DEPARTMENT OF ANIMAL AND VETERINARY SCIENCE

Animal agriculture has a major role in providing the supply of high quality food, not only for the people of the United States, but also for those of other nations. Food and fiber obtained from animals include meat, milk, eggs, wool, and many by-products. Knowledge and skills resulting from a college education in this field will permit the graduate to contribute to improved production and health of the nation’s livestock including beef, sheep, dairy, swine, poultry, horses, and companion animals.

In addition to classrooms and laboratories located in the Agricultural Science Building, the department’s facilities include production centers for dairy, beef, and sheep, as well as a meats laboratory and livestock judging pavilion. Several breeds of animals are maintained for instructional purposes. The academic program is designed to prepare students for a variety of important and rewarding career opportunities. For more specific information, get in touch with the department head (208-885-6345).

To prepare students for the varied types of occupations available in animal agriculture, the Department of Animal and Veterinary Science offers a Bachelor of Science degree in animal and veterinary science with four options: business, dairy science, production and science/pre-veterinary. Each of these majors, while attempting to provide the students with a sound background in animal biology, has its separate emphasis on complementary academic training. One of the strongest features of these programs is the flexibility provided. Each major permits the student to plan the precise course of study that will best prepare him or her for the area of work that he or she desires to enter. The department also offers a minor in animal science for students desiring a background in animal agriculture to complement their major field of study.

The B.S.A.V.S. business option is designed for students who desire a career as entry level into management positions in livestock-related industries. This option is oriented toward business, economics, and agricultural economics, in addition to a sound background in production animal agriculture. With appropriate choices of elective courses, students can also prepare themselves for positions with financial institutions involved with the animal agriculture industry.

An option in dairy science (B.S.A.V.S.) helps prepare students for careers in one of Idaho’s fastest growing industries. This option offers introductory and advanced course work and “hands on training” at a modern dairy center. Specific courses are taught in dairy nutrition, forage crops, dairy reproduction and physiology, dairy cattle evaluation, dairy products and processing, physiology of lactation, herd health management, agriculture power and machines, and farm management. Students are eligible to participate in the cooperative of university dairy students (CUDS) program.

The option in production (B.S.A.V.S.) is designed for students who desire to pursue a career in livestock production, graduate work in one of the varied disciplines in animal sciences (nutrition, breeding, physiology, growth, endocrinology, meats, etc.), or for employment by companies that require intensive training in animal biology. This option is also excellent training for those interested in Cooperative Extension.

The science/pre-veterinary option (B.S.A.V.S.) is offered for students interested in veterinary school or a graduate program involving any of the disciplines of animal biology. It is typically a 4-yr program of study, but for a few students the 3+1 program will be of interest. If, after successful completion of 99 credits of required courses (first 3 years of the 4-yr program, the student is admitted to a recognized college of veterinary medicine and completes the first year of veterinary school (equivalent of at least 32 credits), that first year will constitute the senior year at UI and the student will be awarded a B.S. A.V.S. at UI.

The department offers a graduate program leading to the Master of Science degree with a major in animal science and a Doctor of Philosophy degree with a major in animal physiology. The department offers areas of specialization in nutrition, reproductive physiology, embryo physiology, animal growth and development, meat science, and animal diseases with orientation towards beef cattle, dairy cattle, horses, sheep, and fish. The department also participates in university interdisciplinary programs in reproductive biology, and molecular and agricultural genetic engineering.

Graduate work in the department is designed to prepare the student for work in research, extension, teaching, and industry. Thesis projects are diverse in scope and range in design from studying very fundamental biological questions to application of scientific knowledge to animal production and management. Facilities available for graduate student research include herds and flocks of major livestock breeds, ruminant nutrition and physiology laboratories, biomedical research laboratories, a university-operated dairy, meat science laboratory, and a 500-head experimental feedlot. Active cooperation is maintained with federal research agencies located on and off campus.

Graduate student assistantships are available on a competitive basis each year. Inquiries should be directed to the department’s graduate program coordinator.


*AHMADZAHREH, Amin; 2000; Professor of Animal and Veterinary Science; Interim Department Head, Animal and Veterinary Sciences; Ph.D.; 1998; Virginia Polytechnic Institute.

