ANIMAL AND VETERINARY BIOSCIENCES, BS

Studying the biology of domesticated animals helps us better understand their health. The major addresses important issues related to animal health and welfare, biomedical advancements, food safety, precision livestock farming, and land and water stewardship.

Students in the Animal and Veterinary Biosciences major learn about cattle, swine, sheep, horses, poultry, and goats, as well as companion animals such as cats and dogs. They also examine recent discoveries connecting human and animal health.

The Department of Animal and Dairy Sciences is home to the undergraduate program in Animal and Veterinary Biosciences. The department produces skilled leaders in animal agriculture and sustainable food systems while embracing innovation and technology. A 10:1 student-faculty ratio and small classes allow for meaningful connections among students and instructors.

Students can take courses on an assortment of topics including animal breeding, veterinary genetics, animal health and welfare, physiology, and animal nutrition utilizing various animals as a vehicle for learning. The major offers a science-focused path for students interested in veterinary medicine, animal science, bioscience, or other graduate programs.

LEARN THROUGH HANDS-ON, REAL-WORLD EXPERIENCES

The program emphasizes hands-on learning, and students choose from more than a dozen lab courses covering animal handling, reproductive biology, veterinary genetics, animal welfare, meat science and biologics, and more. Field courses look at international agriculture and sustainability. The department encourages Animal and Veterinary Biosciences majors to get involved with internships and research with faculty and staff.

BUILD COMMUNITY AND NETWORKS

Animal and Veterinary Biosciences majors find a welcoming community where professors know their students and can provide guidance based on their specific goals. Outside of the classroom, students can join several student organizations including the Pre-Veterinary Association (https://win.wisc.edu/organization/prevetassociation/), Saddle and Sirloin Club (https://win.wisc.edu/organization/saddleandsirloin/), Poultry Club (https://www.facebook.com/PoultryClubUWMadison/), Badger Dairy Club (https://win.wisc.edu/organization/badgerdairyclub/), and Badger Meat Science Club. (https://www.facebook.com/badgermeatscienceclub/)

CUSTOMIZE A PATH OF STUDY

Students can choose from a variety of breadth and depth courses to explore their interests within the major, customizing their coursework to fit their career goals. Course flexibility allows students to complete several pre-veterinary requirements, a certificate, or double major within the curriculum. Students can elect to complete Honors in Animal and Veterinary Biosciences.

MAKE A STRONG START

The department offers an introductory seminar course that helps students maximize their education, develop professional skills, and make informed decisions about their classes, internships, and career paths. Multiple Animal Sciences courses are open to first-year students offering additional opportunities to establish connections to the major.

GAIN GLOBAL PERSPECTIVE

Students are encouraged to study abroad; the department offers globally focused courses that look at livestock production, health, animal agriculture, and sustainable development. Students can explore studying abroad as an Animal and Veterinary Biosciences major utilizing the Animal and Veterinary Biosciences Major Advising Page (https://studyabroad.wisc.edu/academics/major-advising-pages-maps/animal-and-veterinary-biosciences/). Students work with their advisor and the CALS study abroad office (https://cals.wisc.edu/academics/undergraduate/current-students/study-abroad/) to identify appropriate programs.

HOW TO GET IN

HOW TO GET IN

Requirements	Details
How to get in	No application required. All students who meet the requirements listed below are eligible to declare. For information on how to declare, visit Advising & Careers.
Courses required to get in	None
GPA requirements to get in	None
Credits required to get in	Must have fewer than 86 credits.
Other	Students who do not meet the requirements above or are not in good academic standing should schedule a meeting with CALS Dean on Call (https://go.wisc.edu/g85h79 (https://go.wisc.edu/g85h79/)) to discuss exceptions.

PROSPECTIVE UW-MADISON STUDENTS

All prospective UW–Madison students must apply through the Office of Admissions and Recruitment (https://www.admissions.wisc.edu/).

Students interested in this major should select it as the first choice major on their UW–Madison application. Admitted students who enroll at UW-Madison and attend Student Orientation, Advising, and Registration (SOAR) with the College of Agricultural and Life Sciences have the option to declare this major at SOAR. More information is available here (https://cals.wisc.edu/academics/undergraduate/future-students/).

The Animal and Veterinary Biosciences BS cannot be earned in combination with the Animal Sciences BS or Dairy Science BS.

