202 Exploring Companion Animal Nonprofits and Businesses

Description: Explore career options in the companion animal industry with nonprofits or other companion animal businesses.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded with Option

ASCI 210 Animal Products

Notes: ASCI 100 or FDST 101 or FDST 131 recommended

Description: Knowledge of edible animal products with particular emphasis to meat products from livestock and poultry. Includes all aspects of the meat industry from slaughter to consumption. Methods of slaughter and fabrication, conversion of muscle to meat, processing techniques, preservation and storage, and consumer related topics discussed and demonstrated.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Prerequisite for: ASCI 310

ASCI 213 Meat Specifications and Procurement**Crosslisted with:** NUTR 213**Notes:** For those students who have an interest in a career in Culinary Science, Meat Science, and/or Dietetics.**Description:** Selecting and purchasing meat for the hotel, restaurant, institutional industry, and the retail markets.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ASCI 240 Anatomy and Physiology of Domestic Animals****Prerequisites:** BIOS 101 or LIFE 120 or equivalent; and CHEM 105A and 105L or CHEM 109A and 109L equivalent.**Description:** Fundamentals of the anatomy and physiology of domestic animals.**Credit Hours:** 4**Max credits per semester:** 4**Max credits per degree:** 4**Grading Option:** Graded with Option**Prerequisite for:** ASCI 320; ASCI 341; ASCI 342; ASCI 445; ASCI 486; NUTR 450; NUTR 455; VBMS 303; VBMS 410**Course and Laboratory Fee:** \$45**ASCI 250 Animal Management****Notes:** ASCI 100 recommended**Description:** Principles of managing animals in typical production systems. Basics of managing beef, dairy, poultry, sheep, and swine through the life cycle for economic and efficient production.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** SPRING**Prerequisite for:** PLAS 445, AGRO 845, ASCI 451, ASCI 851, RNGE 445, GRAS 445**Course and Laboratory Fee:** \$10**ASCI 251 Introduction to Companion Animals****Description:** Overview of pets, their care, nutrition, reproduction behavior, and health issues; exploration of other ways in which these animals can be used (e.g., in therapy, teaching).**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL**Prerequisite for:** ASCI 271**ASCI 252 Introduction to the Horse Industry and Management****Description:** Provides an introduction to the equine industry including history and basic biology of the horse, proper care and acceptable management procedures, and current issues. An overview of basic equine anatomy and physiology will be discussed as it relates to managerial principles associated with proper hoof care, disease prevention, breeding and genetics, nutritional management, reproduction, and animal welfare.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Prerequisite for:** ASCI 271**ASCI 254 Basic Swine Science****Notes:** This course is taught by Iowa State University as part of the GPIDEA/Ag*IDEA course offerings, Registration with permission from your adviser and CASNR Online Education Office.**Description:** Basic disciplines and concepts involved in swine production including: industry structure, trends and statistics; production phases and building; genetic improvement; reproduction; nutrition; health and bio-security; nutrient management; marketing and meat quality; and career opportunities in the swine industry.**Credit Hours:** 2**Max credits per semester:** 2**Max credits per degree:** 2**Grading Option:** Graded**Prerequisite for:** ASCI 354J; ASCI 354K; ASCI 354M**ASCI 260 Basic Equitation****Prerequisites:** Sophomore standing**Description:** Study and application of basic equitation principles for the novice rider. Review of fundamental horse safety and horsemanship to include handling, grooming, equipping, riding western or English, and the relationship of riding to physical and mental well-being. Development of balanced seat, hands and posture at all the natural gaits of the horse. Emphasis will be on control of the horse through the use of the primary and secondary aids. Welfare and communication considerations in order to have effective horse-human relationships.**Credit Hours:** 2**Max credits per semester:** 2**Max credits per degree:** 2**Grading Option:** Graded with Option**Prerequisite for:** ASCI 360**Course and Laboratory Fee:** \$125**ASCI 271 Companion Animal and Equine Behavior****Prerequisites:** ASCI 100 or ASCI 251 or ASCI 252 or BIOS 101 or LIFE 120**Description:** Companion animal and equine behavior. Application of behavior principles to describe normal and problem behaviors of common companion animals and horses.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** SPRING**ASCI 281 Beef Industry Scholars - Issues****Prerequisites:** ASCI 181**Notes:** Letter grade only**Description:** Nebraska beef industry and supporting organizations (the Nebraska Cattlemen and the Nebraska Beef Council). Tours, attending meetings, and discussion of issues by invited beef industry leaders.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded**Prerequisite for:** ASCI 311E