BARROWS, Frederic T; 2006; Adjunct Professor of Animal and Veterinary Sciences; Ph.D.; 1987; Iowa State University.

BODINE, Timothy N; 2009; Adjunct Assistant Professor of Animal and Veterinary Science; Ph.D.; 2004; Oklahoma State University.

*BYERS, John A; 1980; Professor of Zoology; Ph.D.; 1980; University of Colorado.

*CHAHINE, Mireille; 2003; Extension Professor in Animal and Veterinary Science; Ph.D.; 2003; University of Minnesota.

CHIBISA, Gwinyai; 2015; Assistant Professor of Animal and Veterinary Science; Ph.D.; 2013; University of Saskatchewan.

*DALTON, Joseph C; 2000; Extension Professor of Animal and Veterinary Science; Ph.D.; 1999; Virginia Polytechnic Institute.

*DOUMIT, Matthew E; 2008; Professor of Animal and Veterinary Sciences (Meat Specialist); Ph.D.; 1994; Michigan State University.

DOUMIT, Stacey A; 2015; Instructor of Animal and Veterinary Science; M.S.; 1994; Michigan State University.
ELLISON, Melinda; 2016; Assistant Professor in Animal and Veterinary Science; Ph.D.; 2016; University of Wyoming.

*ENGLAND, James J; 1995; Professor of Veterinary Medicine; Director, Caine Veterinary Teaching Center; D.V.M.; 1981; Colorado State University.

GAYLORD, T. Gibson; 2007; Adjunct Assistant Professor of Animal and Veterinary Science; Ph.D.; 2000; Texas A&amp;M University.

*HALL, John B; 2008; Professor of Animal and Veterinary Sciences (Beef Specialist); Superintendent, Nancy M Cummings Research Center; Ph.D.; 1991; University of Kentucky.

*HARDY, Ronald W; 1996; Professor of Animal Science; Director, Aquaculture Research Institute; Ph.D.; 1978; University of Washington.

*KUMAR, Kamal; 2015; Assistant Professor of Animal and Veterinary Science; Ph.D.; 2007; Case Western Reserve University.

*KUMAR, John M; 1996; Professor of Zoology; Affiliate Faculty in Bioinformatics and Computational Biology; Ph.D.; 1993; Johns Hopkins University.

*POWELL, Madison S; 1987; Associate Professor of Animal and Veterinary Science; Affiliate Faculty in Bioinformatics and Computational Biology; Ph.D.; 1999; Texas Technology University.

*REZAMAND, Pedram; 2008; Associate Professor of Animal and Veterinary Sciences; Ph.D.; 2006; University of Idaho.

*STENKAMP, Deborah L; 1997; Professor of Zoology; Ph.D.; 1993; Johns Hopkins University.

*TALCOTT, Patricia A; 1990; Adjunct Associate Professor of Animal and Veterinary Sciences; Ph.D.; 1989; University of Idaho.

*TURGEON, O. Abe Jr.; 2003; Adjunct Associate Professor of Animal and Veterinary Science; Ph.D.; 1984; University of Nebraska.

WALTNER, Scott S; 2003; Assistant Professor, Dairy Production Medicine Veterinarian; D.V.M.; 1996; University of Washington.

*WICHMAN, Holly A; 1988; Distinguished Professor of Zoology; Affiliate Faculty in Bioinformatics and Computational Biology; Ph.D.; 1983; Wesleyan University.

Majors


Minors


Animal and Veterinary Science Graduate Program

Candidates must fulfill the requirements of the College of Graduate Studies and of the Department of Animal and Veterinary Science. See the College of Graduate Studies (https://catalog.uidaho.edu/colleges-related-units/graduate-studies) section for the general requirements applicable to all degrees.

Animal and Veterinary Science

AVS 105 Survey of the Science of Livestock Production and Management
1-3 credits, max 3

This course is designed to introduce the student to the principles of animal production and management through knowledge and skills pertaining to nutrition, reproduction, diseases, breeding, genetics, anatomy, and physiology in livestock. Course will be offered for 1 credit in the Fall and 2 in the Spring.

