

# Animal Science

## Animal Science Major

The Animal Science major encompasses physiology, nutrition, genetics, reproduction, marketing, management, and husbandry of livestock and companion animals; the important scientific understanding for the utilization of animal products; and experiences necessary for leadership in, and advocacy for, industries that provide animals and animal products that benefit humans.

## Curriculum Options

Five study options are available for the animal science major.

- **Animal Production, Management and Husbandry:** This option is designed for students desiring a background in the principles of animal management and husbandry. It includes broad training in animal husbandry, production and management. Employment opportunities include careers in livestock production, allied support fields, and in technical support fields including agricultural positions within the Cooperative Extension Service.
- **Animal Biomedical Science:** This option offers students a more scientific approach to animal science, preparing them for veterinary medicine, graduate research in animal science, teaching, food technology and the biotechnology industry. Students may receive an animal science degree while meeting academic requirements for application to veterinary schools.
- **Animal Agribusiness:** This option is designed for students desiring a background in the business and economic principles as they apply to the livestock industry. It leads to broad training in animal husbandry, production, business, and management. Employment opportunities include careers in agribusiness, sales and marketing of livestock and products for the livestock industry, and a variety of public and private institutions which serve the business of animal agriculture.
- **Livestock Media:** This option offers students an opportunity to acquire skills in journalism, advertising, and public relations in addition to the fundamentals of animal science. Employment opportunities include working for a variety of media outlets including print and virtual media, TV, radio, magazines, breed associations, or commodity organizations as well as positions involved in public relations in the livestock industry.
- **Meat Science:** This option provides the opportunity to emphasize knowledge about the science of muscle biology and evaluation and processing of red meat. This option prepares students for a broad variety of career opportunities in the meat industry including management, sales, meat inspection, and meat marketing.

## Animal Science Minor

Students from other majors may minor in Animal Science by completing a minimum of 16 credits. A minimum of eight credits must be completed at NDSU.

## Major Requirements

### Major: Animal Science

Degree Type: B.S.

Required Degree Credits to Graduate: 128

### General Education Requirements

#### First Year Experience (F):

AGRI 189	Skills for Academic Success (Students transferring in 24 or more credits do not need to take AGRI 189.)	1
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#### Communication (C):

ENGL 110	College Composition I	3
ENGL 120	College Composition II	3
Upper-Level Writing. Select from current general education list		3
COMM 110	Fundamentals of Public Speaking	3

#### Quantitative Reasoning (R):

STAT 330	Introductory Statistics	3
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#### Science & Technology (S):

Select one sequence from the following based on major option:	10
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For Options 1 and 5:

CHEM 117	Chemical Concepts and Applications
or CHEM 121	General Chemistry I
CHEM 117L	Chem Concepts and Applications Lab
or CHEM 121L	General Chemistry I Laboratory

MICR 202 & 202L	Introductory Microbiology and Introductory Microbiology Lab	
PLSC 315	Genetics	
For Options 2 and 4:		
BIOL 111	Concepts of Biology (BIOL 111L is also required. BIOL 150 may be substituted but is not a general education science and technology course.)	
CHEM 117 or CHEM 121	Chemical Concepts and Applications General Chemistry I	
CHEM 117L or CHEM 121L	Chem Concepts and Applications Lab General Chemistry I Laboratory	
PLSC 315	Genetics	
For Option 3:		
CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory	
CHEM 122	General Chemistry II	
PLSC 315	Genetics	
<b>Humanities &amp; Fine Arts (A): Select from current general education list</b>		<b>6</b>
<b>Social &amp; Behavioral Sciences (B):</b>		
ECON 201	Principles of Microeconomics	3
Select from current general education list		3
<b>Wellness (W): Select from current general education list</b>		<b>2</b>
<b>Cultural Diversity (D): Select from current general education list</b>		
<b>Global Perspectives (G):</b>		
ECON 201	Principles of Microeconomics	3
<b>Total Credits</b>		<b>40</b>