ASCI 300A Principles of Meat Evaluation, Grading and Judging

Description: Comparative evaluation of meat characteristics of beef carcasses, beef primal cuts, pork carcasses, pork primal cuts, and lamb carcasses. Federal grade standards for beef carcass and application of USDA Institutional Meat Purchase Specifications.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded with Option

Offered: SPRING

Prerequisite for: ASCI 400A

ASCI 300B Principles of Livestock Evaluation and Judging

Prerequisites: Junior standing. ASCI 200 recommended.

Notes: Opportunity to become members of the University of Nebraska Livestock Judging Team.

Description: Principles of livestock judging and presentation of oral reasons. Evaluation of body structure and composition differences in breeding and market livestock as related to their use in meat production. Live animal, performance records, genetic evaluations, and breeding livestock scenarios evaluated. Presentation of oral reasons to defend selection decisions.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Offered: FALL/SPR

Prerequisite for: ASCI 300D; ASCI 400B

Experiential Learning: Fieldwork

ASCI 300D Principles of Meat Animal Evaluation

Prerequisites: ASCI 300B

Notes: The University of Nebraska Meat Animal Evaluation Team will be selected from students in this course.

Description: Further expertise in breeding animal, market animal, and carcass evaluation. Live animal and carcass grading and pricing.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded with Option

Offered: SPRING

Experiential Learning: Fieldwork

ASCI 300E Principles of Horse Evaluation and Judging

Notes: Students will have an opportunity to become members of the University of Nebraska Horse Judging Team.

Description: Conformation associated with equine structural form and performance standards. Evaluation of performance classes as governed by breed association standards and industry regulations. Presentation of oral reasons to defend selection decisions.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Offered: SPRING

Experiential Learning: Fieldwork

ASCI 310 Fresh Meats

Prerequisites: ASCI 210

Description: Fresh meat from beef, pork, lamb, and poultry.

Characteristics of muscle, meat technology, preservation, merchandising concepts, and markets.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Course and Laboratory Fee: \$40

ASCI 311A Equine Industry Study Tour

Description: Study tour of livestock and/or meat/food processors.

Provide an understanding of the industry's operations and problems.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Course and Laboratory Fee: \$300

ASCI 311B Meat Industry Study Tour

Description: Study tour of livestock and/or meat/food processors.

Provide an understanding of the industry's operations and problems.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Course and Laboratory Fee: \$200

ASCI 311E Beef Industry Study Tour

Prerequisites: ASCI 281

Notes: Supplements to the class include invited speakers. A summer tour is required. Letter grade only

Description: Identify beef cattle related enterprises that represent the breadth of the cattle industry. Prioritize these enterprises as candidates for inclusion in the summer tour.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded

Prerequisite for: ASCI 381

ASCI 320 Animal Nutrition and Feeding

Prerequisites: ASCI 240 or 340; CHEM 106A and CHEM 106L or CHEM 110A and CHEM 110L.

Description: Fundamentals of nutrition and feeding of domestic livestock, nutrients and nutrient requirements, characteristics of feedstuffs, methods of feeding, and the feed industry.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: FALL/SPR

Prerequisite for: ASCI 321; ASCI 450; ASCI 455; ASCI 457; ASCI 486

ASCI 321 Companion Animal Nutrition

Prerequisites: ASCI 320 or NRES 311; CHEM 106A and 106L or CHEM 110A and 110L.