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin-Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (https://guide.wisc.edu/undergraduate/#requirementsforundergraduatestudytext) section of the Guide.

General Education
- Breadth—Humanities/Literature/Arts: 6 credits
- Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth—Social Studies: 3 credits
- Communication Part A & Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A & Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF AGRICULTURAL AND LIFE SCIENCES REQUIREMENTS

In addition to the University General Education Requirements, all undergraduate students in CALS must satisfy a set of college and major requirements. Courses may not double count within university requirements (General Education and Breadth) or within college requirements (First-Year Seminar, International Studies, Science, and Capstone), but courses counted toward university requirements may also be used to satisfy a college and/or a major requirement; similarly, courses counted toward college requirements may also be used to satisfy a university and/or a major requirement.

COLLEGE REQUIREMENTS FOR ALL CALS BS DEGREE PROGRAMS

Code	Title	Credits
Quality of Work: Students must maintain a minimum cumulative grade point average of 2.000 to remain in good standing and be eligible for graduation.		
Residency: Students must complete 30 degree credits in residence at UW–Madison after earning 86 credits toward their undergraduate degree.		
First year seminar (https://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSFirstYearSeminarCourses)		1
International studies (https://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSInternationalStudiesCourses)		3
Physical science fundamentals		4-5
CHEM 103	General Chemistry I	
or CHEM 108	Chemistry in Our World	
or CHEM 109	Advanced General Chemistry	
Biological science		5
Additional science (biological, physical, or natural)		3
Science breadth (biological, physical, natural, or social)		3
CALS Capstone Learning Experience: included in the requirements for each CALS major (see "major requirements") (https://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSCapstoneRequirement)		

SUMMARY OF MAJOR REQUIREMENTS

Code	Title	Credits
Major Requirements		
Mathematics and Science Foundation		19-25
Animal & Veterinary Biosciences Core Requirements		37-38
Capstone in Major		2-3
Total Credits		**58-66**

ANIMAL & VETERINARY BIOSCIENCES MAJOR REQUIREMENTS

Code	Title	Credits
Mathematics		
Complete one of the following (or may be satisfied by placement exam):		3-5
MATH 112	College Algebra	
MATH 114	Precalculus	
Statistics		
Complete one of the following:		3
STAT 301	Introduction to Statistical Methods	
STAT 371	Introductory Applied Statistics for the Life Sciences	
Chemistry		
Complete one of the following:		5-9
CHEM 103 & CHEM 104	General Chemistry I and General Chemistry II	
CHEM 109	Advanced General Chemistry	
Biology		
Complete one of the following:		5
BIOLOGY/BOTANY/ZOOLOGY 151	Introductory Biology	
BIOLOGY/ZOOLOGY 101 & BIOLOGY/ZOOLOGY 102	Animal Biology and Animal Biology Laboratory	
Biochemistry		