## Major Requirements

<b>General Education Requirements</b>		<b>40</b>
<b>Required Core Courses for Animal Science</b>		
MATH 103	College Algebra (or higher level; except MATH 104)	3
ANSC 114	Introduction to Animal Sciences	3
VETS 135	Anatomy and Physiology of Domestic Animals	3
Select one of the following (Students transferring in 24 or more credits do not need to take AGRI 150/ANSC 150/VETS 150.):		1
AGRI 150	Agriculture Orientation	
ANSC 150	Animal Science Orientation	
VETS 150	Introduction to the Veterinary Profession	
ANSC 240	Meat Animal Evaluation and Marketing	3
ANSC 300	Domestic Animal Behavior and Management	3
ANSC 323	Fundamentals of Nutrition	3
ANSC 324	Applied Animal Nutrition	3
ANSC 463 & 463L	Physiology of Reproduction and Physiology of Reproduction Laboratory	4
Select one of the following:		1
ANSC 393	Undergraduate Research (research experience)	
ANSC 396	Field Experience (internship experience)	
ANSC 478	Research and Issues in Animal Agriculture	3
Select one of the following:		3
ANSC 480	Equine Industry and Production Systems	
ANSC 482	Sheep Industry and Production Systems	
ANSC 484	Swine Production/Pork Industry Systems	
ANSC 486	Beef Industry and Production Systems	
ANSC 488	Dairy Industry and Production Systems	
<b>Options: Select one of the five options listed below.</b>		<b>35-41</b>

Students must select one option of interest. The standard option for this major is the Animal Production, Management and Husbandry. Students who wish to declare an option other than the standard option must officially declare that option with the Office of Registration and Records.

**Degree Requirements: Potential of a minimum of 14-20 credits to reach 128.**

20-14

**Total Credits** **128**

**Option 1: Animal Production, Management, & Husbandry Option - 36 Credits**

BIOL 111	Concepts of Biology	3
or BIOL 150	General Biology I	
BIOL 111L	Concepts of Biology Lab	1
or BIOL 150L	General Biology I Laboratory	
PLSC 110	World Food Crops	3
AGEC 242	Introduction to Agricultural Management	3
AGEC 244	Agricultural Marketing	3
CHEM 260	Elements of Biochemistry	4
Select one the following evaluation courses:		2
ANSC 232	Dairy Cattle Evaluation	
or ANSC 230	Meat Grading and Evaluation	
or ANSC 231	Livestock Evaluation	
or ANSC 235	Equine Evaluation	
ANSC 340	Principles of Meat Science	3
ANSC 357	Animal Genetics	3
ANSC 370	Fundamentals/Animal Disease	3
ANSC 380	Livestock Sales and Marketing	2
PLSC 320	Principles of Forage Production	3
or RNG 336	Introduction to Range Management	
ANSC 480	Equine Industry and Production Systems	3
or ANSC 482	Sheep Industry and Production Systems	
or ANSC 484	Swine Production/Pork Industry Systems	
or ANSC 486	Beef Industry and Production Systems	
or ANSC 488	Dairy Industry and Production Systems	

**Total Credits** **36**

**Option 2: Animal Agribusiness Option - 38 Credits**

ACCT 102	Fundamentals of Accounting	3
BIOL 111L	Concepts of Biology Lab	1
or BIOL 150L	General Biology I Laboratory	
ECON 202	Principles of Macroeconomics (will fulfill Social/Behavioral Science)	3
AGEC 242	Introduction to Agricultural Management	3
AGEC 244	Agricultural Marketing	3
AGEC 246	Introduction to Agricultural Finance	3
Select one of the following evaluation courses:		2
ANSC 232	Dairy Cattle Evaluation	
or ANSC 230	Meat Grading and Evaluation	
or ANSC 231	Livestock Evaluation	
or ANSC 235	Equine Evaluation	
ANSC 357	Animal Genetics	3
ANSC 380	Livestock Sales and Marketing	2
AGEC elective	300-400 level	4
Animal Agribusiness electives - 11 Credits (Students may choose from upper level ANSC, AGECE, COMM, ECON, PLSC or RNG)		11

