ANIMAL AND VETERINARY SCIENCE (AVS)

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 per 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 110

AVS 298 (s) Internship
Credit arranged

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

AVS 301 Undergraduate Research in Animal Science
1-3 credits, max 6
Undergraduate research related to animal and veterinary science. Graded P/F.

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, BIOL 115L and CHEM 111, CHEM 111L. Cooperative: open to WSU degree-seeking students.
Prereq: AVS 109

AVS 306 Feeds and Ration Formulation
4 credits
Application of principles of nutrition to ration formulation for poultry and livestock; evaluating feedstuffs for use in ration formulation. Three lectures and one 2-hour lab per week. 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 110

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, BIOL 115L. 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, BIOL 115L

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, BIOL 115L 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 graduate credit. (Alt/yrs)
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 451 Endocrine Physiology
3 credits
Joint-listed with AVS 551
Structure and physiology of glands of internal secretion and their hormonal effects on processes of growth, development, metabolism, and production of vertebrates; minor emphasis on invertebrates. Completion of term paper required for graduate credit. Recommended Preparation: BIOL 380. Cooperative: open to WSU degree-seeking students.

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 and BIOL 115L 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, BIOL 115L
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 lectures and one 2-hour lab per week. Cooperative: open to WSU degree-seeking students.
Prereq: Junior standing and AVS 222, AVS 371 and AVS 305 or Permission

AVS 468 Companion Animal Biology & Management
3 credits
Application of the principles of reproduction, nutrition, genetics, health, and economics to the production and management of companion animals - dogs, cats, birds, small mammals, and fish. Three 1-hour lectures per week. (Fall only)
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 per 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 per week; one 1-day field trip or equivalent time. Recommended Preparation: AVS 222 or equivalent. Cooperative: open to WSU degree-seeking students.  
**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 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 graduate credit. (Alt/years)  
**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 550 Critical Evaluation of Scientific Research**  
2 credits  
Students will learn how to critically evaluate scientific literature, develop an understanding of current molecular biology, biotechnology, genomics and/or genetics techniques and strategies employed in the fields of biology and animal science, and develop scientific writing skills. Graded P/F.

**AVS 551 Endocrine Physiology**  
3 credits  
Joint-listed with AVS 451  
Structure and physiology of glands of internal secretion and their hormonal effects on processes of growth, development, metabolism, and production of vertebrates; minor emphasis on invertebrates. Completion of term paper required for graduate credit. Recommended Preparation: BIOL 380. Cooperative: open to WSU degree-seeking students.

**AVS 553 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, BIOL 115L  
**Coreq:** AVS 305

**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, BIOL 115L  
**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 597 (s) Practicum**  
Credit arranged

**AVS 598 (s) Internship**  
Credit arranged

**AVS 599 (s) Non-thesis Master's Research**  
Credit arranged

**AVS 600 Doctoral Research and Dissertation**  
Credit arranged