
ANSC*3270 - Animal Disorders

Winter 2026 Course Outline

Section: 01

Credits: 0.50

Land Acknowledgement: Guelph

The University of Guelph resides on the ancestral lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit. We recognize the significance of the Dish with One Spoon Covenant to this land and offer respect to our Anishinaabe, Haudenosaunee and Métis neighbours. Today, this gathering place is home to many First Nations, Inuit, and Métis peoples and acknowledging them reminds us of our important connection to this land where we work and learn.

Calendar Description

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

Course Description

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 stress mitigation, vaccination, biosecurity, nutrition, and genetic selection.

Lecture Schedule

MonWedFri 4:30pm-5:20pm in THRN*1200 (1/5 to 4/21)

Instructor Information

Niel Karrow

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Eduardo De Souza Ribeiro

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Elijah Kiarie

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Teaching Assistants

TBD

Additional Support

Lecture slides, and for Dr. Karrow's lectures, notes will be provided.

Learning Resources

- Scientific journal articles will be made available through Courselink.
- Lecture slides will be made available through Courselink.

Campus Resources

If you are concerned about any aspect of your academic program: Make an appointment with a Program Counsellor (<https://www.uoguelph.ca/uaic/programcounsellors/>) in your degree program. If you are struggling to succeed academically: There are numerous academic resources offered by the Learning Commons (<https://www.lib.uoguelph.ca/using-library/spaces/learning-commons/>) including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills.

Cost of Textbooks and Learning Resources

Textbook / Learning Resource	Required / Recommended	Cost
Not Applicable		

Course Learning Outcomes

- Students will attend three hours of lecture per week, and the following learning objectives will be assessed through two midterms, two assignments and a final exam. By the end of the course, students should be able to effectively communicate common causes of psychological, infectious, and metabolic disorders to the industry and general public, and propose prevention strategies to help reduce risk of these disorders affecting domestic and companion animals.
- Students will be expected to explain how animals resist and recover from physical, chemical and biological stress to remain healthy and productive, and how genetics and epigenetics contribute to variation in the stress response and to various disorders of domestic and companion animals. They will also be expected to distinguish differences in the neuroendocrine and immune sensory inputs and responses to physical, chemical and biological stress. Students will be expected to recall examples of different types of acute and chronic stressors provided in the instructor's course material, and to rationalize appropriate use of biomarkers to monitor stress levels in domestic and companion animals. Assessment will be carried out by midterm.
- Students will be expected to explain how psychological and developmental stress affects brain function, distinguish the different aetiologies of abnormal repetitive behaviour, recall and explain the symptoms of depression, and propose ways of objectively identifying similar conditions in non-human animals based on external symptoms and/or underlying mechanisms. Assessment will be carried out by midterm.
- Students will be expected to explain how antimicrobials are used to treat disease, and how sub-therapeutic use to promote livestock growth has contributed to the development of antimicrobial resistance (AMR). Students will also be expected to propose strategies to prolong therapeutic efficacy of existing antimicrobials, and be familiar with areas of research development to deal with AMR. Assessment will be carried out by midterm.
- Students will be expected to be familiar with recommended biosecurity standards for the Canadian dairy industry, and rationalize their importance for maintaining product quality and reducing risk of animal and zoonotic diseases. Students should be able to apply concepts of a farm-level biosecurity plan across various livestock sectors to identify important biosecurity control areas. Assessment will be carried out by midterm.
- Students will be expected to explain how genetic selection can be used to improve animal health, and to rationalize the potential benefits and risks of doing so by recalling examples provided in class. Assessment will be carried out by midterm.
- Students will be expected to apply basic knowledge of immunology to explain the concept of vaccination to enhance immunity. Students will be expected to rationalize the pros and cons of active and passive immunization strategies and their contribution to good biosecurity practices. Assessment will be carried out by midterm.
- Students will be introduced to the concepts of the interaction between nutrition and gastrointestinal health and function in poultry and swine. Specific emphasis will be placed on the effects of nutrients, feed ingredients and management on the stability of gut microbiota and consequences to animal health and productivity. Students will be expected to apply these concepts to explain how certain dietary components could be manipulated to manage gastrointestinal health without recourse to antimicrobial growth promoters. Assessment will be carried out by midterm and a final exam.
- Students will be expected to be familiar with the economic and welfare impact of respiratory tract and gastrointestinal disorders of domestic animals, and rationalize how physical, chemical, psychological and biological stressors contribute to risk of these disorders. Students will be expected to recall examples of disorders provided in class, and to understand how microbes and the host response contribute to pathophysiology and transmission. Lastly, students will be expected to apply concepts of biosecurity, vaccination, genetics, behavioral enrichment and nutrition to reduce risk respiratory tract and gastrointestinal disorders. Assessment will be carried out by final exam.
- In the section of "Metabolic Disorders and Infectious Diseases in Ruminants", students will be expected to understand the main physiological and environmental factors affecting immune competence and susceptibility to disorders in ruminants. Students will be expected to have a holistic understanding of the main metabolic disorders and infectious diseases occurring in North America herds and their consequences for production. Students will be expected to explain the definitions, etiology, epidemiology, pathophysiology, and prevention strategies for the main subclinical and clinical disorders occurring in ruminants. In addition, students will be expected to explain the causes and the short- and long-term consequences of inflammation. Assessment will be carried out by a final exam.
- The causes of the nutritional related metabolic disorders in modern intensively reared poultry and swine will be introduced. Students will be expected to give examples of prevalent nutritional metabolic disorders, consequences to animal welfare and productivity and dietary approaches to overcome the disorder. Assessment will be carried out by final exam.