Description: Digestive anatomy and physiology of companion animals including dogs, cats, small mammals, and exotic species. Unique nutrient requirements, pet food formulation, and regulations.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: SPRING

ASCI 322 Equine Nutrition

Notes: ASCI 320 recommended. Offered in odd numbered calendar years.

Description: Equine nutrition including digestive anatomy and physiology. Nutritional requirements of horses as related to growth, reproduction, and performance. The relationship of nutrition to disease and environment. Management practices and application of current equine nutritional research.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Prerequisite for: ASCI 450

ASCI 330 Animal Breeding and Genetics

Prerequisites: PLAS 215 or BIOS 206; STAT 218.

Description: Principles of animal genetics and genomics, and their application to improvement of livestock and companion animals. Topics include: characterization of allelic and genetic variation associated with animal performance, principles of selection, inbreeding and crossbreeding, advances in molecular genetics, and their applications to the development of breeding programs to enhance animal productivity and well-being.

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

Offered: FALL

Prerequisite for: ASCI 455

Course and Laboratory Fee: \$20

ASCI 340 Animal Physiological Systems

Prerequisites: LIFE 121; CHEM 110A and 110L

Description: A comprehensive look at the major physiological systems that comprise the mammalian body. Anatomical organization and functionality of the nervous system, muscle, cardiovascular system, respiratory system, digestive system, urinary system, reproductive system, endocrine system, and immune system. Labs offer hands-on learning experiences through dissections, clinical demonstrations, and interactive multimedia.

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

Offered: FALL

Prerequisite for: ASCI 320; ASCI 341; ASCI 342; ASCI 445; ASCI 486; VBMS 303; VBMS 403; VBMS 410

ASCI 341 Physiology and Management of Reproduction

Prerequisites: ASCI 240 or 340

Description: Comparative anatomy and physiology of reproduction in domestic animals. Endocrine regulation of reproductive function, patterns of reproduction, economic consequences of sub-optimal reproductive performance, environmental influences on reproductive efficiency, application of selected techniques for controlling reproduction. Laboratory provides application of techniques used in reproductive management.

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

Offered: FALL

Prerequisite for: ASCI 455

Course and Laboratory Fee: \$55

ASCI 342 Equine Reproduction

Prerequisites: ASCI 240 or 340 or BIOS 213.

Notes: ASCI 341 recommended

Description: Anatomy and physiology of stallion and mare reproductive systems. Estrous detection systems, artificial and natural breeding techniques, infertility, semen collection and processing, reproductive management, and record keeping.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Offered: SPRING

ASCI 354A Swine Breeding & Gestation

Notes: This course is taught by North Carolina State University and is part of the GPIDEA/AgIDEA courses offerings. Registration with permission from your advisor and CASNR Online Education.

Description: Concepts related to: reproductive physiology and endocrinology of boars and sows; genetic selection programs; development programs for future replacement gilts and boars; semen collection, evaluation, and preparation; detection of estrus and artificial insemination; pregnancy diagnosis; feeding and house programs for gestating sows; environmental management; records; diseases; and development of quality assurance programs for identifying and solving reproductive problems.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded

ASCI 354B Swine Farrowing Management

Notes: This course is taught by the University of Missouri and is part of the GPIDEA/AgIDEA course offerings. Registration with permission from your advisor and CASNR Online Education Office.

Description: Advanced integration and application of reproductive management concepts during farrowing and lactation. Identification of production trends; formulation of strategies to improve productivity; and parturition and neonatal management.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded

ASCI 354D Swine Nursery Management

Notes: This course is taught by Penn State as part of the GPIDEA/Ag*IDEA course offerings. Registration with permission from your advisor and CASNR Online Education Office.

Description: Overview of the critical management, housing, and financial considerations relevant to the successful operation of a swine nursery, grow-finish, or wean to finish enterprise, including: nutrient requirements; building and facility management; and marketing.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded

ASCI 354E Employee Management for Swine Industry

Notes: This course is taught by an institutional member of the GPIDEA/AgIDEA consortium. Registration is with permission from your advisor and CASNR Online Education Office.

