

Animal Science - B.S.

Curriculum

The Animal Science bachelor's degree program introduces students to all aspects of animal-focused industries and services. Students are prepared for careers in veterinary healthcare, laboratory animal care and research, animal health and wellness, and food and fiber production.

Students apply anatomy, physiology, biology, chemistry, nutrition, reproduction and genetics to the study of animal management, breeding and genetics, growth, behavior, and welfare. The curriculum covers a great variety of species, from livestock to companion animals to pets and animals in research. The animal science major provides excellent preparation for students who wish to find positions immediately upon graduation, as well as those who plan to enter graduate or veterinary schools to obtain advanced degrees.

Students have the opportunity to complete a general course of study or focus their education on pre-veterinary studies or equine science specialization.

Students gain hands-on experience with many animal species in a broad array of animal science-focused skills including handling and health maintenance, facilities management, equipment usage, nutrition, breeding and wellness.

All students participate in the internship program, which allows them to work in an animal science-focused industry at approved establishments.

Core and elective courses in the College of Arts & Sciences provide the critical thinking and communication skills that are considered essential by employers along with the chance for students to explore areas of personal interest.

Upon completion of the Animal Science program, graduates are expected to:

- Apply knowledge of the core disciplines in animal science to the proper care and sustainable management of domestic and captive animals.
- Use knowledge of animal science and related disciplines to develop ethical strategies to address real world challenges in the animal science field
- Communicate the contributions of animals, animal products and animal services across multifaceted mediums and to diverse audiences
- Perform practical tasks associated with animal care, animal management and animal production systems to promote animal health, wellness and welfare

Specialization in Pre-Veterinary Studies

Students choosing a specialization in Pre-Veterinary Studies take a suite of courses that enhance and strengthen the qualifications of graduates interested in applying for admission to Doctor of Veterinary Medicine (DVM) programs. This specialization gives students the opportunity to complete major prerequisite course requirements for application to American Veterinary Medical Association-accredited veterinary schools within the United States. Students completing this specialization can pursue application to DVM programs as well as other animal and science-related graduate studies programs.

Upon completion of the Pre-Veterinary Studies specialization, students are expected to:

- Identify, evaluate and analyze scientific information.

Specialization in Equine Science

Students choosing a specialization in equine science take a suite of courses that prepares graduates for a diversity of science-based careers working with horses. This specialization combines a foundation of comprehensive equine courses where students learn how to select, care for and manage horses involved in all aspects of the equine industry. Foundational equine classes develop their understanding of horses with study in anatomy, physiology, behavior, lameness, sports therapy, genetics, nutrition, diseases and reproduction.

Upon completion of the Equine Science specialization, students are expected to:

- Apply the scientific method and critical thinking skills to address equine science questions.

To participate in the Animal Science program, each student, with or without reasonable accommodations, must be able to safely (including the safety

of the animal, where applicable) meet minimum technical standards as described for this program.

Animal Science

A four-year program leading to the bachelor of science degree

Major Courses

ANSC1010	Introduction to Animal Science	3
ANSC1015	Introduction to Animal Science Laboratory	1
ANSC1050	Domestic Animal Anatomy and Physiology	3
ANSC1055	Domestic Animal Anatomy and Physiology Laboratory	1
ANSC2010	Principles of Animal Nutrition	3
ANSC2030	Principles of Animal Behavior and Training	3
ANSC3010	Animal Reproduction and Genetics	3
ANSC3110	Animal Disease and Preventative Health	3
ANSC3230	Animal Production and Management Laboratory	1
ANSC4120	Animal Welfare, Health and Wellness	3

Major Electives or Specialization

Choose 15 credits of the following* or Specialization listed below:†		15
ANSC3350	Perspectives in Animal-Assisted Interventions	
ANSC4230	Laboratory Animal Science and Management	
ANSC4410	Special Topics in Animal Science I	
ANSC4440	Special Topics in Animal Science II	
ANSC4470	Special Topics in Animal Science III	
BIO2001	Genetics	
BIO2201 & BIO2206	General Microbiology and General Microbiology Laboratory	
BIO3040 & BIO3046	Molecular Biology and Molecular Biology Laboratory	
BIO3070	Evolution	
BIO3080	Epigenetics	
BIO3100 & BIO3106	Coastal Ecology and Coastal Ecology Laboratory	
BIO3400	Fundamentals of Pharmacology	
BIO3620 & BIO3626	Comparative Vertebrate Anatomy and Comparative Vertebrate Anatomy Laboratory	
BIO4020 & BIO4026	Integrative Biology and Integrative Biology Laboratory	
BIO4040 & BIO4046	Functional Histology and Functional Histology Laboratory	
BIO4070	Fundamentals of Immunology	
CHM1000 & CHM1006	Foundations in Chemistry and Foundations in Chemistry Laboratory	
CHM1011 & CHM1016	General Chemistry I and General Chemistry I Laboratory	
CHM1022 & CHM1026	General Chemistry II and General Chemistry II Laboratory	
CHM2011 & CHM2016	Organic Chemistry I and Organic Chemistry I Laboratory	
CHM2022 & CHM2026	Organic Chemistry II and Organic Chemistry II Laboratory	
CHM2050 & CHM2056	Introduction to Organic Chemistry and Introduction to Organic Chemistry Laboratory	
CHM3040 & CHM3046	Biochemistry and Biochemistry Laboratory	
CHM3200	Analytical Chemistry	
RSCH2050	Workshop in Acquiring Social Research Skills	
RSCH3810	Undergraduate Laboratory and Field Research	
RSCH3830	Undergraduate Research Experience	
Choose 15 credits of the following* or Specialization listed below:†		15
CUL3030	Exploring Cheese	
CUL3082	Exploring Mead and Honey	
CULN1010	An Introduction to the Fields of Food, Food Service and Nutrition	
CULS2010	Introduction to Food Product Development	
CULS2210	Food Science	
CULS3025	Food Processing	
ENG3030	Food Writing	
EQN1001 & EQN1006	Introduction to Equine Studies and Introduction to Equine Studies Laboratory	
EQN1035	Equine Anatomy and Physiology	
EQN1410	Collegiate Horseback Riding	
EQN2000	Equine Diseases and Conditions	
EQN2001	Foundations of Horsemanship and Riding Theory	

