

# ANIMAL SCIENCE (ANSC)

## **ANSC\*1210 Principles of Animal Care and Welfare Winter Only (LEC: 4.5) [1.00]**

Students will be introduced to the major ethical theories that deal with humanity's duties to animals. The relationship of ethics to science will be discussed. Factors that contribute to the quality of life of animals will be considered and methods of assessing animal welfare will be described. Common causes of reduced animal welfare will be covered. The course will also deal with how different cultures approach animal welfare and attempt to regulate it.

**Prerequisite(s):** 1 of BIOL\*1050, BIOL\*1070, BIOL\*1080, BIOL\*1090

**Restriction(s):** Registration in BSAG, BSCH.ABIO or BBRM.EQM

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

## **ANSC\*2340 Structure of Farm Animals Winter Only (LEC: 3) [0.50]**

This course is an introduction to anatomy and carcass structure of farm animals. Consideration is given to the major systems in the body and the whole range of animal structure from molecular biology to commercial carcass grading. The course provides a basic understanding of factors such as meat tenderness, adipose development in the carcass, abnormalities of meat quality such as PSE pork and dark-cutting beef, and carcass composition.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 2 of BIOL\*1050, BIOL\*1070, BIOL\*1080, BIOL\*1090

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

## **ANSC\*3040 Animal Reproduction Winter Only (LEC: 3, LAB: 3) [0.50]**

This course takes a multi-species approach to understanding the basic principles of animal reproduction. Both the anatomy and the physiology of reproductive systems are explored in agricultural, companion and wildlife species with an emphasis on animals under human management. In addition, the development and application of assisted reproductive technologies (ART) for animal management are introduced.

**Prerequisite(s):** ANSC\*3080

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

## **ANSC\*3050 Aquaculture: Advanced Issues Fall Only (LEC: 3) [0.50]**

This course examines the fundamental principles and advanced interdisciplinary issues involved in the farming of aquatic organisms. The course will concentrate primarily on finfish species due to their worldwide commercial importance. Lectures will cover fish physiology, behaviour, nutrition, genetics, water quality, health and disease, reproductive techniques, economic, political and legal issues and various culture technologies. Students will analyze contemporary challenges facing the aquaculture industry through exercises requiring interdisciplinary knowledge, lateral thinking, creative problem solving and bridging science and technology to issues management.

**Prerequisite(s):** 8.00 credits in biology, including AGR\*2350 or ZOO\*2090

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

## **ANSC\*3080 Agricultural Animal Physiology Fall Only (LEC: 3, LAB: 1.5) [0.50]**

This course is an introduction to the physiology of domesticated farm animals. The course will emphasize homeostatic control of the major body systems. The lectures cover the nervous, cardiovascular, respiratory, urinary, immune, endocrine and reproductive systems. The lectures and laboratories are closely integrated.

**Prerequisite(s):** BIOC\*2580 or EQN\*2040

**Restriction(s):** Registration in BSC(Agr), BSC.ABIO or BBRM.EQM, Minor in Agriculture.

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

## **ANSC\*3090 Principles of Animal Behaviour Fall Only (LEC: 3) [0.50]**

This course deals with why vertebrates behave as they do (with particular emphasis on mammals and birds), covering the causation of behaviour (including learning, motivation, affective states, hormones, sensory processing, and neurobiological mechanisms); function (both immediate/proximate and adaptive/ultimate); ontogeny (including socialization and sensitive periods); and phylogeny (especially the influences of taxonomic group and domestication). This framework is then applied to the following aspects of animal behaviour: foraging, anti-predator responses, sleep, sociality, mating, parental behaviour, play, dispersal and territoriality, animal intelligence, and behavioural pathologies.

**Prerequisite(s):** ANSC\*1210

**Restriction(s):** ANSC\*4090. Restricted to students in BSCH.ABIO, BSAG.ANSC and BBRM.EQM.

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

## **ANSC\*3120 Introduction to Animal Nutrition Fall Only (LEC: 3, LAB: 2) [0.50]**

This course applies the principles of nutrition to the development of diets and feeding programs for the various species of animals of agricultural importance.