Description: Effective employee management in swine production units. Assist students in understanding the principles, policies, and practices related to procurement, development, maintenance, and utilization of employees.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded

ASCI 354F Swine Environment Management

Notes: This course is taught by Iowa State University as part of the GPIDEA/AgIDEA consortium. Registration with permission from your adviser and CASNR Online Education Office.

Description: Response of swine to thermal environment, ventilation system design and analysis, heating and cooling systems and examples of various designs for all phases of production. Trouble shooting ventilation systems and energy analysis of production units.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded

ASCI 354J Advanced Swine Science

Prerequisites: ASCI 254

Notes: This course is taught by Kansas State University and is part of the GPIDEA/AgIDEA consortium. Registration is with permission from your advisor and CASNR Online Education Office.

Description: An in-depth application of basic concepts covered in Basic Swine Science, focused on the scientific principles to the economical and sustainable production of pork. Detailed analysis of benchmarking, production systems, reproduction, pig flow, ventilation, and herd health are discussed. Become knowledgeable regarding the science, complexity, and technology applied in modern swine production businesses.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded with Option

ASCI 354K Swine Health and Biosecurity

Prerequisites: ASCI 254

Notes: This course is taught by Iowa State University and is part of the GPIDEA/AgIDEA consortium. Registration is with permission from your advisor and CASNR Online Education Office.

Description: Overview of standard biosecurity protocols and identification of behavior and clinical signs of illness in pigs. Treatment administration and prevention methods. Introduction to immune system function and basic swine disease transmission.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded with Option

ASCI 354M Marketing and Risk Management in the Swine Industry

Prerequisites: ASCI 254

Notes: This course is taught by North Carolina State University and is part of the GPIDEA/AgIDEA consortium. Registration is with permission from your advisor and CASNR Online Education Office.

Description: Describe industry structure, markets, and risk that characterize the US swine sector. Review futures and options markets and contracts and their usage to manage risks in US swine production.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Grading Option: Graded with Option

ASCI 360 Advanced Equitation

Prerequisites: Junior standing, ASCI 260 and/or permission.

Description: Study and application of maneuvers basic to performance excellence. Assigned student mounts expected to show satisfactory progress toward standards of excellence in Western and English performance.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Course and Laboratory Fee: \$100

ASCI 361 Equestrian Team Horsemanship/Equitation

Notes: May be repeated for a total of 4 credit hours.

Description: Application of equestrian horsemanship and equitation skills through practices and horsemanship competitions in the Intercollegiate Horse Show Association.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 4

Grading Option: Pass No Pass

ASCI 370 Animal Welfare

Prerequisites: Junior standing or permission.

