



ANSC*3270 Animal Disorders

Winter 2023

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - January 11, 2023

1 Course Details

1.1 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.

Pre-Requisites: ANSC*3080

1.2 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.

1.3 Timetable

Monday, Wednesday and Friday 9:30am-10:20 am MACN room 105.

Timetable is subject to change. Please see WebAdvisor for the latest information.

1.4 Final Exam

EXAM Tues. April 18th, 2023

11:30am - 1:30pm

Room: TBD

Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructional Support Team

Instructor: Elijah Kiarie
Email: ekiarie@uoguelph.ca
Telephone: +1-519-824-4120 x53746
Office: ANNU 226
Office Hours: Arrange by email

Instructor: Trevor DeVries
Email: tdevries@uoguelph.ca
Telephone: +1-519-824-4120 x54081
Office: ANNU 237
Office Hours: Arrange by email

Instructor: Eduardo De Souza Ribeiro
Email: eribeiro@uoguelph.ca
Telephone: +1-519-824-4120 x56516
Office: ANNU 137
Office Hours: Arrange by email

Course Co-ordinator: Niel Karrow
Email: nkarrow@uoguelph.ca
Telephone: +1-519-824-4120 x53646
Office: ANNU 123
Office Hours: Office hours will be held on Zoom 9:00 p.m.-10:00 p.m. Tuesdays

2.2 Teaching Assistants

Teaching Assistant (GTA): Kristen Lamers
Email: klammers@mail.uoguelph.ca
Office Hours: email to set up appointment
 (helping with midterm and exam preparation, marking assignment #1)

Teaching Assistant (GTA): Tess Altvater-Hughes
Email: altvatet@uoguelph.ca
Office Hours: email to set up an appointment
 (helping with midterm and exam preparation, marking assignment #2)

2.3 Netiquette Expectations

Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services

- Attempting to compromise the security or functionality of the learning management system
 - Sharing your user name and password
 - Recording lectures without the permission of the instructor
-

3 Learning Resources

3.1 Additional Resources

Course Resources (Other)

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

3.2 Course Technology and Technical Support

System and Software Requirements

This course will use a variety of technologies including;

- CourseLink (main classroom)
- Zoom
- Respondus LockDown Browser

To help ensure you have the best learning experience possible, please review the list of system and software requirements.

<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>

CourseLink System Requirements

You are responsible for ensuring that your computer system meets the necessary system requirements. Use the browser check tool to ensure your browser settings are compatible and up to date. (Results will be displayed in a new browser window).

<http://spaces.uoguelph.ca/ed/system-requirements/>
<https://courselink.uoguelph.ca/d2l/systemCheck>

CourseLink

This course is being offered using CourseLink (powered by D2L's Brightspace), the University of Guelph's online learning management system (LMS). By using this service, you agree to comply with the University of Guelph's Access and Privacy Guidelines. Please visit the D2L website to review the Brightspace privacy statement and Brightspace Learning Environment web accessibility standards.

<http://www.uoguelph.ca/web/privacy/> <https://www.d2l.com/legal/privacy/>
<https://www.d2l.com/accessibility/standards/>

Technical Support

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support.

Email: courselink@uoguelph.ca

Tel: 519-824-4120 ext. 56939 Toll-Free (CAN/USA): 1-866-275-1478

Support Hours (Eastern Time):

Monday thru Friday: 8:30 am–8:30 pm

Saturday: 10:00 am–4:00 pm

Sunday: 12:00 pm–6:00 pm

Zoom

This course will use Zoom for lectures. Check your system requirements to ensure you will be able to participate.

<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>

3.2 Technical Skills

As part of your learning experience, you are expected to use a variety of technologies for assignments, lectures, teamwork, and meetings. In order to be successful in this course you will need to have the following technical skills:

- Manage files and folders on your computer (e.g., save, name, copy, backup, rename, delete, and check properties);
- Install software, security, and virus protection;
- Use office applications (e.g., Word, PowerPoint, Excel, or similar) to create documents;
- Be comfortable uploading and downloading saved files;

- Communicate using email (e.g., create, receive, reply, print, send, download, and open attachments);
- Navigate the CourseLink learning environment and use the essential tools, such as Dropbox, Quizzes, Discussions, and Grades (the instructions for this are given in your course);
- Access, navigate, and search the Internet using a web browser (e.g., Firefox, Internet Explorer); and
- Perform online research using various search engines (e.g., Google) and library databases.

