

DAIRY SCIENCE

Students majoring in Dairy Science will complete the degree requirements listed below. If desired, a student may also include the specialized option in pre-veterinary medicine. A minimum of 15 credits of animal science coursework must be earned at Iowa State University. A minimum of 15 credits must be completed from the courses listed to meet the Ethics, International Perspectives, U.S. Diversity, and Humanities and Social Sciences requirements.

Total Degree Requirement: 128 cr.

Only 65 cr. from a two-year institution may apply which may include up to 16 technical cr.; 9 P-NP cr. of free electives; 2.00 minimum GPA.

International Perspectives

Approved International Perspectives course 3

U.S. Diversity

Approved U.S. Diversity course 3

Communications Proficiency

English composition 6

Speech fundamentals 3

Total Credits 9

Communication/Library

ENGL 150 Critical Thinking and Communication 3

ENGL 250 Written, Oral, Visual, and Electronic Composition 3

LIB 160 Information Literacy 1

One course from the following: 3

AGEDS 311 Presentation and Sales Strategies for Agricultural Audiences

AGEDS 327 Survey of Agriculture and Life Sciences Communication

COMST 214 Professional Communication

SP CM 212 Fundamentals of Public Speaking

Total Credits 10

Humanities and Social Sciences

Approved Humanities course 3

Approved Social Science course 3

Total Credits 6

Ethics

Approved Ethics course 3

Mathematics and Business

One course from the following: 3

ECON 101 Principles of Microeconomics

ECON 102 Principles of Macroeconomics

ACCT 284 Financial Accounting

One course from the following: 3-4

STAT 101 Principles of Statistics

STAT 104 Introduction to Statistics

STAT 226 Introduction to Business Statistics I

One course from the following: 3-4

MATH 140 College Algebra

MATH 150 Discrete Mathematics for Business and Social Sciences

MATH 160 Survey of Calculus

MATH 165 Calculus I

Total Credits 9-11

Biological Sciences

BIOL 211 Principles of Biology I 3

BIOL 211L Principles of Biology Laboratory I 1

BIOL 212 Principles of Biology II 3

BIOL 212L Principles of Biology Laboratory II 1

BIOL 313 Principles of Genetics 3

or GEN 320 Genetics, Agriculture and Biotechnology

MICRO 201 Introduction to Microbiology and Introductory Microbiology Laboratory 3-4

or MICRO 302 Biology of Microorganisms and Microbiology Laboratory

Total Credits 14-15

Physical Sciences

A minimum of 8 credits are required. These requirements are specific to option and are listed with each option below.

