

# Department of Animal and Dairy Sciences

**Department Head: Christy Bratcher**

**Undergraduate Coordinator/Advisor: Erica Carroll**

Office: 2111 ADS Building

Animal and Dairy Sciences is a multidisciplinary science that focuses on livestock and companion animal growth, health and safety, as well as food and fiber production. Professionals in the diverse fields of animal and dairy sciences strive to provide healthy and wholesome food as well as quality fiber products to support the growing population. Students in Animal and Dairy Sciences will learn about the newest technologies and experience progressive management strategies that will prepare them to be leaders in agriculture.

Joining Animal and Dairy Sciences will give students hands-on education and experience needed to be successful in areas such as breeding, feeding and nutrition, growth and development, reproductive and lactation physiology, biotechnology, marketing, management, and evaluation as it relates to livestock species. The curriculum is designed to provide students with academic and experiential learning while also allowing them flexibility to tailor their program by taking courses that best prepare and support their professional goals. Students of the Animal and Dairy Sciences will be challenged to think critically and exercise knowledge of discipline content through scientific writing and presentation. Students pursuing veterinary medicine or graduate studies will find the academic setting of the Animal and Dairy Sciences is an ideal fit.

Concentrations:

Pre-Vet Science

Business and Industry

Production Management

Pre-Vet Med Tech

## BS in Animal and Dairy Sciences (ADS)

### Degree Requirements

#### English Composition

EN 1103	English Composition I	3
or EN 1104	Expanded English Composition I	
EN 1113	English Composition II	3
or EN 1173	Accelerated Composition II	

#### Mathematics

MA 1323	Trigonometry	3
or MA 1713	Calculus I	
MA 2113	Introduction to Statistics	3

#### Science

See Concentration Requirements

#### Humanities

Choose from General Education courses	6
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#### Fine Arts

Choose from General Education courses	3
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#### Social Sciences

AEC 2713	Introduction to Food and Resource Economics	3
or EC 2113	Principles of Macroeconomics	
or EC 2123	Principles of Microeconomics	
Choose from General Education courses		3

#### Major Core

ADS 1111	Orientation in Animal Science	1
ADS 1113	Animal Science	3
ADS 1121	Animal Science Laboratory	1
ADS 3013	Anatomy and Physiology	3
ADS 3031	Anatomy and Physiology Laboratory	1
ADS 2111	Animal Science Career Planning	1
ADS 3313	Introduction to Meat Science	3
ADS 3311	Meat Processing Laboratory	1

PO 3103	Genetics I	3
ADS 4114	Animal Nutrition	4
ADS 4124	Animal Breeding	4
ADS 4213	Feeds and Feeding	3
ADS 4613	Physiology of Reproduction	3
ADS 4611	Practices in Physiology of Reproduction	1
Experiential Learning		3
ADS 4420 or ADS 4440 or ADS 4520	Animal and Dairy Science Internship Research Experience Practicum Livestock Extension Experience	
ADS 4221	Capstone in Animal and Dairy Science	1

## Choose one of the following concentrations:

### Pre-Vet/Science Concentration

#### Chemistry Sequence

CH 1213 & CH 1211	Chemistry I and Investigations in Chemistry I *	4
CH 1223 & CH 1221	Chemistry II and Investigations in Chemistry II *	4

#### Organic Chemistry & Lab

CH 2503 & CH 2501 or CH 4513 & CH 4511	Elementary Organic Chemistry and Elementary Organic Chemistry Laboratory Organic Chemistry I and Organic Chemistry Laboratory I	4
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#### Biology

BIO 1134	Biology I *	4
BIO 1144	Biology II	4
BIO 3304	General Microbiology	4

#### Biochemistry

BCH 4013 or BCH 4603	Principles of Biochemistry General Biochemistry I	3
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#### Oral Communication

CO 1003 or CO 1013	Fundamentals of Public Speaking Introduction to Communication	3
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#### Electives

Evaluation & Management Elective		2
Production Electives		8
Science Electives		12
Free Electives		6

See academic advisor for list of approved elective courses

<b>Total Hours</b>		<b>124</b>
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\* Satisfies General Education Requirements.

### Business and Industry Concentration

#### Inorganic Chemistry Sequence

CH 1043 & CH 1053 & CH 1051 or CH 1213 & CH 1211 & CH 1223 & CH 1211	Survey of Chemistry I and Survey of Chemistry II and Experimental Chemistry * Chemistry I and Investigations in Chemistry I and Chemistry II and Investigations in Chemistry I	7-8
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**Organic Chemistry**

CH 2503 & CH 2501 or CH 4513 & CH 4511	Elementary Organic Chemistry and Elementary Organic Chemistry Laboratory Organic Chemistry I and Organic Chemistry Laboratory I	4
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**Biology**

BIO 1134 or BIO 1144	Biology I * Biology II	4
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**Electives**

Evaluation & Management Electives	4
Production Electives	8
Business Electives	12
General Agriculture Electives	12
Free Electives	7

**See academic advisor for list of approved elective courses**

**Writing Requirement**

Satisfied by the successful completion of ADS 1113, ADS 2111, ADS 4213, ADS 4613, ADS 4221, and ONE of: ADS 2102, ADS 2122, ADS 3213, ADS 4212, ADS 4420, ADS 4440, ADS 4520, or ADS 4623.