3.2 Library Access

As a student, you have access to the University of Guelph's library collection, including both physical and electronic materials. For information on checking out or couriering physical library items, accessing electronic journals and returning items to the library, visit the library's website.

If you are studying off campus and would like to access the library's electronic resources, use the Off Campus Login and login using your Single Sign On credentials or using your last name and library barcode.

<https://www.lib.uoguelph.ca/>

<https://www.lib.uoguelph.ca/campus-login>

4 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.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.

7. 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.
8. 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.
9. 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.
10. 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.
11. 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 Courouselink. 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.

4.2 Marking Scheme

Marking Scheme for Article Assignments

5% Title

5% Abstract

40% Background

5% Hypothesis

30% Methodology summary and novel research findings

5% References

10% Spelling and grammar

5 Teaching and Learning Activities

5.1 Lecture

Topics: 1. Response to Physical, Chemical and Biological Stressors (Karrow)

- Response to stress
- The neuroendocrine stress response
- The immune response to microbial stressors
- Genetics and epigenetics of stress
- Responses to stress: the good, bad and ugly

Topics: 2. Psychological Stress and Disorders (DeVries)

- Psychological stressors
- Mental health/psychiatric issues
- Prevention/treatment

Topics: 3. Antimicrobials for Controlling Infectious Disorders (Karrow)

- Historical usage of antimicrobials for growth promotion and disease prevention
- Consequences of antimicrobial usage

Topics: 4. Strategies to Enhance Animal Health and Reduce Antimicrobial Usage (Karrow)

- A. Biosecurity
- B. Genetic selection

- C. Enhancing immunity through vaccination

Topics:

5. Strategies to Enhance Animal Health and Reduce Antimicrobial Usage (Kiarie)

- A. Interaction between nutrition and gut health
- B. Feed strategies to promote a healthy microbiome

Topics:

6. Metabolic Disorders and Infectious Diseases in Ruminants: Definitions, Etiology, Epidemiology, Pathophysiology and Prevention (Ribeiro)

- Susceptibility to Diseases in Ruminants
- Energy Metabolism and Ketosis
- Metabolism of Ca and Hypocalcemia
- Rumen Acidosis Complex
- Bacterial infections and clinical diseases – uterine diseases and mastitis
- Consequence of inflammation
- Health Management of Dairy Calves

Topics:

7. Disorders of the Respiratory Tract: Pathophysiology, Transmission and Prevention (Karrow)

- Viral and bacterial complex disorders

Topics:

8. Disorders of the Gastrointestinal (GI) Tract:

Pathophysiology, Transmission and Prevention (Karrow)

- Viral and bacterial disorders
- Parasite disorders

Topics:9. Monogastric Metabolic Disorders: Pathophysiology and Prevention (Kiarie)

- Cardiovascular ailments
- Fatty liver and kidney disorders
- Musculoskeletal disorders

6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Course Assignments and Tests	0
Midterm #1	20
Midterm #2	25
Article #1	10
Article #2	15
Final Exam	30
Total	100

6.2 Assessment Details

Course Assignments and Tests (0%)

Schedule	Topic	Instructor	Date	% of Final Mark	Learning Outcomes Assessed
First class	1. Response to Stressors	Karrow	Jan 9		1
	1. Response to Stressors	Karrow	Jan 11		1
	1. Response to Stressors	Karrow	Jan 13		1
	1. Response to Stressors	Karrow	Jan 16		1
	1. Response to Stressors	Karrow	Jan 18		1
	1. Responses to Stressors	Karrow	Jan 20		1
	1. Responses to Stressors	Karrow	Jan 23		2
	3. Antimicrobials	Karrow	Jan 25		3
	3. Antimicrobials	Karrow	Jan 27		3
	2. Psychological Stress and Disorders	DeVries	Jan 30		2

Schedule	Topic	Instructor	Date	% of Final Mark	Learning Outcomes Assessed
	4A. Biosecurity	Karrow	Feb 1		4
	4A. Biosecurity	Karrow	Feb 3		4
	4B. Genetic selection	Karrow	Feb 6		5
	4B. Genetic selection	Karrow	Feb 8		5
Midterm 1		Karrow/ DeVries	Feb 10	20	1-3
	4C. Vaccination	Karrow	Feb 13		6
	4C. Vaccination	Karrow	Feb 15		6
	5A. Concepts of AGP in monogastrics	Kiarie	Feb 17		7
	5A. Nutrition and gut health in monogastrics	Kiarie	Feb 27		7
	5B. Feeding the microbiome I	Kiarie	Mar 1		7