EQN2035	Equine Lameness and Sports Therapy Laboratory
EQN3001	Methods of Horseback Riding Instruction
EQN3010	Equine Reproduction and Genetics
EQN3025	Equine Nutrition
EQN3040	Sport Horse Evaluation and Judging
EQN3280	Introduction to Equine-Assisted Services
EQN3290	Application of Equine-Assisted Services
EQN3350	Equine Facility Design and Operation Management
EQN4115	Special Topics in Equine Studies I
EQN4145	Special Topics in Equine Studies II
EQN4215	Special Topics in Equine Studies III
EQN4310	Equine Industry Experience
EQN4410	Equine Behavior and Training
EVNT1001	Introduction to Event Management
PHY1011 & PHY1016	General Physics I and General Physics I Laboratory
PHY1022 & PHY1026	General Physics II and General Physics II Laboratory
SCI3020	Sustainability Policy and Planning
SCI3070	Food Sustainability
SFS1001	Introduction to Food Systems
SFS3001	Sustainability in the Culinary Kitchen
SFS4001	Cultivating Local Food Systems

Applied/Experiential Learning

Choose 12 credits from the following:		12
ASCI4799	College of Arts & Sciences Internship	
DEE3999	Directed Experiential Education ^D	
RSCH3830	Undergraduate Research Experience	
RSCH4020	Honors Directed Academic Experience	
	Study Abroad ^{5a}	

University Core Curriculum

Communicating		9
ENG1020	Rhetoric & Composition I	
ENG1021	Rhetoric & Composition II	
ENG1030	Communication Skills	
Connecting		6
Two courses with the Connecting attribute (ECNG), one at the 2000 level, one at the 4000 level		
Experiencing		6
Two courses with the Experiencing attribute (EEXP), different disciplines		
Measuring		6
MATH1020	Fundamentals of Algebra (or higher, based on student's placement)	
MATH2001	Statistics I	
Exploring		4
BIO1011 & BIO1016	General Biology - Cellular and General Biology Laboratory - Cellular	
Interacting		6
Two courses with the Interacting attribute (EINT), different disciplines		
A&S electives ^{**}		7
BIO1022 & BIO1026	General Biology - Organismal and General Biology Laboratory - Organismal	
Additional course with the Arts & Sciences elective attribute (EASC)		

Free Electives

12 credits selected from 1000-4999 numbered offerings within the university	12
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Total Credits **122.0**

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Students are responsible for meeting prerequisites.

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Students considering the Pre-Veterinary specialization must complete MATH1030 Precalculus. This course may fulfill an arts & science or free elective.

†Specialization in Equine Science

CHM1011 & CHM1016	General Chemistry I and General Chemistry I Laboratory	4
EQN1001 & EQN1006	Introduction to Equine Studies and Introduction to Equine Studies Laboratory	4
EQN1035	Equine Anatomy and Physiology	3
EQN2000	Equine Diseases and Conditions	3
EQN2035	Equine Lameness and Sports Therapy Laboratory	1
EQN3010	Equine Reproduction and Genetics	3
EQN3025	Equine Nutrition	3
Choose 9 credits from the following (maximum of three credits in horseback riding):		9

EQN1410	Collegiate Horseback Riding
EQN2000	Equine Diseases and Conditions
EQN2001	Foundations of Horsemanship and Riding Theory
EQN3001	Methods of Horseback Riding Instruction
EQN3010	Equine Reproduction and Genetics
EQN3025	Equine Nutrition
EQN3040	Sport Horse Evaluation and Judging
EQN3280	Introduction to Equine-Assisted Services
EQN3290	Application of Equine-Assisted Services
EQN3350	Equine Facility Design and Operation Management
EQN4050	Horse Farm Management and Business Planning
EQN4115	Special Topics in Equine Studies I
EQN4145	Special Topics in Equine Studies II
EQN4215	Special Topics in Equine Studies III
EQN4410	Equine Behavior and Training

Total Credits **30.0**

†Specialization in Pre-Veterinary Studies

Students must use 1 credit of free electives to complete this specialization

Students considering this specialization must complete MATH1030 Precalculus as a prerequisite. This course may fulfill an arts & science or free elective.