Description: In-depth exploration of the issues involved in animal use. The historical, biological, ethical, and social aspects of human/animal interactions in Western culture.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ASCI 381 Beef Industry Scholars - Practicum**Prerequisites:** ASCI 311E, ALEC 350**Notes:** Letter grade only.**Description:** Financial risk management, beef processing, animal health, and related emerging issues.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded**Offered:** SPRING**Prerequisite for:** ASCI 481**ASCI 395A Experiential Learning for Career Development in Animal Sciences - Industry Experiences****Description:** Extension and application of the animal science curriculum within the context of industry (e.g., internship), extension and service, research, or teaching experience.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded with Option**Prerequisite for:** ASCI 482, AECN 482**Experiential Learning:** Internship/Co-op**ASCI 395B Extension and Service Experiences****Description:** Extension and application of the animal science curriculum within the context of industry (e.g., internship), extension and service, research, or teaching experience. A faculty adviser for the area of interest must be identified prior to registering for the course.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded with Option**Prerequisite for:** ASCI 482, AECN 482**Experiential Learning:** Internship/Co-op**ASCI 395D Research Experiences****Description:** Extension and application of the animal science curriculum within the context of industry (e.g., internship), extension and service, research, or teaching experience. A faculty adviser for the area of interest must be identified prior to registering for the course.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded with Option**ASCI 395E Experiential Learning for Career Development in Animal Sciences - Undergraduate Teaching Experience****Description:** Extension and application of the animal science curriculum within the context of industry (e.g., internship), extension and service, research, or teaching experience.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded with Option**Offered:** FALL/SPR**Experiential Learning:** Student Teaching/Education Practicum**ASCI 399 Independent Study in Animal Science****Prerequisites:** Permission.**Description:** Individual or group projects in research, literature review, or extension of course work under supervision and evaluation of a departmental faculty member.**Credit Hours:** 1-5**Min credits per semester:** 1**Max credits per semester:** 5**Max credits per degree:** 12**Grading Option:** Graded with Option**ASCI 400A Advanced Meat Grading and Evaluation****Prerequisites:** ASCI 300A**Notes:** Must be an active member of the current semester's Meat Judging Team.**Description:** Comparative evaluation of the meat characteristics of beef, pork, and lamb that affect product merit and the scientific basis of the factors that influence the relative value. Federal meat grades and their application, industry grading system and their application, and application of Institutional Meat Purchase Specifications. Application of the above topics, as well as critical decision making and written justification of meat product merit, practiced in-depth.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded with Option**Offered:** FALL/SPR**ASCI 400B Advanced Livestock Evaluation and Judging****Prerequisites:** ASCI 300B or equivalent experience.**Notes:** The University of Nebraska Senior Livestock Judging Team will be selected from students in this course.**Description:** Livestock judging and evaluation applying principles learned in ASCI 300B. Field trips to commercial and purebred livestock operations and exhibitions. Network with producers to learn varied livestock production philosophies. Develop a proficiency in brief, concise oral presentation of reasons for making a decision.**Credit Hours:** 2**Max credits per semester:** 2**Max credits per degree:** 2**Grading Option:** Graded with Option**Offered:** FALL/SPR**Experiential Learning:** Fieldwork**ASCI 400E Advanced Horse Evaluation and Judging****Prerequisites:** Permission**Notes:** ASCI 300E recommended. Departmental consent required. The University Horse Judging Team will be selected from students in this course. Field trips are a major component of the course.**Description:** Advanced horse judging and analysis. Evaluate conformation and score multiple performance events. The development and presentation of concise oral reasons to defend placing decisions.**Credit Hours:** 1-2**Min credits per semester:** 1**Max credits per semester:** 2**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL**Experiential Learning:** Fieldwork

