



The Animal Science major offers an opportunity to apply animal biology, physiology, biochemistry, molecular biology, and other life sciences to the study of animal breeding and genetics, growth, lactation, nutrition, reproduction, and management. The field of Animal Science is diverse and the program offers flexibility for students to pursue their particular interests and provides a broad education within a first-class university. Topics such as global food production and supply, ethics of animal production and management, and animal welfare are important and are considered throughout the curriculum. Graduates are prepared to:

- Pursue careers in animal production, veterinary medicine, education, biotechnology, and conservation;
- Work with businesses inside and outside of agriculture, including farms, financial institutions, pharmaceutical companies, government agencies, and foundations;
- Undertake graduate and professional training;
- Teach and begin research in related fields;
- And many others!

MAJOR REQUIREMENTS

For all students, the requirements of the major consist of:

1. Foundation courses in Animal Science, normally taken in the first two years
ANSC 1100: Domestic Animal Biology
ANSC 1105: Contemporary Perspectives on Careers in Animal Science
ANSC 2120: Animal Nutrition
ANSC 2210: Principles of Animal Genetics
ANSC 2400: Animal Reproduction and Development
2. 6 credits (minimum) of Animal Biology Systems courses (see page 2 for list)
3. 6 credits (minimum) of Advanced Animal Biology courses (see page 2 for list)

Students are encouraged to complement required Animal Science courses with others from a specialized pathway to their area of interest. (See recommended pathways and courses beginning on page 3.) Pathways illustrate how courses in Animal Science may be enhanced with coursework outside of the department.

For transfer students or students that wish to minor in Animal Science, please consult with an Animal Science advisor about your courses, interests and goals. A minimum of 15 credit hours is required for a minor and the courses need to be taken from Foundation courses (or equivalent), Animal Biology Systems, and Advanced Animal Biology courses.

In addition, all students are encouraged to take advantage of one or more opportunities for internships, a semester abroad, independent research or honors thesis research, as appropriate. For research or the Honor's Program in Research, consult with your advisor. Your advisor can help you identify possible internship opportunities and CALS has an office available to assist you (<http://www.cals.cornell.edu/cals/current/career/find/internships/index.cfm>).

Links to Study Abroad and Exchange programs are:

CALS Exchange Program: <http://www.cals.cornell.edu/cals/current/abroad-exchange/index.cfm>

Cornell Abroad: <https://www.cuabroad.cornell.edu/>

THE ROLE OF YOUR ADVISOR

Each student in the Animal Science major is assigned a faculty advisor. Your advisor plays several roles: guiding you through the requirements of the major and the College distribution requirements; helping you to clarify your educational and career goals; suggesting courses to help you meet your particular educational interests

and career goals; and serving as a source of information about opportunities and services available to you through the College and University (e.g., study abroad, internships, career counseling, health and psychological services). If you make the effort to get to know your advisor, she or he also may serve as a reference for you for internships, jobs, or graduate school.

Also, you might want to change advisor or major. Do not worry about “hurt feelings.” An advisor-student relationship might not work for any number of reasons, e.g., meshing with your interests or personality type. See Deloris Bevins (149 Morrison Hall) if you want to change advisors within Animal Science.

YOUR RESPONSIBILITY

Ultimately, you are responsible for your education. Having the opportunity to obtain a first-rate university education is a privilege few have. You owe it to yourself and the world to make the most of it. Students are responsible for making regular progress toward meeting the curriculum requirements of their specific concentration. In addition, it helps to develop a plan of courses early in your program, especially if you would like to study abroad, participate in an exchange program or are planning on graduate or professional school.

CURRENT COURSES

Foundation Courses (Required)	Animal Biology Systems (6 credits min.)	Advanced Animal Biology (6 credits min.)
1100 (4 cr.)	2150 (2 cr.)	3200 (4 cr.)
1105 (1 cr.)	2410 (1 cr.)	3410 (2 cr.)
2120 (4 cr.)	2500 (3 cr.)	3700 (3 cr.)
2210 (3 cr.)	2510 (2 cr.)	3920 (2 cr.)
2400 (3 cr.)	2650 (3 cr.)	3921 (1 cr.)
	2710 (1 cr.)	3980 (2 cr.)
	2720 (1 cr.)	4020 (1 cr.)
	3100 (2 cr.)	4050 (3 cr.)
	3510 (4 cr.)	4100 (3 cr.)
	3511 (2 cr.)	4110 (4 cr.)
	3540 (4 cr.)	4140 (2 cr.)
	3550 (3 cr.)	4250 (2 cr.)
	3600 (3 cr.)	4270 (3 cr.)
	3800 (3 cr.)	4990 (3 cr.)
	4000 (4 cr.)	
	4010 (3 cr.)	
	4120 (4 cr.)	
	4510 (3 cr.)	
	4511 (2 cr.)	
	4560 (1 cr.)	
	4570 (3 cr.)	
	4580 (3 cr.)	
	4700 (2 cr.)	