12. Students will be expected to create articles that summarize cutting-edge research reported in two scientific journal articles assigned by the course instructor. These assignments are designed to get you to interpret research data, and present novel findings of the research to the public. The article should contain an imaginative title that is student composed, a research hypothesis paraphrased by the student, an organization of background material required for the reader to understand the research topic, a brief summary of the research methodology, and an explanation of the novel research findings. The format of the article must be single-spaced text, Times New Roman 12 font with 1" margins. The article should be no longer than 500 words in length, and it should be divided into two columns; an abstract of two to three sentences should be included, which is not considered part of the word count. At least six references should be provided following the format of an example scientific article posted on Courselink. Students are encouraged to create images/figures if it helps to enhance the reader's understanding of the background material; however, they should reflect the student's own artwork and must contain a figure/table title, which is also not included in the word count.

Schedule of Topics and Assignments

Day	Date:	Activities	Due
Mon	2/16	Winter Break	
Wed	2/18	Winter Break	
Fri	2/20	Winter Break	
Fri	4/3	Holiday	

Teaching and Learning Activities

Lecture Content

1. Response to Physical, Chemical and Biological Stressors (**Karrow**)
2. Psychological Stress and Disorders (**TBD**)
3. Antimicrobials for Controlling Infections Disorders (**Karrow**)
4. Strategies to Enhance Animal Health and Reduce Antimicrobial Useage - Biosecurity, Genetic Selection, Enhancing immunity through vaccination (**Karrow**)
5. Strategies to Enhance Animal Health and Reduce Antimicrobial Useage - Interaction between nutrition and gut health, Feed strategies to promote a healthy microbiome (**Kiarie**)
6. Metabolic Disorders and Infection Diseases in Ruminants: Definitions, Etiology, Epidemiology, Pathophysiology and Prevention (**Ribeiro**)
7. Disorders of the Respiratory Tract: Pathophysiology, Transmission and Prevention (**Karrow**)
8. Disorders of the Gastrointestinal (GI) tract: Pathophysiology, Transmission and Prevention (**Karrow**)
9. Monogastric Metabolic Disorders: Pathophysiology and Prevention (**Kiarie**)

Assessment Breakdown

Description	Weighting (%)	Due Date
Assignment # 1	10%	Feb 9
Assignment # 2	10%	Mar 30
Midterm 1	25%	Jan 30
Midterm 2	25%	Mar 11
Final Exam	30%	TBD

Assessment Details

Assignment	
Assignment #1	10%
Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	
Assignment #2	10%
Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	
Midterm	
Midterm #1	25%
Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	
Midterm #2	25%
Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	
Exam	
Final Exam	30%
Please check WebAdvisor once Final Exam Date/Time/Location get listed	
Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	

Grading Schemes for Article Assignments

- 5% Title
- 5% Abstract
- 40% Background
- 5% Hypothesis
- 30% Methodology summary and novel research findings
- 5% References
- 10% Spelling and grammar

- Data Analysis Total: 25%**
- Data Analysis Assignment 1 (12.5%)
 - Data Analysis Assignment 2 (12.5%)

Online Final Exam (45%)

Scheme 2

Term Tests Total: 45%

- Best 2 term tests weighted 40%
- Worst term test weighted 5%

Data Analysis Assignments Total: 25%

- Best assignment weighted at 15%
- Worst assignment weighted at 10%

Online Final Exam (45%)

Last Day to Drop Course

The final day to drop Winter 2026 courses without academic penalty is the last day of classes: April 06

After this date, a mark will be recorded, whether course work is completed or not (a zero is assigned for missed tests/assignments). This mark will show on the student's transcript and will be calculated into their average.

Course Grading Policies

Submission of Assignments

each instructor will have their own policy

Late Assignment

each instructor will have their own policy

Standard Statements for Undergraduate Courses

Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-misconduct/>) is outlined in the Undergraduate Calendar.

Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability. Use of the SAS Exam Centre requires students to make a booking at least 10 days in advance, and no later than the first business day in November, March or July as appropriate for the semester. Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time. For students at the Guelph campus, information can be found on the SAS website. (<https://www.uoguelph.ca/sas/>)

Accommodation of Religious Obligations

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements.

See the Academic calendar for information on regulations and procedures for Academic Accommodations of Religious Obligations (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-accommodation-religious-obligations/>).

Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all undergraduate students except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in the Undergraduate Calendar - Dropping Courses (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/dropping-courses/>).

Email Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

Health and Wellbeing

The University of Guelph provides a wide range of health and wellbeing services at the Vaccarino Centre for Student Wellness (<https://wellness.uoguelph.ca/>). If you are concerned about your mental health and not sure where to start, connect with a Student Wellness Navigator (<https://wellness.uoguelph.ca/navigators/>) who can help develop a plan to manage and support your mental health or check out our mental wellbeing resources (<https://wellness.uoguelph.ca/shine-this-year/>). The Student Wellness team are here to help and welcome the opportunity to connect with you.

Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

Recording of Materials

Presentations that are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The Academic Calendars (<http://www.uoguelph.ca/registrar/calendars/?index>) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration. (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/>)