ASCI 410 Processed Meats**Crosslisted with:** ASCI 810**Prerequisites:** ASCI 210 or FDST 205.**Description:** Science and technology of modern meat processing. Utilization of meat, non-meat ingredients, and processing techniques and their impact on processed meat characteristics. Laboratory provides hands-on application with the preparation, development, and evaluation of processed meats products.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** SPRING**Course and Laboratory Fee:** \$40**ASCI 411 HACCP and Food Safety Systems for the Food Industry****Prerequisites:** An understanding of food production and processing operations. Recommended: ASCI 310, 410, and FDST 205; or NUTR 343.**Description:** Principles, implementation, sanitation, and standard operating procedures that function to support the Hazard Analysis and Critical Control Point (HACCP) System. Food safety hazards and their relationship to food borne illness in the meat and food industry.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ASCI 419 Meat Investigations****Crosslisted with:** ASCI 819, FDST 419, FDST 819**Prerequisites:** ASCI 210**Description:** Conduct independent research and study meat industry problems in processing, production, storage, and preparation of meat and meat products.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ASCI 421 Advanced Animal Nutrition****Crosslisted with:** ASCI 821**Prerequisites:** ASCI 320**Description:** Advanced course dealing with the nutrition of domestic animals. In-depth coverage of nutrients, nutrient metabolism, and nutrient requirements. Biochemical and physiological functions of nutrients in life processes.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Prerequisite for:** ASCI 925, NUTR 925; ASCI 926, NUTR 926; ASCI 927, NUTR 927**ASCI 422 Advanced Feeding and Feed Formulation****Crosslisted with:** ASCI 822**Prerequisites:** ASCI 320 or equivalent.**Description:** Feeding practices for domestic animals. Applied animal nutrition and feed formulation.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ASCI 431 Advanced Animal Breeding****Crosslisted with:** ASCI 831**Prerequisites:** ASCI 330**Description:** Application of genetic principles to animal breeding. Critical examination of current and potential selection programs and crossbreeding systems. Determination of performance objectives. Expected responses to selection methods and dissemination of improvement in an industry.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ASCI 432 Genome Analysis****Crosslisted with:** ASCI 832**Prerequisites:** PLAS 215 and BIOC 401 or equivalent**Description:** Theoretical and practical aspects of: structure and function of eukaryotic genomes; genome sequencing and assembling, polymorphism and isoform detection and genotyping; gene and genome annotation; strategies used to identify genetic variants responsible for phenotypic differences; and personalized genomics, social and ethical aspects associated with genomic information.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Offered:** SPRING**ASCI 441 New Techniques in Reproductive Biology****Crosslisted with:** ASCI 841**Prerequisites:** ASCI 341 or equivalent.**Description:** Mammalian early embryonic development. Basic aspects of embryology and development biology. Modern technologies in animal reproductive biology, in vitro maturation and fertilization, embryo transfer, cloning, assisted reproductive technologies, transgenic animals, and embryonic stem cells.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Course and Laboratory Fee:** \$100**ASCI 442 Endocrinology****Crosslisted with:** ASCI 842, BIOS 442, BIOS 842, VBMS 842**Prerequisites:** A course in vertebrate physiology and/or biochemistry.**Description:** Mammalian endocrine glands from the standpoint of their structure, their physiological function in relation to the organism, the chemical nature and mechanisms of action of their secretory products, and the nature of anomalies manifested with their dysfunction.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option

ASCI 443 Physiology of Animal Cells and Tissues**Crosslisted with:** ASCI 843**Prerequisites:** ASCI 240 or ASCI 340 or BIOS 213

Description: Molecular, cellular, and tissue dependent functions of neurons, skeletal and smooth muscle, vasculature, and immune cells. Cellular regulation of important physiological processes including blood flow, gas exchange, inorganic solute homeostasis, acid-base balance, water balance, appetite control, and thermal regulation will also be studied. Understand cellular and molecular processes that ensure homeostasis and promote integration of physiological systems.

Credit Hours: 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Offered:** SPRING**ASCI 444 Domestic Animal Immunology****Crosslisted with:** ASCI 844**Prerequisites:** LIFE 120; LIFE 121; ASCI 240 or BIOS 213 or ASCI 340

Description: Learn the fundamental knowledge of the animal immune system, and how to utilize immunology to improve animal health and production. Become familiar with common immunoassays, immunological diseases and immunotherapy.

Credit Hours: 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Offered:** FALL**Groups:** Biology, Psychology, & Politics**ASCI 445 Equine and Canine Exercise Science****Prerequisites:** ASCI 240 or ASCI 340

Description: Physiological adaptations to athletic training in equine and canine athletes. Topics of emphasis include exercise-related adaptations in metabolism, locomotion, the cardiovascular system, musculoskeletal system, and endocrine system. The roles of nutrition and conditioning programs on exercise.

Credit Hours: 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Offered:** FALL**ASCI 450 Horse Management****Prerequisites:** ASCI 320 or 322**Notes:** ASCI 341 or 342 recommended

Description: Light horse production. Nutrition, reproduction, management, housing, and principle usage of light horses.

Credit Hours: 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL**ACE:** ACE 10 Integrated Product**ASCI 451 Livestock Management on Range and Pasture****Crosslisted with:** PLAS 445, AGRO 845, ASCI 851, RNGE 445, GRAS 445**Prerequisites:** ASCI 250 and PLAS 240 or PLAS 340

Notes: AECN 201 recommended. Capstone course. All students required to participate in a one-week field trip in central or western Nebraska prior to beginning of fall semester. Therefore, students must notify instructor at time of early registration (Dates are given in class schedule.)