**Oral Communication Requirement**

Satisfied by the successful completion of ADS 4613, ADS 4221, and TWO of the following: ADS 2102, ADS 2122, ADS 2223, ADS 3812, ADS 4212, ADS 4412, ADS 4420, ADS 4440, ADS 4520, ADS 4623, or ADS 4813.

**Computer Literacy Requirement**

Satisfied by the successful completion of ADS 3312, ADS 4420, ADS 4440, ADS 4520, ADS 4813, or ADS 4523

<b>Total Hours</b>	<b>124</b>
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\* Satisfies General Education Requirements.

**Production Management Concentration****Inorganic Chemistry Sequence**

CH 1043 & CH 1053 & CH 1051 or CH 1213 & CH 1211 & CH 1223 & CH 1221	Survey of Chemistry I and Survey of Chemistry II and Experimental Chemistry * Chemistry I and Investigations in Chemistry I and Chemistry II and Investigations in Chemistry II	7-8
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**Organic Chemistry & Lab**

CH 2503 & CH 2501 or CH 4513 & CH 4511	Elementary Organic Chemistry and Elementary Organic Chemistry Laboratory Organic Chemistry I and Organic Chemistry Laboratory I	4
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**Biology**

BIO 1134 or BIO 1144	Biology I * Biology II	4
PSS 4103	Forage and Pasture Crops	3

**Electives**

Evaluation & Management Electives	4
Production Electives	16
Business Electives	6
General Agriculture Electives	12
Free Electives	5

**See academic advisor for list of approved elective courses.**

**Writing Requirement**

Satisfied by the successful completion of ADS 1113, ADS 2111, ADS 4213, ADS 4613, ADS 4221, and ONE of: ADS 2102, ADS 2122, ADS 3213, ADS 4212, ADS 4420, ADS 4440, ADS 4520, or ADS 4623.

#### Oral Communication Requirement

Satisfied by the successful completion of ADS 4613, ADS 4221, and TWO of the following: ADS 2102, ADS 2122, ADS 2223, ADS 3812, ADS 4212, ADS 4412, ADS 4420, ADS 4440, ADS 4520, ADS 4623, or ADS 4813.

#### Computer Literacy Requirement

Satisfied by the successful completion of ADS 3312, ADS 4420, ADS 4440, ADS 4520, ADS 4813, or ADS 4523

#### Total Hours

61

\* Satisfies General Education Requirements.

## Pre-Vet Med Tech Concentration

### Inorganic Chemistry Sequence

CH 1043 & CH 1053 & CH 1051 or CH 1211 & CH 1213 & CH 1221 & CH 1223	Survey of Chemistry I and Survey of Chemistry II and Experimental Chemistry Investigations in Chemistry I and Chemistry I and Investigations in Chemistry II and Chemistry II	7
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### Organic Chemistry & Lab

CH 2503 & CH 2501 or CH 4513 & CH 4511	Elementary Organic Chemistry and Elementary Organic Chemistry Laboratory Organic Chemistry I and Organic Chemistry Laboratory I	4
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### Biology

12

BIO 1134	Biology I	4
BIO 1144	Biology II	4
BIO 3304	General Microbiology	4

### Oral Communication

CO 1003	Fundamentals of Public Speaking	3
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### Veterinary Science

VS 1012	Introduction to Veterinary Medicine Careers	2
CVM 3101	Veterinary Technology Medical Terminology	1

### Electives

Evaluation & Management Electives <sup>1</sup>		2
Production Electives <sup>2</sup>		8
Ag/Science Electives <sup>3</sup>		12
Free Electives		10

### Writing Requirement:

Satisfied by the successful completion of ADS 1113, ADS 2111, ADS 4213, ADS 4613, ADS 4221, and ONE of: ADS 2102, ADS 2122, ADS 3213, ADS 3212, or ADS 4623

#### Total Hours

61

<sup>1</sup> Evaluation & Management Electives: See academic advisor for list of approved courses.

<sup>2</sup> Production Electives: See academic advisor for list of approved courses.

<sup>3</sup> Ag/Science Electives: See academic advisor for list of approved courses.

## Course requirements for Pre-Veterinary students (3 + 1 program) to obtain a B.S. degree in Animal and Dairy Sciences

Because

- the entrance requirements for the College of Veterinary Medicine satisfy a portion of the course requirements for the Animal and Dairy Sciences curriculum

- b. a number of students are enrolled in Animal and Dairy Sciences while satisfying their pre-veterinary requirements and
- c. an Animal and Dairy Sciences degree will be especially helpful to a practicing veterinarian,

the following requirements for those electing to apply for a Bachelor of Science degree in Animal and Dairy Sciences after successfully completing the first year of Veterinary Medicine are listed.