Many courses also meet the College Distribution Requirements for Introductory Life Sciences and other Physical and Life Sciences. For example, Animal Science 1100 fulfills part of the requirement for Introductory Life Science, except at this time for pre-veterinary medicine students.

ANSC 1100, 2120, 2150, 2210, 2400, 3700, and 3920 all fulfill the requirements for Other Life Sciences in the CALS distribution requirement.

For a complete listing of Cornell courses, refer to the following link: <http://courses.cuinfo.cornell.edu/>

College Distribution Requirements in Physical, Biological, and Social Sciences and Humanities
Physical and Life Sciences (18 Credits)
Intro Life Sciences/Bio (6 cr.)
Chemistry or Physics (3 cr.)
Other Physical and Life Sciences (6 cr.)
Quantitative literacy (3 cr.)
Social Sciences and Humanities (12 cr.)
Human Diversity (3 cr.)
Other Areas (9 cr.)
Written and Oral Expression (9 cr.)
Written Expression (6 cr.)
Oral Communication (3 cr.)

Consult

<http://www.cals.cornell.edu/cals/current/registrar/current-students/cals-graduation/distribution.cfm>

Remember, if you are a four year student, you must complete two physical education courses to graduate. The credits do not count towards graduation but they are required following successful completion of the swim test.

PATHWAYS WITHIN THE MAJOR

General Animal Science

This pathway is also useful for Agricultural Science majors with an Animal Science emphasis

1. Major Requirements
2. Animal Biology
 - ANSC 2410: Animal Reproduction and Development Lab
 - ANSC 2500: Dairy Cattle Principles
 - ANSC 2650: Equine Biology and Management
 - ANSC 2710: Canine Reproduction
 - ANSC 2720: Feline Reproduction
 - ANSC 3410: Biology of Lactation
 - ANSC 3540: Dairy Cattle Herd Health
 - ANSC 3600: Beef Cattle
 - ANSC 3700: Immunology in Animal Health and Disease
 - ANSC 3800: Sheep
 - ANSC 3920: Mechanisms of Animal Growth and Development
 - ANSC 3980: Animals in Biomedical Research
 - ANSC 4000: Feeding the World
3. Agronomy
 - ANSC 4120: Whole Farm Nutrient Management
 - CSS 2110: Field Crop Systems
 - CSS 3150: Weed Biology and Management
4. Other Related Courses
 - ANSC 4140: Ethics and Animal Science
 - AEM 1200: Introduction to Business Management
 - AEM 2210: Financial Accounting
 - AEM 2400: Marketing
 - AEM 3020: Farm Business Management
 - IARD 2020: Perspectives in International Agriculture and Rural Development

Animal Nutrition

1. Major Requirements
2. Animal Biology and Management
 - ANSC 3200: Comparative Animal Nutrition and Toxicology: Horses, Dogs, Cats, and More
 - ANSC 3410: Biology of Lactation
 - ANSC 3550: Dairy Cattle Nutrition
 - ANSC 3980: Animals in Biomedical Research
 - ANSC 4100: Nutritional Physiology and Metabolism
 - ANSC 4110: Integrated Cattle Nutrition
 - ANSC 4270 Fundamentals of Endocrinology
3. Nutritional Sciences
 - NS 1150: Nutrition, Health and Society
 - NS 1220: Nutrition and the Life Cycle
 - NS 3200: Introduction to Human Biochemistry
 - NS 3310: Physiological and Biochemical Basis of Human Nutrition
4. Biochemistry and Physiology
 - BIOG 3300: Principles of Biochemistry, Individualized Instruction
 - BIOG 3350: Principles of Biochemistry - Proteins, Metabolism, and Molecular Biology
 - BIOAP 3110: Introductory Animal Physiology
 - BIOAP 4580: Mammalian Physiology