AVS 109 The Science of Animals that Serve Humanity
4 credits

Role of animal agriculture in providing food, work, and pleasure for mankind; intro to animal genetics, physiology, endocrinology, nutrition, and other disciplines essential for an understanding of the contributions of animals in the expanding human population.
AVS 110 Science of Animal Husbandry
3 credits
Fundamental concepts of animal husbandry and its foundation in the science of animal production; introduction to the technical subject matter of animal production.
Prereq: AVS 109.

AVS 110L Science of Animal Husbandry Lab
1 credit
Laboratory to support teaching in AVS 110; introductory applications of fundamentals of animal science to domestic animal management and production. One 2-hr lab a week.
Prereq: AVS 109
Coreq: AVS 110.

AVS 172 Principles and Practices of Dairy Science
2 credits
An overview of the dairy industry and the science of producing milk and reproduction, udder health and mastitis, milk marketing, and dairy product quality and safety; approved management practices for dairy enterprise.

AVS 204 (s) Special Topics
Credit arranged.

AVS 222 Animal Reproduction and Breeding
3 credits
Provides fundamental information about reproduction, lactation, and breeding of domestic animals; topics include functional anatomy, basic physiology, and endocrinology relating to reproduction and lactation; animal breeding involves the mathematical and conceptual framework of genetic evaluation.

AVS 263 Live Animal and Carcass Evaluation
3 credits
Evaluation and selection of cattle, sheep, and swine for herd replacement; evaluation of market animals; carcass evaluation and grading, slaughter procedures, and factors that affect quality and quantity of meat; visual and objective appraisals. One lecture and two 3-hour lab a week; four 1-day and four 1/2-day field trips or equivalent time. Cooperative: open to WSU degree-seeking students.

AVS 268 Companion Animal Diseases
2 credits
Principles of disease resistance, transmission, and prevention; clinical signs, pathogenesis, and control of major diseases in companion animals. Recommended preparation: AVS 222 or equivalent.
Prereq: AVS 109.

AVS 274 Beef Feedlot Systems
2 credits
Overview of feeding management, feed milling and batching, animal health, and economics of the commercial cattle feeding business.
Prereq: AVS 109
Coreq: AVS 209.

AVS 298 (s) Internship
Credit arranged.

AVS 299 (s) Directed Study
1-6 credits, max 6
Graded P/F.
Prereq: Permission of department.

AVS 305 Animal Nutrition
4 credits
Introduction of the concepts and principles of animal nutrition; fundamentals of nutrients and their digestion and metabolism; various biochemical pathways and processes for nutrient utilization; nutrition fundamentals for a range of monogastric and ruminant animals. Recommended Preparation: BIOL 115 and CHEM 111. Cooperative: open to WSU degree-seeking students.
Prereq: AVS 109.

AVS 306 Feeds and Ration Formulation
AVS 306 Feeds and Ration Formulation (4 cr)
Application of principles of nutrition to ration formulation for poultry and livestock; evaluating feedstuffs for use in ration formulation. Three lec and one 2-hr lab a wk. Recommended Preparation: AVS 305. Cooperative: open to WSU degree-seeking students.

AVS 317 Artificial Insemination and Pregnancy Detection
3 credits
Anatomy and physiology of pregnant and non-pregnant reproductive systems; artificial insemination; male reproduction; pregnancy detection in domestic livestock.
Prereq: AVS 109; and AVS 222 or AVS 452, Junior/Senior Standing OR instructor permission.

AVS 318 Beef Calving Management
1 credit
Increase student’s knowledge and experience of the biology, physiology and management of cows and calves before, during and after the birthing process.
Prereq: AVS 109 and AVS 209.

AVS 330 Genetics of Livestock Improvement
3 credits
Genetic principles applied to breeding of farm animals. This is a cooperative course available to WSU degree-seeking students.
Prereq: AVS 109.

AVS 363 Animal Products for Human Consumption
4 credits
Cross-listed with FS 363
The meat, dairy, and egg industries, including product produced, processed, safety (HACCP), nutrition, distribution, quality, quantity, palatability, health, cooking, home storage, and consumer concerns. Special clothing and equipment required. Three lecture credits and one 3-hour lab per week. Recommended Preparation: BIOL 115. Cooperative: open to WSU degree-seeking students.