Schedule	Topic	Instructor	Date	% of Final Mark	Learning Outcomes Assessed
	5B. Feeding the microbiome II	Kiarie	Mar 3		7
Midterm 2		Kiarie/ Karrow	Mar 6	25	4-7
	6. Susceptibility to diseases in ruminants	Ribeiro	Mar 8		9
	6. Energy metabolism and Ketosis	Ribeiro	Mar 10		9
	6. Metabolism of Ca and Hypocalcemia	Ribeiro	Mar 13		9
	6. Rumen Acidosis Complex	Ribeiro	Mar 15		9
	6. Uterine Diseases and Mastitis	Ribeiro	Mar 17		9
	6. Consequences of Inflammation	Ribeiro	Mar 20		9

Schedule	Topic	Instructor	Date	% of Final Mark	Learning Outcomes Assessed
Article #1 due	6. Health Management of Dairy Calves	Ribeiro	Mar 22	10	9, 11
	7. Respiratory disorders	Karrow	Mar 24		8
	7. Respiratory disorders	Karrow	Mar 27		8
	8. GI disorders	Karrow	Mar 29		8
	8. GI disorders	Karrow	Mar 31		8
	9. Metabolic disorders 1	Kiarie	Apr 3		10
	9. Metabolic disorders 2	Kiarie	Apr 5		10
Article #2 due	10. Last lecture	Karrow	Apr 10	15	11

Final examination Tues. April 18, 2023, 11:30am - 1:30pm, Location: TBD. Please confirm details on WebAdvisor.

Final exam weighting: 30% (Learning outcomes assessed 7, 8, 9, 10)

Midterm #1 (20%)

Date: Fri, Feb 10

Learning Outcome: 1, 2, 3

Midterm #2 (25%)

Date: Mon, Mar 6

Learning Outcome: 4, 5, 6, 7

Article #1 (10%)

Date: Wed, Mar 22

Learning Outcome: 11

Article #2 (15%)

Date: Mon, Apr 10

Learning Outcome: 11

Final Exam (30%)

Date: Tue, Apr 18, 11:30 AM - 1:30 PM, TBD

Learning Outcome: 7, 8, 9, 10

7 Course Statements

7.1 Grading Policies

The article (i.e. e-copy submitted into Dropbox on Courselink) is due at the beginning of the class scheduled above. Students submitting late assignments will receive a 5% late penalty per day.

7.2 Course Policy on Group Work

While students are encouraged to participate in an individual-and group-learning environment to better understand the course material, all assignments must reflect the work of each individual student.

7.3 Course Policy regarding use of electronic devices and recording of Lectures

Since electronic recording of classes is useful for reviewing course material, it will be allowed with the consent of the course instructor. These recordings are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

7.4 Dropbox Submissions

Assignments should be submitted electronically via the online **Dropbox** tool. When submitting your assignments using the **Dropbox** tool, do not leave the page until your assignment has successfully uploaded. To verify that your submission was complete, you can view the submission history immediately after the upload to see which files uploaded successfully. The system will also email you a receipt. Save this email receipt as proof of submission.

Be sure to keep a back-up copy of all of your assignments in the event that they are lost in transition. In order to avoid any last-minute computer problems, your instructor strongly recommend you save your assignments to a cloud-based file storage (e.g., OneDrive), or send to your email account, so that should something happen to your computer, the assignment could still be submitted on time or re-submitted.

It is your responsibility to submit your assignments on time as specified on the Schedule. Be sure to check the technical requirements and make sure you have the proper computer, that you have a supported browser, and that you have reliable Internet access. Remember that **technical difficulty is not an excuse not to turn in your assignment on time**. Don't wait until the last minute as you may get behind in your work.

If, for some reason, you have a technical difficulty when submitting your assignment electronically, please contact your instructor or CourseLink Support.

<http://spaces.uoguelph.ca/ed/contact-us/>

8 University Statements

8.1 Email Communication

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

8.2 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. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

8.3 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 students (undergraduate, graduate and diploma) 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 their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

8.4 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.

8.5 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 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

8.6 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 encourages academic integrity. 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.

Undergraduate Calendar - Academic Misconduct
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

8.7 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.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

8.10 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).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campusess/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campusess/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