PATHWAYS WITHIN THE MAJOR

Animal Physiology and Growth

1. Major Requirements
2. Physiology
 - ANSC 2410: Animal Reproduction and Development Lab
 - ANSC 2710: Canine Reproduction
 - ANSC 2720: Feline Reproduction
 - ANSC 4050: Molecular and Cellular Approaches to Reproductive Physiology
 - ANSC 4250: Gamete Physiology and Fertilization
 - ANSC 4270: Fundamentals of Endocrinology
3. Growth and Development
 - ANSC 3410: Biology of Lactation
 - ANSC 3920: Mechanisms of Animal Growth and Development
 - ANSC 3921: Mechanisms of Animal Growth and Development Lab
4. Health and Disease
 - ANSC 3700: Immunology in Animal Health and Disease
 - ANSC 3980: Animals in Biomedical Research
5. Related ANSC Courses
 - ANSC 3100: Introduction to Animal Welfare
 - ANSC 3200: Comparative Animal Nutrition and Toxicology: Horses, Dogs, Cats, and More
 - ANSC 3550: Dairy Cattle Nutrition
 - ANSC 4110: Integrated Cattle Nutrition
 - ANSC 4120: Whole Farm Nutrient Management
 - ANSC 4140: Ethics and Animal Science
6. Biological Sciences Related Courses
 - BIOAP 3110: Introductory Animal Physiology
 - BIOAP 3160: Cellular Physiology
 - BIOAP 3190: Animal Physiology Experimentation
 - BIOAP 4580: Mammalian Physiology
 - BIOAP 4980: Teaching Experience
 - BIOMG 4000: A Genomics Approach to Studying Life
 - BIOMG 4870: Human Genomics
 - BIOMS 4130: Histology – The Biology of the Tissues

PATHWAYS WITHIN THE MAJOR

Pre Vet/Med

1. Major Requirements
2. Pre- requisites to meet most veterinary school admissions requirements
 - BIOG 1105 and 1106: Introductory Biology *or equivalent*
 - BIOMI 2900 and 2910: General Microbiology *or equivalent*
 - BIOMG 3310 and 3320: Principles of Biochemistry *or equivalent*
 - CHEM 2070 and 2080: General Chemistry *or equivalent*
 - CHEM 3570 and 3580 and 2510: Organic Chemistry for the Life Sciences *or equivalent*
 - PHYS 1101 and 1102: General Physics *or equivalent*
3. Animal Biology
 - ANSC 2150: Exotic Avian Husbandry and Propagation
 - ANSC 2410: Animal Reproduction and Development Lab
 - ANSC 3700: Immunology in Animal Health and Disease
 - ANSC 3920: Mechanisms of Animal Growth and Development
 - ANSC 3980: Animals in Biomedical Research
 - ANSC 4110: Integrated Cattle Nutrition
4. Reproduction
 - ANSC 2710: Canine Reproduction
 - ANSC 2720: Feline Reproduction
 - ANSC 3410: Biology Of Lactation
 - ANSC 4050: Molecular And Cellular Approaches to Reproductive Physiology
 - ANSC 4250: Gamete Physiology and Fertilization
 - ANSC 4270: Fundamentals Of Endocrinology
5. Animal Production
 - ANSC 2500: Dairy Cattle Principles
 - ANSC 3600: Beef
 - ANSC 3800: Sheep
6. Biological Sciences
 - BIOAP 3110: Introductory Animal Physiology
 - BIOAP 3160: Cellular Physiology
 - BIOAP 3190: Animal Physiology Experimentation
 - BIOMS 3150: Basic Immunology
7. Other Related Courses
 - ANSC 4140: Ethics in Animal Science
 - AEM 1200: Introduction to Business Management
 - AEM 2210: Financial Accounting
 - AEM 2400: Marketing

For a comprehensive discussion of pre-health programs, please go to the following link:

<http://www.career.cornell.edu/HealthCareers/>

PATHWAYS WITHIN THE MAJOR

Dairy Management

1. Major Requirements
2. Dairy Management
 - ANSC 2500: Dairy Cattle Principles
 - ANSC 2510: Applied Dairy Cattle Genetics
 - ANSC 3510: Dairy Herd Management
 - ANSC 3511: Junior Dairy Fellows
 - ANSC 3540: Dairy Cattle Herd Health
 - ANSC 3550: Dairy Cattle Nutrition
 - ANSC 4010: Dairy Production Seminar
 - ANSC 4110: Integrated Cattle Nutrition
 - ANSC 4120: Whole Farm Nutrient Management
 - ANSC 4510: Dairy Herd Business Management
 - ANSC 4511: Quantitative Decision Making on Dairy Farms
 - ANSC 4560: Dairy Management Fellowship
 - ANSC 4570: Introductory Spanish for Dairy Producers
 - ANSC 4580: Advanced Spanish for Dairy Producers
3. Applied Economics and Management
 - AEM 2210: Financial Accounting
 - AEM 2400: Marketing
 - AEM 3020: Farm Business Management
 - AEM 3200: Business Law I
 - AEM 3240: Finance
 - AEM 3250: Personal Enterprise and Small Business Management
 - AEM 3460: Dairy Markets and Policy
 - AEM 4020: Food and Brand Lab Workshop
 - AEM 4030: Farm Management Study Trip
 - AEM 4040: Financial Management for Agriculture and Agribusiness
 - AEM 4050: Agricultural Finance
 - AEM 4260: Fixed-Income Securities
4. Related Courses
 - ANSC 2410: Animal Reproduction And Development Lab
 - ANSC 3410: Biology of Lactation
 - CSS 2110: Field Crop Systems
 - CSS 3150: Weed Biology and Management
 - HADM 2274: Business Computing
 - HADM 4415: Managerial Leadership in the 21st Century
 - NBA 3000: Entrepreneurship and Private Equity

PATHWAYS WITHIN THE MAJOR

Animal Genetics

1. Major Requirements (***BIOGD 2800: Lectures in Genetics may be substituted for ANSC 2210*)
2. Animal Genetics Concentrations (*Select courses from one of the following concentrations*)
 - a. Animal Breeding Concentration
 - ANSC 2410: Animal Reproduction and Development Lab
 - ANSC 4050: Molecular and Cellular Approaches to Reproductive Physiology
 - ANSC 4140: Ethics in Animal Science
 - ANSC ****: Comparative Genomics of Domestic Species
 - ANSC 4990: Undergraduate Research in Animal Science
 - Suggested advanced courses:*
 - BIOEE 2740: The Vertebrates – Structure, Function, and Evolution
 - BIOMG 4810: Population Genetics
 - BIOMG 4870: Human Genomics
 - BIONB 4310: Genes and Behavior
 - b. Computational Genetics Concentration
 - BEE 1510: Introduction to Computer Programming
 - CS 4520: Introduction to Bioinformatics
 - MATH 1110: Calculus I
 - MATH 1120: Calculus II
 - Suggested advanced courses:*
 - BIOMG 4810: Population Genetics
 - BTRY 4820: Statistical Genomics
 - BTRY 4830: Quantitative Genomics and Genetics
 - BTRY 4840: Computational Genomics
 - c. Molecular Genetics Concentration
 - ANSC 3920: Mechanisms of Animal Growth and Development
 - ANSC 3980: Animals in Biomedical Research
 - ANSC 4050: Molecular and Cellular Approaches to Reproductive Physiology
 - ANSC 4990: Undergraduate Research in Animal Science
 - Suggested advanced courses:*
 - BIOMG 4000: A Genomics Approach to Studying Life
 - BIOMG 4340: Applications of Molecular Biology to Medicine, Agriculture and Industry
 - BIOMG 4870: Human Genomics
3. Statistics
 - BTRY 3010: Biological Statistics I
 - BTRY 3020: Biological Statistics II
4. Pre-Professional
 - BIOMG 3300: Principles of Biochemistry
 - BIOMG 3310: Principles of Biochemistry
 - BIOMG 3320: Principles of Biochemistry
 - BIOMG 4400: Laboratory in Biochemistry and Molecular Biology
 - BIOMI 2900: General Microbiology Lectures
 - BIOMI 2910: General Microbiology Laboratory
 - CHEM 2510: Introduction to Experimental Organic Chemistry
 - CHEM 3570: Organic Chemistry for the Life Sciences
 - CHEM 3580: Organic Chemistry for the Life Sciences