AVS 371 Anatomy and Physiology
3 credits
Structure and function of tissues and organ systems of domestic and wild animals.
Prereq: BIOL 115.

AVS 373 Anatomy and Physiology Lab
1 credit
Students will perform dissections and examine the relationship between the organization of tissues and their distinct function within the animal. Field trips may be incorporated should teaching opportunities arise though most instruction will be confined to the Physiology and Anatomy laboratory and classroom. (Fall only)
Prereq: AVS 109, BIOL 115, and Animal and Veterinary Science major
Coreq: AVS 371.
AVS 398 (s) Internship  
Credit arranged  
Cooperative programs with producers, allied industry and food processing industries within the state. Graded P/F.  
**Prereq:** Permission.

AVS 404 (s) Special Topics  
Credit arranged.

AVS 405 (s) Professional Development  
Credit arranged.

AVS 411 Ruminant Nutrition  
3 credits  
Joint-listed with AVS 511  
Intro to anatomy of digestive tract of ruminant; focus on ruminal and postruminal carbohydrate, protein, and lipid metabolism; ruminal bacteria, protozoa and fungi, microbe-microbe interactions and their role in nutrients utilization; compartmentation of the rumen and microbial protein synthesis; practical aspects of ruminant nutrition and intro to current feeding systems; research techniques in studying ruminal degradation and digesta kinetics. Additional projects/assignments required for grad cr. (Alt/yr)

**Prereq:** Permission.

AVS 450 Issues in Animal Agriculture  
2 credits  
*Gen Ed: Senior Experience*  
The capstone experience for seniors in AVS; students will present information on selected topics and propose solution to current problems; emphasis on problem solving using integration of information across disciplines.

**Prereq:** Senior standing.

AVS 452 Physiology of Reproduction  
4 credits  
Physiology of reproduction; growth, structure, development, endocrinology, and control of reproductive function with emphasis on farm animals. Three lecture and one 2-hour lab a week. Cooperative: open to WSU degree-seeking students.

**Prereq:** AVS 109 and BIOL 115 or equivalent.

AVS 463 Growth and Lactation  
3 credits  
Joint-listed with AVS 563  
Principles of animal growth and lactation. Hormonal, nutritional, and metabolic control of bone, muscle, adipose, and mammary tissue development; regulation of lactation.

**Prereq:** AVS 109 and BIOL 115  
**Coreq:** AVS 305.

AVS 466 Equine Science and Management  
3 credits  
Study of the industry as well as basic principles of equine science and management, including conformation and selection, anatomy, form to function, nutrition and feeding, behavior, health, reproduction, marketing, facilities and business management. Two lecture, and one 2-hour lab a week. Cooperative: open to WSU degree-seeking students.

**Prereq:** Junior standing and AVS 222, AVS 371 and AVS 305 or Permission.

AVS 471 Animal Disease Management  
3 credits  
Principles of immunity and disease resistance, transmission, and prevention; clinical signs, pathogenesis, and control of major diseases of economic importance in domestic animals.

**Prereq:** Junior standing.

AVS 472 Dairy Cattle Management  
3 credits  
Establishing a dairy farm, housing and managing large dairy herds, selection of breeding cattle, and marketing quality milk. One 4-day field trip. Recommended Preparation: AVS 222 or equivalent. Cooperative: open to WSU degree-seeking students.

**Prereq:** AVS 109

**Coreq:** AVS 305.

AVS 474 Beef Cattle Science  
3 credits  
Breeding, feeding, and management; commercial and purebred enterprises; management of beef cattle on ranges, pasture, and in the feedlot. One 1-day field trip. Recommended Preparation: AVS 222 or equivalent. Cooperative: open to WSU degree-seeking students.

**Prereq:** AVS 109

**Coreq:** AVS 305.

AVS 475 Advanced Dairy Management  
3 credits  
Application of concepts of dairy cattle management to practical situations. One lecture and 1-2 hours of lab a week. Recommended Preparation: AVS 472. Cooperative: open to WSU degree-seeking students.