Complete one of the following:		3
BIOCHEM 301	Survey of Biochemistry	
BIOCHEM 501	Introduction to Biochemistry	
Introduction to the Major		
Complete the following:		4
AN SCI/ DY SCI 101	Introduction to Animal Sciences	
AN SCI/ DY SCI 102	Introduction to Animal Sciences Laboratory	
Animal Science Core		
Complete four courses from the following: [1]		11-12
AN SCI 245	Animal Welfare	
AN SCI/DY SCI/ NUTR SCI 311	Comparative Animal Nutrition	
AN SCI/ DY SCI 320	Animal Health and Disease	
AN SCI/ DY SCI 361	Introduction to Animal and Veterinary Genetics	
AN SCI/ DY SCI 373	Animal Physiology	
Animal Biology Depth		
Complete at least 10 credits from the following:		10
AN SCI 245	Animal Welfare [1]	
AN SCI/ FOOD SCI 305	Introduction to Meat Science and Technology	
AN SCI/DY SCI/ NUTR SCI 311	Comparative Animal Nutrition [1]	
AN SCI/ DY SCI 320	Animal Health and Disease [1]	
AN SCI 324	Applied Companion Animal Behavior and Learning	
AN SCI 336	Animal Growth and Development	
AN SCI/ DY SCI 361	Introduction to Animal and Veterinary Genetics [1]	
AN SCI/ DY SCI 362	Veterinary Genetics	
or AN SCI/ DY SCI 363	Principles of Animal Breeding	
AN SCI 366	Concepts in Genomics	
AN SCI/ DY SCI 373	Animal Physiology [1]	
DY SCI 378	Lactation Physiology	
AN SCI/ DY SCI 414	Ruminant Nutrition & Metabolism	
AN SCI 415	Application of Monogastric Nutrition Principles	
AN SCI 420	Microbiomes of Animal Systems	
AN SCI/ DY SCI 434	Reproductive Physiology	
Major Breadth		
Complete at least 12 credits from the following:		12
AN SCI 200	The Biology and Appreciation of Companion Animals	
DY SCI 233	Dairy Herd Management I	
DY SCI 234	Dairy Herd Management II	
AN SCI/BSE 344	Digital Technologies for Animal Monitoring	
AN SCI 399	Coordinative Internship/ Cooperative Education (Footnote 2 applies to both AN SCI 399 and 699) [2]	
or AN SCI 699	Special Problems	
A A E 422	Food Systems and Supply Chains	
AN SCI 431	Beef Cattle Production	
AN SCI 432	Swine Production	
AN SCI/ FOOD SCI 515	Commercial Meat Processing	
DY SCI 534	Reproductive Management of Dairy Cattle	
BIOLOGY/ BOTANY/ ZOOLOGY 152	Introductory Biology	
or BIOLOGY/ BOTANY 130	General Botany	
CHEM 343	Organic Chemistry I	
PHYSICS 103	General Physics	
MICROBIO 303	Biology of Microorganisms	
M M & I/ENTOM/ PATH-BIO/ ZOOLOGY 350	Parasitology	
Capstone in Major		
Complete one of the following:		2-3
AN SCI 435	Animal Sciences Proseminar	
DY SCI 535	Dairy Farm Management Practicum	
Total Credits		**58-66**

[1] Courses cannot count for both Animal Science Core and Depth.
[2] Maximum of 3 credits.

HONORS IN THE MAJOR

Students admitted to the university and to the College of Agricultural and Life Sciences are invited to apply to be considered for admission to the CALS Honors Program.

Admission Criteria for New First-Year Students:

- Complete program application including essay questions

Admission Criteria for Transfer and Continuing UW-Madison Students:

- UW-Madison cumulative GPA of at least 3.25
- Complete program application including essay questions

HOW TO APPLY

The application is available on the CALS Honors Program website (https://cals.wisc.edu/academics/undergraduate/current-students/honors-program/). Applications are accepted at any time.

New first-year students with accepted applications will automatically be enrolled in Honors in Research. It is possible to switch to Honors in the Major in the student's first semester on campus after receiving approval from the advisor for that major. Transfer and continuing students may

apply directly to Honors in Research or Honors in the Major (after approval from the major advisor).

REQUIREMENTS

All CALS Honors programs have the following requirements:

- Earn at least a cumulative 3.25 GPA at UW-Madison (some programs have higher requirements)
- Complete the program-specific requirements listed below
- Submit completed thesis documentation to CALS Academic Affairs

REQUIREMENTS

To earn honors in the major, students are required to take at least 20 honors credits. In addition, students must take AN SCI 681 Senior Honor Thesis and AN SCI 682 Senior Honors Thesis when completing their thesis project; please see the honors program page (https://cals.wisc.edu/academics/undergraduate/current-students/honors-program/) for more information.

UNIVERSITY DEGREE REQUIREMENTS

Total Degree	To receive a bachelor's degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.
Residency	Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. "In residence" means on the UW–Madison campus with an undergraduate degree classification. “In residence” credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.
Quality of Work	Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

LEARNING OUTCOMES

LEARNING OUTCOMES

1. Define biological processes and explain their role in animal health and management
2. Apply scientific concepts and critical thinking skills to identify and analyze real world problems in animal and veterinary biosciences
3. Develop scientific competencies and communication skills needed for advanced careers in animal or veterinary biosciences

FOUR-YEAR PLAN

FOUR-YEAR PLAN

Below you will find two sample four-year plans. These plans represent a range of interest and career-based options for completing the Animal and Veterinary Biosciences major. Your individual plan will look different from these plans. You should customize your own program of study in consultation with your advisor. The degree requires a minimum of 120 credits for completion.