General Education Requirements	27
Dept Core	39
Science/Veterinary Medicine Concentration (excl. Science Electives and Free Electives)	40

To qualify for the Bachelor of Science degree in ADS, a student in the 3+1 program must successfully complete the 3 years of above listed undergraduate course work (115-118 hours) and the first year of the Veterinary Medicine curriculum.

## ADS Minor Requirements

Obtaining a minor in Animal and Dairy Sciences will serve to complement other Bachelor of Science studies at Mississippi State University through multidisciplinary science coursework aimed to provide a deeper understanding of livestock.

## Requirements

ADS 1113	Animal Science	3
ADS 1121	Animal Science Laboratory	1
Production Courses (choose from the following)		3
ADS 3214	Livestock Growth and Development	
ADS 4113	Swine Science	
ADS 4223	Goat and Sheep Production	
ADS 4233	Horse Management	
ADS 4323	Beef Cattle Science	
ADS 4813	Dairy Farm Management	
Evaluation Course (choose from the following)		2
ADS 2102	Equine Conformation and Performance Evaluation	
ADS 2122	Advanced Equine Evaluation	
ADS 3212	Livestock Evaluation	
ADS 3812	Dairy Cattle Appraisal	
ADS 4232	Advanced Livestock Evaluation	
Upper Level Courses (choose from the following)		9
ADS 3013	Anatomy and Physiology	
ADS 3313	Introduction to Meat Science	
ADS 4114	Animal Nutrition	
ADS 4124	Animal Breeding	
ADS 4213	Feeds and Feeding	
ADS 4333	Equine Exercise Physiology	
ADS 4543	Applied Animal Biotechnology	
ADS 4613	Physiology of Reproduction	
ADS 4623	Physiology of Lactation	
ADS 4633	Immunology and Disease in Large Livestock Species	

**Minimum Hours Required**

**18**

## Companion Animal Management Certificate

The Department of Animal and Dairy Sciences offers a Companion Animal Management certificate for students who wish to delve deeper into concepts specifically related to companion animals. Students must complete a total of 15 credit hours as described below to be eligible for the certificate. The goal of this certificate is to equip students with knowledge and skills that may be applied in a variety of companion animal careers as well as in one's personal life. Students who complete all coursework will be able to develop practical solutions and management plans for needs related to raising, nutrition and management of companion animal species.

### Required Courses

ADS 2202	Companion Animal Evaluation	2
ADS 2313	Animal Behavior & Training	3
ADS 3413	Companion Animal Nutrition	3
ADS 4513/6513	Companion Animal Management	3
ADS 4511/6511	Companion Animal Management Laboratory	1
ADS 4713/6713	Human-Animal Bond/Shelter Management	3
<b>Total Hours</b>		<b>15</b>

## Meat Science Certificate

Major Advisor: Wes Schilling

The Department of Food Science, Nutrition, and Health Promotion and the Department of Animal and Dairy Sciences offer a Meat Science Certificate for students who wish to specialize in the meat processing industry. Students must complete a total of 24 credit hours as described below to be eligible for the certificate. Nineteen credit hours are in required courses, with the remaining 5 hours to be selected from several electives. Students must also complete 300 hours of hands-on experiential learning in meat processing, research, and extension activities. With this approach, students will be career ready professionals equipped with a comprehensive understanding of industry and a skill set designed for them to make an immediate impact in meat science government, academic, or industry positions upon graduation.

### Certificate Requirements

#### Required Courses

ADS 3314		
or FNH 3314		
FNH 4333	Food Law	3
FNH 4414	Microbiology of Foods	4
or BIO 4414	Microbiology of Foods	
FNH 4514	Poultry Processing	4
or PO 4514	Poultry Processing	
FNH 4480	Food Science Internship (3 credits must be at meat processing or related facility)	1-6
or ADS 4420	Animal and Dairy Science Internship	
HACCP Training (as a Directed Individual Study)		1

#### Electives

Choose a minimum of 5 credit hours from the following:

ADS 3142	Meats Judging I	
or FNH 3142	Meats Judging I	
ADS 3214	Livestock Growth and Development	
ADS 4243	Composition and Chemical Reactions of Foods	
or FNH 4243	Composition and Chemical Reactions of Foods	
ADS 4313	Advanced Science of Muscle Foods	
or FNH 4313	Advanced Science of Muscle Foods	
FNH 4114	Analysis of Food Products	
FNH 4164	Quality Assurance of Food Products	
FNH 4241	Applied Food Chemistry	
FNH 4512	Poultry Products Safety and Sanitation	
or PO 4512	Poultry Products Safety and Sanitation	
<b>Total Hours (minimum)</b>		<b>24</b>