**Total Credits** **38**

**Option 3: Biomedical Science Option - 40-41 Credits**

Pre-Veterinary Medicine option - Students interested in veterinary school should consider this option. The option meets most veterinary school prerequisites. Consultation with an adviser is recommended.

CHEM 122L	General Chemistry II Laboratory	1
PHYS 120 or PHYS 211	Fundamentals of Physics College Physics I	3
PHYS 120L or PHYS 211L	Fundamentals of Physics Laboratory College Physics I Laboratory	1
BIOL 150 & 150L	General Biology I and General Biology I Laboratory	4
BIOL 151 & 151L	General Biology II and General Biology II Laboratory	4
CHEM 240 or CHEM 341	Survey of Organic Chemistry Organic Chemistry I	3
CHEM 260 or BIOC 460	Elements of Biochemistry Foundations of Biochemistry and Molecular Biology I	3-4
MICR 350 & 350L	General Microbiology and General Microbiology Lab	5
Select one of the following evaluation courses:		2
ANSC 232 or ANSC 230 or ANSC 231 or ANSC 235	Dairy Cattle Evaluation Meat Grading and Evaluation Livestock Evaluation Equine Evaluation	
ANSC 357 or ANSC 314	Animal Genetics Animal Biotechnology	3
ANSC 444	Livestock Muscle Physiology	3
Biomedical Science electives – 8 Credits (Students may choose from upper level ANSC, BIOC, BIOL, CHEM, MICR, PHYS OR SAFE)		8
<b>Total Credits</b>		<b>40-41</b>

**Option 4: Livestock Media Option - 35 Credits**

BIOL 111L or BIOL 150L	Concepts of Biology Lab General Biology I Laboratory	1
AGEC 242	Introduction to Agricultural Management	3
AGEC 244	Agricultural Marketing	3
Select one of the following evaluation courses:		2
ANSC 232 or ANSC 230 or ANSC 231 or ANSC 235	Dairy Cattle Evaluation Meat Grading and Evaluation Livestock Evaluation Equine Evaluation	
ANSC 357	Animal Genetics	3
ANSC 380	Livestock Sales and Marketing	2
<b>Complete any minor in the communication area (21 credits) OR complete the following COMM courses:</b>		<b>21</b>
COMM 112	Understanding Media and Social Change	
COMM 114 or COMM 212 or COMM 216	Human Communication Interpersonal Communication Intercultural Communication	
COMM electives. Select 15 credits of the following:		
COMM 200	Introduction to Media Writing	
COMM 245	Principles of Broadcast Production	
COMM 260	Introduction to Web Design	
COMM 261	Introduction to Web Development	
COMM 362	Principles of Design For Print	

COMM 375	Principles of Strategic Communication	
COMM 376	Advertising Creative Strategies	
COMM 377	Advertising Media Planning	
COMM 400-level		

**Total Credits** **35**

### Option 5: Meat Science Option - 36-37 Credits

BIOL 111	Concepts of Biology	3
or BIOL 150	General Biology I	
BIOL 111L	Concepts of Biology Lab	1
or BIOL 150L	General Biology I Laboratory	
AGEC 244	Agricultural Marketing	3
CHEM 260	Elements of Biochemistry	4
ANSC 230	Meat Grading and Evaluation	2
ANSC 340	Principles of Meat Science	3
ANSC 344	Fundamentals of Meat Processing	2
ANSC 357	Animal Genetics	3
ANSC 444	Livestock Muscle Physiology	3
CFS 210	Introduction to Food Science and Technology	2
CFS elective	300-400 Level	3
Meat Science electives– 8 Credits (Students may choose from upper level ANSC, BIOC, CFS, CHEM, MICR OR SAFE)		8

**Total Credits** **37**

#### Degree Requirements and Notes:

- Students must earn a minimum 2.00 cumulative GPA for courses that satisfy major requirements.
- Transfer grades must be 'C' or higher to count toward major requirements.

