

# ANIMAL SCIENCES

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## **ANS 5446 Animal Nutrition 3 Credits**

**Grading Scheme:** Letter Grade

Carbohydrates, fats, proteins, minerals, and vitamins and their functions in the animal body. Offered fall term.

**Prerequisite:** ANS 3440, BCH 4024, or consent of instructor.

## **ANS 5935 Reproductive Biology Seminar and Research Studies 1 Credit, Max 4 Credits**

**Grading Scheme:** S/U

Invited speakers on a wide range of topics. Student-faculty participation in research projects.

**Prerequisite:** ANS 3319C or equivalent.

## **ANS 6040 Concepts in Applied Ethology 3 Credits**

**Grading Scheme:** Letter Grade

Introduces concepts and methods used to conduct research in the field of applied ethology. Course content includes an overview of mechanisms of animal behavior and approaches to measuring and modeling animal behavior. The focus is on developing skills necessary to conduct, analyze, and interpret research in applied ethology.

**Prerequisite:** CALS major

## **ANS 6255L Dairy Farm Evaluation 2 Credits**

**Grading Scheme:** Letter Grade

Enables students to learn the basics about dairy farm evaluation. We will evaluate all aspects of a dairy farm including farm financials, management, health, reproduction, nutrition and feeding, facilities, and milking. Throughout the course, the students should be able to analyze, present and discuss case studies, and by the end of the course, students should be able to present a summary of a dairy farm's weaknesses and be able to present opportunities for improvement with a budget.

**Prerequisite:** ANS 3006 Introduction to Animal Science.

## **ANS 6288 Experimental Techniques and Analytical Procedures in Meat Research 3 Credits**

**Grading Scheme:** Letter Grade

Experimental design, analytical procedures; techniques; carcass measurements and analyses as related to livestock production and meats studies. Offered spring term in even-numbered years.

## **ANS 6312C Applied Livestock Reproduction 3 Credits**

**Grading Scheme:** Letter Grade

Applied Livestock Reproduction is a course that provides unique experiences in applied reproductive techniques and management of livestock. Rotation through numerous animal teaching units reinforces classroom curriculum in beef, dairy, equine, small ruminants, and porcine reproduction. Topics include estrus detection, synchronization, management, artificial insemination, ultrasonography, assisted reproductive technologies, semen collection and evaluation, sperm freezing and embryo handling.

**Prerequisite:** ANS 3319C

## **ANS 6313 Current Concepts in Reproductive Biology 2 Credits**

**Grading Scheme:** Letter Grade

Lectures prepared by students and discussion of current review articles. Offered spring term in odd-numbered years.

**Prerequisite:** ANS 3319C or equivalent; consent of instructor.

## **ANS 6379L Techniques Genetics 2 Credits**

**Grading Scheme:** Letter Grade

Techniques Genetics

## **ANS 6387 Genetic Analysis of Complex Traits in Livestock 3 Credits**

**Grading Scheme:** Letter Grade

Comprehensive examination of principles of livestock inheritance, QTL mapping strategies and functional genomic approaches used for genomic selection and improvement programs in farm animals.

## **ANS 6447 Ruminant Nutrition 4 Credits**

**Grading Scheme:** Letter Grade

The anatomy and physiology of the ruminant digestive system as well as the digestion and metabolism of dietary nutrients for the purposes of growth, pregnancy, and lactation. Ration formulations using computer software.

**Prerequisite:** ANS 5446: Animal Nutrition

## **ANS 6449 Vitamins 3 Credits**

**Grading Scheme:** Letter Grade

Historical development, properties, assays, and physiological effects.

**Prerequisite:** organic chemistry.

## **ANS 6452 Principles of Forage Quality Evaluation 3 Credits**

**Grading Scheme:** Letter Grade

Definition of forage quality in terms of animal performance, methodology used in forage evaluation, and proper interpretation of forage evaluation data. Offered spring term in even-numbered years.

**Prerequisite:** ANS 5446, AGR 4231C.

## **ANS 6636 Meat Technology 3 Credits**

**Grading Scheme:** Letter Grade

Chemistry, physics, histology, bacteriology, and engineering involved in the handling, processing, manufacturing, preservation, storage, distribution, and utilization of meat. Offered fall term in odd-numbered years.

## **ANS 6637 Quantitative Microbial Risk Assessment of Pathogens in Food Systems 3 Credits**

**Grading Scheme:** Letter Grade

Modeling principles of microbial risk assessment in food chains. Model implementation in stochastic simulation software (R). Focus is on the bottom-up food chain approach and basic principles of the top-down approach.