**Co-requisite(s):** NUTR\*3210

**Restriction(s):** Registration in BSC(Agr) or BSC.ABIO.

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

## **ANSC\*3170 Nutrition of Fish and Crustacea Winter Only (LEC: 3) [0.50]**

This course examines growth, digestive and metabolic processes, nutritional requirements and practical feeding programs for fish and crustaceans with an emphasis on those species used in aquaculture.

**Prerequisite(s):** NUTR\*3210

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

## **ANSC\*3180 Wildlife Nutrition Winter Only (LEC: 3) [0.50]**

This course is a study of the nutrition of avian and mammalian wildlife with emphasis on North American species and the role of nutrition in survival and population growth of wildlife in their natural habitat.

**Prerequisite(s):** NUTR\*3210

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*3270 Animal Disorders Winter Only (LEC: 3) [0.50]**

This course will highlight common causes of infectious, metabolic and psychological/neurological disorders of domestic and companion animals, and their potential impact on animal welfare and production. Disorders will be addressed in the context of pathophysiology, transmission, and prevention strategies involving environmental enrichment, vaccination, biosecurity, nutrition, and genetic selection.

**Prerequisite(s):** ANSC\*3080

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4010 Animal Welfare Judging and Evaluation Fall Only (LAB: 3) [0.50]**

This course provides senior level students with a structured opportunity to practice assessing animal welfare using scientific evidence. Students learn to present their evaluations in a logical and persuasive manner. They learn general criteria and approaches used to assess welfare and then apply that knowledge for assessment of four different species in practical settings.

**Prerequisite(s):** 15.00 credits including ANSC\*1210, ANSC\*3080

**Co-requisite(s):** ANSC\*3090 or ANSC\*4090

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4050 Biotechnology in Animal Science Fall Only (LEC: 3, LAB: 2) [0.50]**

The course will provide an overview of how biotechnology has impacted biomedical science and animal production. Important principles of recombinant DNA, DNA marker identification, stem cell biology, and generation of transgenic animals will be emphasized. The current challenges and potential opportunities in biotechnology will also be discussed.

**Prerequisite(s):** MBG\*2040 or MBG\*2400

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4090 Applied Animal Behaviour and Welfare Winter Only (LEC: 3) [0.50]**

Students will build upon their basic knowledge of animal behaviour and welfare for in-depth examination of how genetic selection, housing and management practices affect the behaviour, health and well-being of farmed and companion animals. Topics will include effects of domestication and artificial selection on behaviour and health traits, and how early experience affects adaptability, sexual and maternal behaviour. Emphasis is placed on the application of behavioural knowledge to the design of housing and management procedures that promote healthy, productive animals and good welfare.

**Prerequisite(s):** ANSC\*3080, ANSC\*3090

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4100 Applied Environmental Physiology and Animal Housing Winter Only (LEC: 3) [0.50]**

Basic concepts of environmental physiology and their application to animal housing and management will be introduced. The course will review the physics of heat flow, light and air quality as they relate to animal biology and health. Other aspects, such as the physical environment, that impact on animal health and well-being will be discussed.

**Prerequisite(s):** ANSC\*3080

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4230 Challenges and Opportunities in Dairy Cattle Production Fall Only (LAB: 6) [0.50]**

This course will provide senior level students with experience in working as a team to propose solutions to dairy cattle industry problems. Teams of students will critically assess dairy cattle-related businesses at the farm or industry level under the supervision of a faculty member.

**Prerequisite(s):** ANSC\*3080, ANSC\*3120, MBG\*3060

**Restriction(s):** Instructor consent required.

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4260 Beef Cattle Nutrition Winter Only (LEC: 3, LAB: 2) [0.50]**

This course is designed for students to evaluate problems in feeding beef cattle. Relevant aspects of digestion and metabolism of nutrients as well as current issues of feeding beef cattle and diagnosing nutritional deficiencies will be included.

**Prerequisite(s):** ANSC\*3120

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4270 Dairy Cattle Nutrition Fall Only (LEC: 3, LAB: 2) [0.50]**

Students will learn how nutrients are transformed from feed into milk and bodies of dairy animals. There will be an emphasis on feed management on farms and developing skills in formulation and evaluation of rations using computer models.