**Prereq:** AVS 305

**Coreq:** AVS 306 or AVS 411.

AVS 476 Sheep Science  
3 credits  
Application of principles of genetics, reproduction, nutrition, health, and marketing to the management of commercial and purebred sheep; new developments related to sheep industry; production, evaluation, and use of wool. Two lectures and one 2-hour lab a week; one 1-day field trip or equiv time. Recommended Preparation: AVS 222 or equivalent.

**Prereq:** AVS 109

AVS 498 (s) Internship  
Credit arranged.

AVS 499 (s) Directed Study  
1-6 credits, max arranged.

AVS 500 Master's Research and Thesis  
Credit arranged.

AVS 501 (s) Seminar  
Credit arranged.

AVS 502 (s) Directed Study  
Credit arranged  
Graded P/F.

**Prereq:** Permission.

AVS 503 (s) Workshop  
Credit arranged.

AVS 504 (s) Special Topics  
Credit arranged.

AVS 505 (s) Professional Development  
Credit arranged.
AVS 509 Growth Physiology Inquisition
2 credits, max arranged
Joint-listed with AVS 409
This course will develop skills in critical review of literature in Growth Physiology. Students will study set journal articles describing original research and present their review to the study group in a team participation format. Active participation of the study group, led by the primary reviewer is an essential component of the course. Graduate students are encouraged to take the course multiple times (e.g., each semester). Student performance is evaluated using a six criterion Rubric. For undergraduate credit, students are evaluated across 2-3 achievement levels per criterion. For graduate credit, students are evaluated across 4 achievement levels per criterion as shown in the Course Outline. Recommended Preparation: AVS J451/J551.

AVS 511 Ruminant Nutrition
3 credits
Joint-listed with AVS 411
Intro to anatomy of digestive tract of ruminant; focus on ruminal and postruminal carbohydrate, protein, and lipid metabolism; ruminal bacteria, protozoa and fungi, microbe-microbe interactions and their role in nutrients utilization; compartmentation of the rumen and microbial protein synthesis; practical aspects of ruminant nutrition and intro to current feeding systems; research techniques in studying ruminal degradation and digesta kinetics. Additional projects/assignments required for grad cr. (Alt/yr)
Prereq: Permission.

AVS 517 Macronutrient Metabolism
3 credits
Upon completion of this class students will be familiarized with many aspects of digestion, absorption and metabolism of macronutrients in a detailed level. The emphasis will be on interrelationship and regulation of macronutrients utilization at cellular and organ levels. It is assumed that graduate students have a good knowledge of physiology and biochemistry. Pertinent research manuscripts will be discussed in a round-table fashion.
Prereq: AVS 305, or AVS 411, or similar course.

AVS 531 Practical Methods in Analyzing Animal Science Experiments
3 credits
Upon completion of this class students will be able to manage and analyze data obtained from animal experimentations. This is a “hands-on” type of training, specifically designed for AVS graduate students and intends to provide our graduate students with a better understanding of designs commonly used in animal science experiments, advantages and potential pitfalls associated with each design, data processing and analysis, data tabulation, and graphic illustration, and data interpretation.
Prereq: 400 level statistics course.

AVS 563 Growth and Lactation
3 credits
Joint-listed with AVS 463
Principles of animal growth and lactation. Hormonal, nutritional, and metabolic control of bone, muscle, adipose, and mammary tissue development; regulation of lactation.
Prereq: AVS 109 and BIOL 115
Coreq: AVS 305.

AVS 567 Advanced Physiology
4 credits
An advanced review of physiology designed to emphasize the interaction between structure and function of specialized cells, tissues, organs and systems. The systems to be covered will include but are not limited to, the mammalian cell, hematology neurophysiology, muscle physiology, cardiovascular physiology, pulmonary physiology, renal physiology and whole animal metabolism. Recommended preparation: undergraduate physiology, biology, cell biology, and/or biochemistry. (Spring, alt/odd yrs)

AVS 598 (s) Internship
Credit arranged.

AVS 599 (s) Non-thesis Master’s Research
Credit arranged.

AVS 600 Doctoral Research and Dissertation
Credit arranged.