Description: Analyzing the plant and animal resources and economic aspects of pasturage. Management of pasture and range for continued high production emphasized.

Credit Hours: 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL**ACE:** ACE 10 Integrated Product**Course and Laboratory Fee:** \$300**ASCI 455 Beef Cow-Calf Management****Prerequisites:** Senior standing or permission; ASCI 320; ASCI 330 or 341

Description: Integrated management specific to the beef cow-calf enterprise necessary to achieve biologic and economic efficiency.

Credit Hours: 2**Max credits per semester:** 2**Max credits per degree:** 2**Grading Option:** Graded with Option**ASCI 456 Beef Cattle Merchandising****Prerequisites:** Senior standing. ASCI 300B and 330 recommended.

Notes: Students are responsible for planning and conducting the annual UNL bull sale.

Description: Develop skills to merchandise breeding cattle including advertising, genetic and phenotype selection, data collection, and conducting a bull sale.

Credit Hours: 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded with Option**ASCI 457 Beef Feedlot Management****Prerequisites:** Senior standing or permission; ASCI 320

Description: Advanced preparation in the feeding of cattle for slaughter. Emphasis on the nutrition and management of feedlot cattle and related health and economic considerations. Covers the beef enterprise from weaning to market and relates closely to beef cow-calf production.

Credit Hours: 2**Max credits per semester:** 2**Max credits per degree:** 2**Grading Option:** Graded with Option**ASCI 481 Beef Industry Scholars - Beef Summit****Prerequisites:** ASCI 381

Notes: Requires working with the Nebraska Cattlemen and the instructor to develop the summit. Letter grade only.

Description: Identification of a major issue confronting the Nebraska beef industry. Organize a Nebraska summit meeting to discuss and bring the identified issue to resolution.

Credit Hours: 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded**Offered:** FALL**Prerequisite for:** ASCI 482, AECN 482

ASCI 482 Beef Industry Scholars - National Beef Industry Policy**Crosslisted with:** AECN 482**Prerequisites:** ASCI 481; ASCI 395A or ASCI 395B or GRAS 490 or AECN 495C**Notes:** Requires attending the National Cattlemen's Beef Association (NCBA) annual convention and then, communicating the new policy and issues to local organizations and undergraduate student groups. Letter grade only.**Description:** Discuss and dissect issues from the NCBA convention researching the pros and cons of current and proposed policy.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded**Offered:** SPRING**Experiential Learning:** Fieldwork**ASCI 485 Animal Systems Analysis****Prerequisites:** Junior or Senior standing or permission**Notes:** For majors in the College of Agricultural Sciences and Natural Resources with an interest in careers in livestock production units, the meat industry, or related agribusiness.**Description:** Goal setting, information gathering, and application of problem solving methods in animal science. Develops ability to analyze and solve problems in all segments of animal science by integration of information from all pertinent disciplines and sources.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL/SPR**ACE:** ACE 10 Integrated Product**ASCI 486 Animal Biological Systems****Prerequisites:** Junior or Senior standing; ASCI 240 or 340; ASCI 320; AGRO 215 or BIOS 206**Notes:** Capstone course. For seniors with an interest in careers involving animal science disciplines, animal biology, and related fields.**Description:** How to integrate information from the animal science disciplines to understanding animals as biological systems. The processes of growth, adaptation, and lactation. Analyzing the interrelationship of each discipline within animal production. Using case studies, scenarios, and problem solving assignments to examine how alterations in nutrition and metabolism, genetic makeup, endocrine profile and/or the environment impact or effect the animal as a whole.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL**ACE:** ACE 10 Integrated Product**ASCI 490A Animal Science Internship - Beef Feedlot Management****Prerequisites:** Acceptance into the Beef Feedlot Management Program.**Description:** Management internship in a beef feedlot. Organizational and financial structure of the beef feedlot and experience in making decisions related to: animal production, marketing, business management, and personnel management.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ASCI 491 Animal Science Seminar****Prerequisites:** Senior standing.**Description:** Student-led discussion of selected current topics significant to the livestock, poultry, and meat industry. Concerns and issues of society as they relate to local, national, and international animal agriculture.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Pass No Pass**ASCI 496 Independent Study in Animal Science****Crosslisted with:** ASCI 896**Prerequisites:** 12 hrs animal science or closely related areas and permission.**Description:** Individual or group projects in research, literature review, or extension of course work under the supervision and evaluation of a departmental faculty member.**Credit Hours:** 1-5**Min credits per semester:** 1**Max credits per semester:** 5**Max credits per degree:** 12**Grading Option:** Graded with Option**ASCI 499H Honors Thesis****Prerequisites:** Admission to the University Honors Program and permission; AGRI 299H recommended.**Description:** Conduct a scholarly research project and write a University Honors Program or undergraduate thesis.**Credit Hours:** 3-6**Min credits per semester:** 3**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded**PLEASE NOTE**

