ANIMAL SCIENCE MAJOR (B.S.)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/animal-science-major

Description

Animal Science is the study of the biology and management of animals that enhance human life and well-being. Completion of the Animal Science B.S. is designed to prepare students for a variety of animal-focused careers. The Animal Science B.S. is one of many pathways for admission to veterinary school. Because admission to veterinary school is highly competitive due to the limited number of available spaces and the high standards for admission, students are advised to choose an academic program that deeply interests them. Simply taking the prerequisite courses required by veterinary schools without considering alternate career goals is not advisable.

Requirements

Major Requirements

Code	Title	Credits
Foundation Courses		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BIOL 528	Applied Biostatistics I	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMCB 501	Biological Chemistry [1]	4
Requirements for All Animal Science Majors		
AAS 439	Fundamentals of Animal Health	2
ANSC 406	Careers in Animal Science	1
ANSC 421	Introduction to Animal Science	4
ANSC 511	Anatomy and Physiology	4
ANSC 512	Anatomy and Physiology	4
ANSC 543	Technical Writing in Animal Sciences (or equivalent) [2]	2
ANSC 602	Animal Rights and Societal Issues	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Animals	4
ANSC 625	Animal Diseases	4
Reproduction Course		
Select one of the following:		4
ANSC 701	Physiology of Reproduction	
ANSC 715	Physiology of Lactation	
ANSC 724	Reproductive Management and Artificial Insemination	
BMS 702	Endocrinology	
Major Electives		
Select 3 electives from the following list. At least 2 electives must be at the 500 level or above. Electives less than 3 credits must be combined to equal 3 credits or more to count as 1 elective. At least one elective must be from the Experiential category.		12
AAS 421	Large Animal Behavior and Handling Techniques	
AAS 423	Dairy Selection	
AAS 425	Introduction to Dairy Herd Management	
AAS 432	Introduction to Forage and Grassland Management	
AAS 434	Equipment and Facilities Management	
ADMN 502	Financial Accounting	
ANSC 426	Equine Conformation and Lameness	
ANSC 437	Equine Husbandry Techniques	
ANSC 504	Equine Physiology	
ANSC 507	Survey of Equine Training Techniques	
ANSC 510	Integration of Culture and Agriculture in Ireland: Past, Present, and Future	
ANSC 546	Animal Business Applications	
ANSC 547	Equine Stable Management	
ANSC 548	Agricultural Business Management	
ANSC 600	Field Experience	
ANSC 603	Introduction to Livestock Management	
ANSC 605	Poultry Production and Health Management	
ANSC 627	Animal Health Applications	
ANSC 635	Nonprofit Management for Agriculture Business	
ANSC 650	Dairy Industry Travel Course	
ANSC 670	Exotic Companion Species Health and Management	
ANSC 690	Livestock and Wildlife in Namibia: Challenges, Opportunities and Geography	
ANSC 695	Supervised Teaching Experience (Course can only be used once for elective credit)	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM) (Each semester counts as 1 elective. However, if taken in the senior year >90 credits, 1 semester can count as the capstone and 1 as an elective.)	
ANSC 701	Physiology of Reproduction	
ANSC 708	Ruminant Nutritional Physiology	
ANSC 710	Dairy Nutrition	
ANSC 715	Physiology of Lactation	
ANSC 724	Reproductive Management and Artificial Insemination	
ANSC 725	Equine Sports Medicine	
ANSC 727	Advanced Dairy Management I	
ANSC 728	Advanced Dairy Management II	
ANSC 750	Collaborative Farm Design and Development	
ANSC 795	Investigations	
ANSC 796	Equine Senior Seminar	
ANSC 799	Honors Senior Thesis	
BMCB 753	Cell Culture	
BMS 602	Pathogenic Microbiology	
BMS 623	Histology: Microscopic Cellular Structure and Function	
BMS 655	Human and Animal Parasites	
BMS 702	Endocrinology	
BMS 703	Infectious Disease and Health	
BMS 704	Pathologic Basis of Disease	
BMS 705	Immunology	
BMS 706	Virology	
BMS 711	Toxicology	
BMS 712	Experiences in Applied Veterinary Diagnostics	
BMS 718	Mammalian Physiology	
BUS #410	Introduction to Entrepreneurship	
CMN 500	Public Speaking	
CMN 600	Public Speaking as a Civic Art	
EREC 411	Environmental and Resource Economics Perspectives	
EREC 680	Agricultural and Food Policy	
MEFB 773	Physiology of Fishes	
MGT 535	Organizational Behavior	
SAFS 632	Urban Agriculture	
ZOOL 610	Principles of Aquaculture	
ZOOL 613	Animal Behavior	
ZOOL 777	Neuroethology	
Experiential Electives		
ANSC 600	Field Experience	
ANSC 603	Introduction to Livestock Management	
ANSC 605	Poultry Production and Health Management	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	
ANSC 727	Advanced Dairy Management I	
ANSC 728	Advanced Dairy Management II	
ANSC 750	Collaborative Farm Design and Development	
ANSC 795	Investigations	
ANSC 799	Honors Senior Thesis	
Total Credits		**78**

[1] Students interested in graduate school should take 2 semesters of Organic Chemistry (CHEM 651/CHEM 653 and CHEM 652/CHEM 654)

and one semester of General Biochemistry (BMCB 658/BMCB 659) in place of BMCB 501.