SAMPLE FOUR-YEAR PLAN - VETERINARY INTEREST [1]

First Year

Fall	Credits	Spring	Credits
AN SCI/DY SCI 101	3	CHEM 103	4
AN SCI/DY SCI 102	1	Major Breadth	3
AN SCI 135 (CALS First-Year Seminar)	1	General Education (Comm A, Comm B, or Ethnic)	3
University Breadth (Humanities or Social Science)	3	University Breadth (Humanities or Social Science)	3
MATH 112 or 114	3-5	Elective	3
General Education (Comm A, Comm B, or Ethnic)	3		
	14-16		**16**

Second Year

Fall	Credits	Spring	Credits
ZOOLOGY/BIOLOGY/BOTANY 151[2]	5	ZOOLOGY/BIOLOGY/BOTANY 152 (Major Breadth)[2]	5
CHEM 104	5	CHEM 343 (Major Breadth)	3
Animal Science Core	3	General Education (Comm A, Comm B, or Ethnic)	3
University Breadth (Humanities or Social Science)	3	Animal Science Core	2-3
	16		**13-14**

Third Year

Fall	Credits	Spring	Credits
PHYSICS 103 (Major Breadth)	4	Animal Science Core	3
Animal Biology Depth	3	Animal Biology Depth	2-3
BIOCHEM 501	3	Electives[3]	6-7
STAT 301 or 371	3	Electives	3
CALS International	3		
	16		**14-16**

Fourth Year

Fall	Credits	Spring	Credits
AN SCI 435 or DY SCI 535 (Capstone)	2	Animal Biology Depth	3
Animal Biology Depth	3	Animal Science Core	3
Electives[3]	3	Electives	7-9
Electives	6-8		
	14-16		**13-15**

Total Credits 116-125

[1] This four-year plan reflects the minimum required coursework for UW-Madison School of Veterinary Medicine as of 2022-2023. Course

requirements may vary among schools of veterinary medicine. Consult with your institution of choice and your advisor to ensure that the courses you select meet specific requirements.

2 Students may complete BIOLOGY/BOTANY/ZOOLOGY 151 Introductory Biology-BIOLOGY/BOTANY/ZOOLOGY 152 Introductory Biology or BIOLOGY/ZOOLOGY 101 Animal Biology-BIOLOGY/ZOOLOGY 102 Animal Biology Laboratory, BIOLOGY/BOTANY 130 General Botany

3 Electives will include additional coursework for veterinary school preparation.

SAMPLE FOUR-YEAR PLAN - ANIMAL BIOSCIENCES OR PRODUCTION INTEREST

First Year

Fall	Credits	Spring	Credits
AN SCI/DY SCI 101	3	ZOOLOGY/ BIOLOGY 101[1]	3
AN SCI/DY SCI 102	1	Major Breadth	3
AN SCI 135 (CALS First-Year Seminar)	1	General Education (Comm A, Comm B, or Ethnic)	3
University Breadth (Humanities or Social Science)	3	University Breadth (Humanities or Social Science)	3
General Education (Comm A, Comm B, or Ethnic)	3	Electives	3
MATH 112 or 114	3-5		
	14-16		**15**

Second Year

Fall	Credits	Spring	Credits
ZOOLOGY/ BIOLOGY 102[1]	2	CHEM 104	5
CHEM 103	4	Animal Science Core	3
Animal Science Core	3	Animal Biology Depth	3
General Education (Comm A, Comm B, or Ethnic)	3	University Breadth (Humanities or Social Science)	3
Electives	2-3		
	14-15		**14**

Third Year

Fall	Credits	Spring	Credits
Animal Biology Depth	3	BIOCHEM 301	3
Animal Biology Depth	3	Animal Science Core	2-3
CALS International Studies	3	Animal Biology Depth	2-3
STAT 301 or 371	3	Major Breadth	3
Electives	3	Electives	3
	15		**13-15**

Fourth Year

Fall	Credits	Spring	Credits
AN SCI 435 or DY SCI 535 (Capstone)	2	Major Breadth	3
Major Breadth	3	Animal Science Core	3
Animal Biology Depth	3	Electives	9
Electives	8		
	16		**15**

Total Credits 116-121

1 Students may complete BIOLOGY/ZOOLOGY 101 Animal Biology-BIOLOGY/ZOOLOGY 102 Animal Biology Laboratory, BIOLOGY/BOTANY 130 General Botany, or BIOLOGY/BOTANY/ZOOLOGY 151 Introductory Biology-BIOLOGY/BOTANY/ZOOLOGY 152 Introductory Biology.