Dairy Sciences Option

AN S 101 Working with Animals 2

AN S 110 Orientation in Animal Science and ISU 1

AN S 114 Survey of the Animal Industry 2

AN S 210 Career Preparation in Animal Science 1

AN S 211 Issues Facing Animal Science 1

AN S 214 Domestic Animal Physiology 3

AN S 214L Domestic Animal Anatomy and Physiology Lab 1

AN S 235 Dairy Cattle Science 3

AN S 270 Foods of Animal Origin and Foods of Animal Origin Laboratory

or FS HN 101 Food and the Consumer

AN S 319 Animal Nutrition 3

AN S 320 Animal Feeds and Feeding 3

AN S 331 Domestic Animal Reproduction 3

AN S 337	Lactation	3
AN S 352	Genetic Improvement of Domestic Animals	3
AN S 411	Addressing Issues in Animal Science	1
AN S 434	Dairy Systems Management	3
AN S 435	Applied Dairy Farm Evaluation	3
CHEM 163 & 163L	College Chemistry and Laboratory in College Chemistry	5
or CHEM 177 & 177L	General Chemistry I and Laboratory in General Chemistry I	
CHEM 331	Organic Chemistry I	3
or BBMB 221	Structure and Reactions in Biochemical Processes	
Four credits (minimum) from the following:		4
AGRON 334	Forage Crop Management	
AN S 332	Laboratory Methods in Animal Reproduction	
or AN S 333	Embryo Transfer and Related Technologies	
AN S 336	Domestic Animal Behavior and Well-Being	
AN S 345	Growth and Development of Domestic Animals	
AN S 360	Fresh Meat Science and Applied Muscle Biology	
AN S 415	Equine Systems Management	
AN S 419	Advanced Animal Nutrition	
AN S 424	Companion Animal Systems Management	
AN S 425	Swine Systems Management	
AN S 426	Beef Cattle Systems Management	
AN S 429	Sheep Systems Management	
AN S 460	Science and Technology of Value Added Meat Products	
ECON 332	Cooperatives	
FS HN 305	Food Quality Management and Control	
FS HN 403	Food Laws and Regulations	
FS HN 410	Food Analysis	
MICRO 310	Medical Microbiology	
MICRO 353	Introductory Parasitology	
MICRO 374	Insects and Our Health	
MICRO 402	Microbial Genetics and Genomics	
MICRO 407	Microbiological Safety of Foods of Animal Origins	
FS HN 420	Food Microbiology	
MICRO 420	Food Microbiology	
MICRO 475	Immunology	
VDPAM 487	Livestock Disease Prevention	
Total Credits		51

Additional free electives for the Dairy Sciences option 26-29

Pre-Veterinary Medicine Option

AN S 101	Working with Animals	2
AN S 110	Orientation in Animal Science and ISU	1
AN S 114	Survey of the Animal Industry	2
AN S 210	Career Preparation in Animal Science	1
AN S 211	Issues Facing Animal Science	1
AN S 214	Domestic Animal Physiology	3
AN S 214L	Domestic Animal Anatomy and Physiology Lab	1
AN S 235	Dairy Cattle Science	3
AN S 270 & 270L	Foods of Animal Origin and Foods of Animal Origin Laboratory	3
or FS HN 101	Food and the Consumer	
AN S 319	Animal Nutrition	3
AN S 320	Animal Feeds and Feeding	3
AN S 331	Domestic Animal Reproduction	3
AN S 337	Lactation	3
AN S 352	Genetic Improvement of Domestic Animals	3
AN S 411	Addressing Issues in Animal Science	1
AN S 434	Dairy Systems Management	3
AN S 435	Applied Dairy Farm Evaluation	3
CHEM 177	General Chemistry I	4
CHEM 177L	Laboratory in General Chemistry I	1
CHEM 178	General Chemistry II	3
CHEM 331	Organic Chemistry I	3
CHEM 331L	Laboratory in Organic Chemistry I	1
BBMB 301	Survey of Biochemistry	3
or BBMB 316	Principles of Biochemistry	
or BBMB 404	Biochemistry I	
or BBMB 420	Mammalian Biochemistry	
PHYS 111	General Physics	5
Four credits (minimum) from the following:		4
AGRON 334	Forage Crop Management	
AN S 332	Laboratory Methods in Animal Reproduction	
or AN S 333	Embryo Transfer and Related Technologies	
AN S 336	Domestic Animal Behavior and Well-Being	
AN S 345	Growth and Development of Domestic Animals	
AN S 360	Fresh Meat Science and Applied Muscle Biology	
AN S 415	Equine Systems Management	
AN S 419	Advanced Animal Nutrition	
AN S 424	Companion Animal Systems Management	
AN S 425	Swine Systems Management	
AN S 426	Beef Cattle Systems Management	
AN S 429	Sheep Systems Management	

AN S 460	Science and Technology of Value Added Meat Products
ECON 332	Cooperatives
FS HN 403	Food Laws and Regulations
FS HN 410	Food Analysis
MICRO 310	Medical Microbiology
MICRO 353	Introductory Parasitology
MICRO 374	Insects and Our Health
MICRO 402	Microbial Genetics and Genomics
MICRO 407	Microbiological Safety of Foods of Animal Origins
MICRO 421	Food Microbiology Laboratory

Total Credits 63

Additional free electives for the Pre-Veterinary Medicine Option 11-14

* The Iowa State University College of Veterinary Medicine academic requirements are met by completion of this option (<http://vetmed.iastate.edu/academics/prospective-students/admissions/academic-requirements>).