2 ENGL 501 Introduction to Creative Nonfiction, ENGL 502 Professional and Technical Writing, ENGL 503 Persuasive Writing or ENGL 419 How to Read Anything

Capstone Experience

The capstone requirement must be completed during the senior year, and may be satisfied through a course (e.g., ANSC 698 Cooperative for Real Education in Agricultural Management (CREAM), ANSC 728 Advanced Dairy Management II, ANSC 750 Collaborative Farm Design and Development, ANSC 797 Equine Capstone Experience, or ANSC 799 Honors Senior Thesis) or some form of experiential learning (e.g., mentored research projects and other special student activities).

GPA Requirements for All Students in Animal Science

Students will be required to earn a C- or better in all required courses for the animal science major to receive credit toward graduation. Students failing to do this will need to retake the course in order to receive credit.

Requirements for Animal Science Students Interested in Graduate/ Veterinary School

Code	Title	Credits
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
MATH 424B	Calculus for Life Sciences	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

Students interested in veterinary medicine should consult the pre-veterinary medicine program website.

Degree Plan

ANSC Sample Student Schedule by Semester

Course	Title	Credits
First Year		
Fall		
ANSC 421	Introduction to Animal Science	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing (WI) or Discovery course (Not SS, FPA, or WC)	4
	Credits	**16**
Spring		
ANSC 406	Careers in Animal Science	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
ENGL 401	First-Year Writing (WI or Discovery course)	4
Elective		4
	Credits	**17**
Second Year		
Fall		
ANSC 511	Anatomy and Physiology	4
ANSC 612	Genetics of Animals	4
Discovery course		4
Elective		4
	Credits	**16**
Spring		
AAS 439	Fundamentals of Animal Health	2
ANSC 512	Anatomy and Physiology	4
ANSC 543	Technical Writing in Animal Sciences	2
BIOL 528	Applied Biostatistics I	4
Discovery Course		4
	Credits	**16**
Third Year		
Fall		
ANSC 625	Animal Diseases	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Discovery course		4
Elective		4
	Credits	**17**
Spring		
ANSC 609	Principles of Animal Nutrition	4
BMCB 501	Biological Chemistry	4
Discovery course		4
Elective		4
	Credits	**16**
Fourth Year		
Fall		
ANSC Reproduction course or Discovery course		4
Elective		4
Elective		4
Elective		4
	Credits	**16**
Spring		
ANSC 602	Animal Rights and Societal Issues (WI)	4
ANSC Reproduction course or Discovery course		4
Capstone course		4
Elective		4
	Credits	**16**
	Total Credits	**130**

ANSC Sample Student Schedule by Semester - Pre-Veterinary/ Graduate School Intent

Course	Title	Credits
First Year		
Fall		
ANSC 421	Introduction to Animal Science	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4

ENGL 401	First-Year Writing (WI) or Discovery course (Not SS, FPA, or WC)	4
	Credits	**16**
Spring		
ANSC 406	Careers in Animal Science	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
MATH 424B	Calculus for Life Sciences	4
ENGL 401	First-Year Writing (WI or Discovery course)	4
	Credits	**17**
Second Year		
Fall		
ANSC 511	Anatomy and Physiology	4
BIOL 528	Applied Biostatistics I	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
Discovery course		4
	Credits	**17**
Spring		
AAS 439	Fundamentals of Animal Health	2
ANSC 512	Anatomy and Physiology	4
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
ENGL 501	Introduction to Creative Nonfiction (WI and FPA DISC)	4
Elective		2
	Credits	**17**
Third Year		
Fall		
ANSC 612	Genetics of Animals	4
ANSC 625	Animal Diseases	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Discovery course or Elective		4
	Credits	**17**
Spring		
ANSC 609	Principles of Animal Nutrition	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Discovery course		4
Elective		4
	Credits	**17**
Fourth Year		
Fall		
PHYS 401	Introduction to Physics I	4
ANSC Repro Course or Discovery course		4
Discovery course or Elective		4
Elective		4
	Credits	**16**
Spring		
ANSC 602	Animal Rights and Societal Issues (WI)	4
PHYS 402	Introduction to Physics II	4
ANSC Repro Course or Discovery course		4
Capstone		4
	Credits	**16**
	Total Credits	**133**

Student Learning Outcomes

Students will gain a fundamental knowledge of the animal science related disciplines of:

Anatomy & physiology

- Students will be able to recognize the complimentary relationship of anatomic structure and function and accurately describe the basic physiologic processes of mammalian organ systems.

Nutrition

- Students will be able to identify, compare, contrast, and link different concepts regarding animal feeding and metabolism of carbohydrates, lipids, and protein in major livestock species and equine. - Genetics o Students will understand basic principles and applications of inheritance, the difference between qualitative and quantitative genetics, and be able to discuss the various disciplines within genetics.

Disease

- Students will understand the modes of transmission of infectious diseases, recognize signs of illness associated with notable diseases in livestock species, and be able to appropriately apply general concepts of disease prevention and biosecurity to a variety of management situations.

Reproduction

- Students will comprehend the mechanisms and endocrine control of gametogenesis, fertilization, pregnancy, and lactation and understand the variety of factors that can influence reproductive success.

Animal Ethics

- Students will recognize the numerous ways that humans use, benefit from, and conflict with non-human animals and have an awareness of the variety of motivations and influences that drive these relationships.

Students will be able to develop critical questions that facilitate their independent investigation of topics related to animal science and demonstrate an integration of discipline specific knowledge through engaging in experiential education opportunities.

Students will be able to conduct literature searches using relevant databases to critically evaluate both academic and popular press resources pertinent to the animal sciences.

Students will be able to construct well-supported, effectively organized written arguments to express informed perspectives on animal science related topics. These writings will demonstrate professional style, appropriate mechanics (grammar, punctuation, and spelling), and the correct use of citations.