This document represents a sample 4-year plan for degree completion with this major. Actual course selection and sequence may vary and should be discussed individually with your college or department academic advisor. Advisors also can help you plan other experiences to enrich your undergraduate education such as internships, education abroad, undergraduate research, learning communities, and service learning and community-based learning.

Animal Science - Animal Biology & Biotechnology

Animal Science - Veterinary Animal Sciences

Career Information

The following represents a sample of the internships, jobs and graduate school programs that current students and recent graduates have reported.

Jobs of Recent Graduates

- Nutritionist, Dekalb Feeds - Ely, IA
- Pet Care Technician Manager, Nebraska Animal Medical Center - Lincoln, NE

- 4-H Extension Assistant, Nebraska Extension - Omaha, NE
- Operations Management Associate, Cargill Meat Solutions - Schuyler, NE
- Animal Behaviorist, Capital Humane Society - Lincoln, NE
- Horse Trainer and Riding Instructor, Self-Employed - Lincoln, NE
- Cattle Health Assistant, Adams Land and Cattle Co. - Broken Bow, NE
- Farm Manager, Rock Creek Swine - Nebraska City, NE
- Animal Protein Manager, Cargill - Wichita, KS
- Herdsman/Cattle Manager, Rippe Gelbvieh - Hubbell, NE

Internships

- Beef Sales Intern, Cargill Meat Solutions - Wichita, KS
- Kentucky Equine Management Internship, Adena Springs - Paris, KY
- Intern, Henry Doorly Zoo - Omaha, NE
- Feedlot Intern, Rhea Cattle Co. - Arlington, NE
- Clydesdale Handler Intern, Anheuser-Busch - St. Louis, MO
- Animal Welfare Intern, Nebraska Humane Society - Omaha NE
- Communications and Marketing Intern, American Hereford Association - Blue Rapids, KS
- Feedlot Intern, U.S. Meat Animal Research Center - Clay Center, NE
- Animal Care Intern, Willowbrook Wildlife Center - Glen Ellyn, IL
- Equine Racetrack Practitioner Intern, Arapahoe Park Racetrack - Aurora, CO

Graduate & Professional Schools

- Ruminant Nutrition, University of Nebraska-Lincoln - Lincoln, NE
- Professional Program of Veterinary Medicine, University of Nebraska-Lincoln - Lincoln, NE
- Animal Biology, University of California-Davis - Davis, CA
- Master's of Conservation Medicine, Tufts University - Medford, MA
- Range Management Program, Texas Christian University - Fort Worth, TX
- Animal Breeding and Genetics, University of Nebraska-Lincoln - Lincoln, NE
- Animal Science, Physiology, University of Nebraska - Lincoln, NE
- Master's of Science in Leadership Education: Leadership Development Emphasis, University of Nebraska-Lincoln - Lincoln, NE
- Master's of Agriculture Economics, Oklahoma State - Stillwater, OK
- Poultry Nutrition, University of Nebraska - Lincoln, NE