Dairy Science, B.S. - general

Freshman

Fall	Credits Spring	Credits
AN S 110	1 AN S 114	2
AN S 101	2 CHEM 177, 177L or 163, 163L	5
BIOL 211	3 Humanities - elective list	3
BIOL 211L	1 SP CM 212, AGEDS 311, AGEDS 327, or COMST 214	3
ENGL 150	3 STAT 101, 104, or 226	3-4
LIB 160	1	
MATH 140, 150, 160, or 165	3-4	
Social Science - elective list	3	
17-18		16-17

Sophomore

Fall	Credits Spring	Credits
AN S 211	1 AN S 210	1
AN S 235	3 AN S 270 & 270L or FS HN 101	3
BIOL 212	3 AN S 214	3
BIOL 212L	1 AN S 214L	1
BBMB 221	3 ENGL 250	3
ECON 101	3 MICRO 201 & 201L or MICRO 302 & 302L	3-4

Free elective	3 Free elective	3
17		17-18

Junior

Fall	Credits Spring	Credits
AN S 319	3 AN S 320	3
AN S 331	3 AN S 352	3
GEN 320 or BIOL 313	3 AN S 337	3
US diversity - elective list	3 Free elective	3
Free elective	3 Ethics - elective list	3
15		15

Senior

Fall	Credits Spring	Credits
AN S 411	1 AN S 435	3
AN S 434	3 International perspective - elective list	3
AN S elective	3 AN S elective	3
Free Elective	3 Free elective	3
Free elective	3 Free Elective	4
Free elective	3	
16		16

Important Note: This is only one of many equally-sound schedule sequences.

Free electives and specified group electives are often chosen to complement the student's career focus. The student's academic advisor assists with developing scheduling schemes that prepare students individually for careers in the animal industry. They are explained fully in AN S 110 and through appointments with the student's advisor in Dairy Science. Typical career areas include Advanced Degree in Dairy Science, Business and Finance, Agriculture Promotion and Information, Dairy Food Industry, Agricultural Sales and Marketing, International Agriculture, Animal Production and General Agribusiness and Pre-Veterinary Medicine.

Dairy Science, B.S. - pre-veterinary medicine option

Freshman

Fall	Credits Spring	Credits
AN S 110	1 AN S 114	2
AN S 101	2 CHEM 177	4
BIOL 211	3 CHEM 177L	1
BIOL 211L	1 Humanities - elective list	3
ENGL 150	3 SP CM 212, AGEDS 311, AGEDS 327, or COMST 214	3
LIB 160	1 STAT 101, 104, or 226	3-4

MATH 140, 150, 160, or 165	3-4	
Social Science - elective list	3	
	17-18	16-17
Sophomore		
Fall	Credits Spring	Credits
AN S 211	1 AN S 210	1
AN S 235	3 AN S 270 & 270L or FS HN 101	3
BIOL 212	3 AN S 214	3
BIOL 212L	1 AN S 214L	1
CHEM 178	3 CHEM 331	3
ECON 101	3 CHEM 331L	1
Ethics - elective list	3 ENGL 250	3
	Free elective	3
	17	18
Junior		
Fall	Credits Spring	Credits
AN S 319	3 AN S 320	3
AN S 331	3 AN S 352	3
GEN 320 or BIOL 313	3 AN S 337	3
CHEM 332	3 BBMB 301, 316, 404, or 420	3
MICRO 201L & 201L or MICRO 302 & 302L	3-4 US diversity - elective list	3
	15-16	15
Senior		
Fall	Credits Spring	Credits
AN S 411	1 AN S 435	3
AN S 434	3 International Perspective - elective list	3
AN S elective	3 AN S elective	3
PHYS 111	5 Free elective	3
Free elective	4 Free elective	4
	16	16

General Chemistry with lab (7)
 Organic Chemistry with lab (4)
 Biochemistry (3)
 General Physics with lab (4)
 General Biology with lab (8)
 Genetics/Animal Breeding (3)
 Mammalian Anatomy and/or Physiology (3)
 English Composition (6)
 Oral Communication (3)
 Humanities and/or Social Science (8)
 Other Electives (8)

* Credits currently required for application to Veterinary Medicine program at ISU (55 credits)