ADVISING AND CAREERS

ADVISING AND CAREERS

ADVISING

Each student receives one-on-one guidance from their professional advisor. Academic advisors will help students build an individualized, four-year plan. Many Animal and Veterinary Biosciences majors complete certificates or double majors. Customary examples include Life Sciences Communication, Genetics and Genomics, Global Health, CALS Business Management, and opportunities outside of CALS such as foreign languages, depending on students' interests.

CAREER OPPORTUNITIES

All students have a faculty mentor to assist with their career planning.

Students graduating with a degree in Animal and Veterinary Biosciences can enter a number of career fields. These include nutrition and genetics, health and welfare, animal management and monitoring technology, meat science and biologics, food and animal research, and teaching. Many students go on to pursue professional education in veterinary medicine, graduate programs in animal science, or human medicine.

WISCONSIN EXPERIENCE

WISCONSIN EXPERIENCE

INTERNSHIPS

Animal and Veterinary Biosciences majors take part in a number of internships around campus and beyond. Past students interned at veterinary clinics and hospitals, genetics companies, animal feed companies, Extension, food companies, farms, animal pharmaceutical companies, animal councils, humane societies, and more.

On-campus opportunities at department animal care facilities, the UW School of Veterinary Medicine, and at Bucky's Varsity Meats, give students hands-on experience each semester.

RESEARCH EXPERIENCE

There are numerous opportunities to conduct research with faculty and staff in the department. Around 75% of Animal and Veterinary Biosciences majors have completed independent study projects. Several research stipends are available and some students also take part in research as part of an honors thesis.

STUDENT ORGANIZATIONS

By joining a student organization, Animal and Veterinary Biosciences majors connect with other students and build relationships with faculty and staff. Organizations of particular interest to Animal and Veterinary Biosciences students include the Pre Vet Association (https://win.wisc.edu/organization/prevetassociation/), Saddle and Sirloin Club (https://win.wisc.edu/organization/saddleandsirloin/), Poultry Club (https://www.facebook.com/PoultryClubUWMadison/), Badger Dairy Club (https://win.wisc.edu/organization/badgerdairyclub/), and Badger Meat Science Club (https://www.facebook.com/badgermeatscienceclub/).

There are additional opportunities for students to get involved in animal or agriculture-related organizations on campus, such as the Hoofer Riding Club (https://www.hooferriding.org/), Association of Women in Agriculture (http://awamadison.org/), Babcock House (https://win.wisc.edu/organization/babcock_house/), and Collegiate FFA (http://collegiateffamadison.weebly.com/).

GLOBAL ENGAGEMENT

The department encourages students to study abroad and offers globally focused courses that look at animal health, animal agriculture, and sustainable development. Students can find more information on the International Academic Programs website (https://www.studyabroad.wisc.edu/) and the CALS study abroad advising page (https://cals.wisc.edu/academics/undergraduate-students/international-programs/study-abroad-advising/).

COMMUNITY ENGAGEMENT AND VOLUNTEERING

Animal and Veterinary Biosciences students engage in a number of volunteer opportunities including working at the Livestock Lab, the Poultry Research Lab, the Dairy Cattle Center, Bucky's Varsity Meats, and Animal Farm Units. Students also participate in undergraduate student recruitment events, 4-H and Extension events, Dane County Humane Society, and spay/neuter clinics.

On campus, the Morgridge Center for Public Service (https://morgridge.wisc.edu/) provides resources to help students connect with volunteer opportunities based on their interests and goals.

RESOURCES AND SCHOLARSHIPS

RESOURCES AND SCHOLARSHIPS

The Animal and Veterinary Biosciences program awards $25,000–$35,000 in annual scholarships. Students in the College of Agricultural and Life Sciences receive more than $1.25 million in scholarships annually. Learn more about college scholarships here (https://cals.wisc.edu/academics/undergraduate-students/financing-your-education/cals-scholarships/).

Campus facilities offering students hands-on experiences:

- The Livestock Laboratory accommodates research on multiple species and includes a surgery room.
- The Poultry Research Laboratory houses chickens and other birds.
- The state-of-the-art Meat Science & Animal Biologics Discovery Building houses a meat processing facility, retail shop, and advanced laboratories.
- A network of off-campus Agricultural Research Stations serve as living laboratories for agricultural animal research.
- The School of Veterinary Medicine Animal clinics and research labs offer experiences for undergraduate students.
- The Dairy Cattle Center houses more than 80 dairy cows on campus in a tie-stall barn.