**Prerequisite(s):** ANSC\*3120

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4280 Poultry Nutrition Fall Only (LEC: 3) [0.50]**

This course is designed to evaluate basic and applied poultry nutrition. Students will learn nutrient requirements of poultry, feeding value of ingredients used in poultry feed formulation and how feeding affects the environment, growth, reproduction, health, and composition of poultry products for human consumption.

**Prerequisite(s):** ANSC\*3120

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4290 Swine Nutrition Fall Only (LEC: 3) [0.50]**

This course is designed to explore details of evaluating feed ingredients and formulating diets for swine. Students will use models to evaluate various aspects of nutrient partitioning for growth and reproduction in pigs.

**Prerequisite(s):** ANSC\*3120

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4350 Experiments in Animal Biology Winter Only (LAB: 6) [0.50]**

This course provides an opportunity for directed hands-on projects involving live animals and laboratory techniques. A set of selected projects will be provided by Animal Biosciences faculty within their broad fields of study.

**Prerequisite(s):** 14.00 credits including ANSC\*3080

**Restriction(s):** Restricted to students in BSCH.ABIO,BSAG.ANSC and BBRM.EQM. Instructor consent required.

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4470 Animal Metabolism Winter Only (LEC: 3) [0.50]**

Current concepts in whole animal metabolism and the quantitative techniques used to measure whole body metabolic kinetics will be presented. Tissue and organ specific biochemical processes will be integrated with whole body control mechanisms.

**Prerequisite(s):** NUTR\*3210

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4490 Applied Endocrinology Winter Only (LEC: 3) [0.50]**

This course examines the endocrine systems of farm animals and their applications to improve and monitor the production, performance, behavior and health of livestock. Considerable emphasis will be placed upon understanding how knowledge of endocrine regulation can be applied within animal production systems.

**Prerequisite(s):** ANSC\*3080

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4560 Pet Nutrition Fall Only (LEC: 3) [0.50]**

This course covers nutrient requirements, feed formulation and nutritional idiosyncrasies for dogs, cats, and exotic pets.

**Prerequisite(s):** NUTR\*3210

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4610 Critical Analysis in Animal Science Winter Only (LEC: 3) [0.50]**

Students are guided to independently research and critically review a topic of emerging importance in animal biosciences. Students select a topic in consultation with the instructor.

**Prerequisite(s):** 15.00 credits including 2.00 in ANSC or EQN

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4650 Comparative Immunology Winter Only (LEC: 3) [0.50]**

This course gives an overview of the immune defense mechanisms of domestic species, and to compare common and unique defense strategies developed for resisting microbial and viral infections. Topics include innate and acquired immunity, evolution of the immune system, immunoregulation, and the host response to pathogen invasion.

**Prerequisite(s):** ANSC\*3080

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4700 Research in Animal Biology I Fall and Winter (LEC: 6) [0.50]**

This course provides an opportunity for those students potentially interested in postgraduate studies to work with a committed faculty advisor to research a problem and design experiment(s) that address a solution. Evaluation of the course requires a substantive literature review and to write a research proposal. Selection of a faculty supervisor and approval from course coordinator must be obtained before course selection.

**Prerequisite(s):** 14.00 credits

**Restriction(s):** Restricted to students in BSC.ABIO and BSAG.ANSC. Instructor consent required.

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph

**ANSC\*4710 Research in Animal Biology II Fall and Winter (LAB: 6) [0.50]**

This course is a continuation of ANSC\*4700, Research in Animal Biology I. It allows more sophisticated projects to be undertaken or to provide an opportunity to build upon the work of ANSC\*4700. Evaluation of the course requires a greater emphasis on data analysis or experimental design than for ANSC\*4700. Selection of a faculty advisor and approval of course coordinator must be obtained before course selection.

**Prerequisite(s):** ANSC\*4700

**Restriction(s):** Restricted to students in BSC.ABIO and BSAG.ANSC. Instructor consent required.

**Department(s):** Department of Animal Biosciences

**Location(s):** Guelph