BIO2201 & BIO2206	General Microbiology and General Microbiology Laboratory	4
CHM1011 & CHM1016	General Chemistry I and General Chemistry I Laboratory	4
CHM1022 & CHM1026	General Chemistry II and General Chemistry II Laboratory	4
CHM2011 & CHM2016	Organic Chemistry I and Organic Chemistry I Laboratory	4
CHM2022 & CHM2026	Organic Chemistry II and Organic Chemistry II Laboratory	4
CHM3040	Biochemistry	3
PHY1011 & PHY1016	General Physics I and General Physics I Laboratory	4
PHY1022 & PHY1026	General Physics II and General Physics II Laboratory	4

Total Credits **31.0**

^D Directed Experiential Education (DEE) opportunities are based on project availability with community partners and student eligibility. For more information, visit Experiential Education & Career Services (EE&CS).

^{5a}To be eligible to count toward Applied/Experiential Learning, a Study Abroad offering must meet certain requirements. Contact JWU Global to discuss eligible Study Abroad options for this degree program.

In addition to classes, free elective credits may be applied to a number of options such as internship, study abroad, Directed Experiential Education courses and courses in a specialization or minor as relevant. For students who qualify for the J2 program, up to four graduate courses may apply. Students are strongly encouraged to contact a faculty advisor before scheduling free elective credits.

Note: Students must pass MATH0010 Pre-Algebra or have equivalent placement scores to enroll in required math courses.

Note: Students must pass ENG0001 Writing Workshop or have equivalent placement scores to enroll in ILS 2000-level courses.

In collaboration with academic colleges Study Abroad offer several options, direct enroll with international universities, domestic and digital options meet with a Study Abroad Advisor to learn more about how your major, minor, free electives, experiential learning and transferable courses would benefit by a Study Abroad program. There are many options for students during a semester, spring and/or summer breaks. Faculty-led, exchange, and direct-enroll programs range in duration from one week to a full semester or full year. Financial aid may be applied, and some partners offer external scholarships. Visit the study abroad website for information, program descriptions and online applications. Where will you go? Wherever you decide, make the best of your educational journey!

Admissions Requirements

Please see a campus catalog for Admissions Requirements for this program.

Accelerated Program Options

J2 Program

The JWU J2 program allows qualified students enrolled in a matriculating undergraduate program to take graduate level courses at JWU. Students interested in pursuing this option should meet with their academic advisor

to discuss their interest, qualifications and plans. The undergraduate student may take up to four graduate courses (maximum 12 credits) and are limited to 6 credits a semester and 3 credits per session (Fall Session I and Fall Session II).

The completion of graduate credits to fulfill undergraduate program requirements does not guarantee acceptance into the graduate program after completion of the baccalaureate degree. Matriculating undergraduate students who wish to formally enroll in a graduate program must fulfill all requirements for entrance into the intended graduate program and complete a graduate program application.

Note: Not all graduate courses are included as part of this policy. Courses offered as part of the Master of Arts in Teaching, Master of Education, Master of Science in Physician Assistant Studies and doctoral courses are excluded from this policy and are restricted to program majors only. Additional courses and/or programs as determined by individual colleges may also have restricted access.

Eligibility Criteria

To be eligible to enroll in graduate level courses (excludes: Masters of Arts in Teaching, Masters of Education, Masters of Science in Physician Assistant Studies, doctoral courses and other programs as outlined by the colleges).

Undergraduate students must meet the following criteria:

- Undergraduate cumulative GPA of 3.00 or higher
- Completed and registered undergraduate credits at least 90 credits
- Meet the individual course prerequisites

Appeal to Eligibility Criteria: College dean or designee will receive a copy of the Petition Form, Student's GPS and email requesting appeal if the student requests to appeal the GPA or earned/registered credit criteria. College dean/designee will review and determine approval.

These courses carry graduate credit and will replace undergraduate degree requirements when applicable, traditionally free-electives (maximum of 12 credits). The course will be applied to the undergraduate degree in the order in which they are taken (if required) and will also be applied towards both the students undergraduate and graduate GPA.

Students should maintain enrollment in at least 12 credits of undergraduate coursework to maintain full-time status; graduate course enrollment is not calculated into undergraduate full-time status. For students already attending full-time as undergraduates (12 credits or more) and paying the full-time tuition, the graduate credits will be included in full-time tuition fee. Students attending part-time (11 credits or less) will pay the cost per-credit undergraduate tuition for the graduate course.

Course registration will be based on space availability and students enrolled in graduate level courses will be required to maintain good academic standing at the undergraduate and graduate level.