**Prerequisite:** STA 6166 or similar statistics course & knowledge of the R programming environment.

## **ANS 6702 Physiology of the Mammary Gland and Lactation 2 Credits**

**Grading Scheme:** Letter Grade

Offers insights into the endocrinology and physiology of the defining characteristics of mammals: the mammary gland and lactation, focusing on the anatomy and development of the mammary gland with an overview of the biochemical, cellular and molecular processes controlling lactation emphasizing on livestock species.

**Prerequisite:** ANS 6704 or permission of instructor

## **ANS 6704 Mammalian Endocrinology 2 Credits**

**Grading Scheme:** Letter Grade

Physiologic systems of farm animals. Emphasizes the impact of endocrinology and cell biology on animal physiology, development and performance.

**Prerequisite:** BCH 4024 or BCH 3025, or equivalent.

## **ANS 6711 Current Topics in Equine Nutrition and Exercise Physiology 2 Credits**

**Grading Scheme:** Letter Grade

Equine science with emphasis on current topics of interest. Offered fall term in odd-numbered years.

**ANS 6714 Current Topics in Microbial Physiology in Animals 1 Credit**

**Grading Scheme:** Letter Grade

Insights into microbial pathogenesis, microbial genetics, and molecular microbiology with particular reference to livestock species.

**ANS 6715 Gastrointestinal and Feed Microbiology 3 Credits**

**Grading Scheme:** Letter Grade

Microbiology of the rumen, hindgut, and feed; relation to livestock production and food safety.

**Prerequisite:** ANS 5446.

**ANS 6716 Physiology in Farm Animals 1 Credit**

**Grading Scheme:** Letter Grade

Physiology and function of the gastrointestinal system in monogastrics and ruminants.

**Prerequisite:** ANS 6704

**ANS 6723 Mineral Nutrition and Metabolism 3 Credits**

**Grading Scheme:** Letter Grade

Physiological effect of macro- and micro-elements, and mineral interrelationships.

**ANS 6751 Physiology of Reproduction 3 Credits**

**Grading Scheme:** Letter Grade

Conceptual relationship of the hypothalamus, pituitary, and reproductive organs during the estrous cycle and pregnancy. Influence of exteroceptive factors and seasonal reproduction. Offered fall term in even-numbered years.

**Prerequisite:** BCH 5045 or equivalent.

**ANS 6775 Essentials of Livestock Immunology 1 Credit**

**Grading Scheme:** Letter Grade

Basic immunological concepts and their relation to immunity for livestock and other species.

**ANS 6905 Problems in Animal Science 1-4 Credits, Max 8 Credits**

**Grading Scheme:** Letter Grade

Problems in Animal Science

**ANS 6910 Supervised Research 1-5 Credits, Max 5 Credits**

**Grading Scheme:** S/U

Supervised Research

**ANS 6932 Special Topics in Animal Science 1-3 Credits, Max 9 Credits**

**Grading Scheme:** Letter Grade

New developments in animal nutrition and livestock feeding, animal genetics, animal physiology, and livestock management.

**ANS 6933 Graduate Seminar in Animal Science 1 Credit, Max 8 Credits**

**Grading Scheme:** Letter Grade

Graduate Seminar in Animal Science

**ANS 6936 Graduate Seminar in Animal Molecular and Cell Biology 1-2 Credits, Max 2 Credits**

**Grading Scheme:** Letter Grade

Seminar attendance and 1-hour presentation on graduate research project.

**ANS 6939 Animal Molecular and Cellular Biology Journal Colloquy 1 Credit, Max 5 Credits**

**Grading Scheme:** S/U

Critical evaluation, presentation and discussion of recent scientific journal articles on a specified topic in cellular and/or molecular biology.

**ANS 6940 Supervised Teaching 1-5 Credits, Max 5 Credits**

**Grading Scheme:** Letter Grade

Helping students develop teaching skills in the animal sciences under the guidance of faculty member.

**ANS 6942 Supervised Extension in the Animal Sciences 1-3 Credits**

**Grading Scheme:** Letter Grade

Develops extension skills in the Animal Sciences under the guidance of faculty member.

**ANS 6971 Research for Master's Thesis 1-15 Credits**

**Grading Scheme:** S/U

Research for Master's Thesis

**ANS 7979 Advanced Research 1-12 Credits, Max 999 Credits**

**Grading Scheme:** S/U

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ANS 7980 Research for Doctoral Dissertation 1-15 Credits, Max 999 Credits**

**Grading Scheme:** S/U

Research for Doctoral Dissertation

**PCB 6816 Thermal Physiology 1 Credit**

**Grading Scheme:** Letter Grade

Exploring the processes by which homeotherms produce heat and regulate its exchange with the environment, and the consequences of thermal biology for animal production.