## Minor Requirements

### Animal Science Minor

#### Minor Requirements

Required Credits: 16

#### Required Courses

ANSC 114	Introduction to Animal Sciences	3
ANSC 223	Introduction to Animal Nutrition	2
ANSC 220	Livestock Production	3
ANSC 240	Meat Animal Evaluation and Marketing	3

**Elective Courses** **5**

Must include one of the following courses:

ANSC 300	Domestic Animal Behavior and Management	
ANSC 314	Animal Biotechnology	
ANSC 323	Fundamentals of Nutrition	
ANSC 324	Applied Animal Nutrition	
ANSC 340	Principles of Meat Science	
ANSC 344	Fundamentals of Meat Processing	
ANSC 357	Animal Genetics	
ANSC 370	Fundamentals/Animal Disease	
ANSC 380	Livestock Sales and Marketing	
ANSC 444	Livestock Muscle Physiology	
ANSC 463	Physiology of Reproduction	
ANSC 466	Principles of Mixed Feed Technology, Production and Management	
ANSC 487	Growing and Finishing Cattle Management	

Remaining credits may come from those listed above or the following courses:

ANSC 230	Meat Grading and Evaluation
ANSC 231	Livestock Evaluation
ANSC 232	Dairy Cattle Evaluation
ANSC 331	Competitive Livestock Evaluation

**Total Credits** **16**

**Minor Requirements and Notes:**

- A minimum of 8 credits must be taken at NDSU.
- Students must earn a minimum 2.00 GPA for the minor requirements.

**Freshman**

Fall	Credits	Spring	Credits
This Plan of Study applies to Animal Production, Management, and Husbandry study option (Option 1). For other options see the departmental website.		ANSC 240	3
AGRI 189	1	BIOL 111 or 150	3
ANSC 114	3	BIOL 111L or 150L	1
ANSC 150, VETS 150, or AGRI 150	1	ENGL 120 (ENGL 110 or placement as prerequisite)	3
VETS 135	3	PLSC 110	3
MATH 103	3	Humanity or Fine Art <small>One course needs to be a Cultural Diversity</small>	3
CHEM 117 or 121	3		
CHEM 117L or 121L	1		
	<b>15</b>		<b>16</b>

**Sophomore**

Fall	Credits	Spring	Credits
ANSC 331	2	CHEM 260	4
AGEC 242	3	AGEC 244	3
MICR 202	2	STAT 330	3
MICR 202L	1	PLSC 315	3
COMM 110	3	Humanity or Fine Art	3
ECON 201 <small>Social Science and Global Perspective course</small>	3		
Humanity or Fine Art	3		
	<b>17</b>		<b>16</b>

**Junior**

Fall	Credits	Spring	Credits
ANSC 300	3	ANSC 324	3
ANSC 323	3	ANSC 340	3
ANSC 370	3	ANSC 357	3
RNG 336 or PLSC 320	3	ANSC 380	2
ENGL 320	3	ANSC 463	3
Wellness	2	ANSC 463L	1
	<b>17</b>		<b>15</b>

**Senior**

<b>Fall</b>	<b>Credits</b>	<b>Spring</b>	<b>Credits</b>
ANSC 394 or 396	1-5	ANSC 480, 484, or 486	3
ANSC 482 or 488	3	ANSC 478	3
Social or Behavior Science	3	Elective <sup>Some are guided</sup>	10
Elective <sup>Some are guided</sup>	9-5		
	<b>16</b>		<b>16</b>

**Total Credits: 128**