

# EQN\*3250 - Equine Exercise Physiology

Fall 2024 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 considers the conversion of absorbed nutrients into metabolic fuels and the use of these substrates for work and heat production in horses. Practical application of theoretical knowledge develops an understanding for the basic physiological principles of muscle contraction and fatigue, thermoregulation, and energy utilization under differing exercise intensities, and how these principles can be applied to differential training strategies for equine athletes.

**Co-requisite(s):** ANSC\*3080

**Restriction(s):** Registration in BBRM.EQM, BSC(Agr) and BSC.ABIO This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. See the departmental website for more information.

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

## Lecture Schedule

MonWedFri 10:30am-11:20am in MINS\*103 (9/5 to 12/13)

## Lab / Seminar Sections

Day	Time	Location	Sections
Thursday	2:30PM - 5:20PM	ANNU 102	01
Tuesday	8:30AM - 11:20AM	ANNU 110	02
Friday	11:30AM - 2:20PM	ANNU 110	03
Thursday	11:30AM - 2:20PM	ANNU 110	04

## Instructor Information

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## TA Information

**Kailey Vanderboom**

Email: [vanderbk@uoguelph.ca](mailto:vanderbk@uoguelph.ca)

## Textbooks

Group	Title	Author	ISBN
Recommended	Equine Exercise Physiology: the science of exercise in the athletic horse	Kenneth Hinchcliff, Raymond Geor, Andris Kaneps	978-0-7020-2857-1

Recommended

Horse Anatomy: A Coloring Atlas

 Robert A Kainer , Thomas O  
McCracken

978-1-5777-9021-1

## Learning Resources

### 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.

### Field Trip Fees

For those courses in the Department of Animal Biosciences that have a field trip component - an associated fee for each field trip in the amount of \$20 will apply. Further details on how these fees will be collected will be provided in class/on CourseLink; along with a waiver form that will need to be completed prior to the trip(s).

## Course Learning Outcomes

1. Understand and explain basic principles of muscle contraction and relaxation within a context of energetic inputs and differential training regimens.
2. Define fundamental principles of energy demand, energy supply and energy utilization within muscle.
3. Articulate the integration of major physiological systems, including cardiovascular, respiratory, musculoskeletal and gastrointestinal systems within the context of the equine athlete.

## Schedule of Topics and Assignments

Day	Date:	Topic	Activities	Due
Fri	9/6	Introduction to exercise physiology: course overview	lecture; discussion	
Mon	9/9	Bones, tendons and ligaments: adaptive responses to exercise and training	lecture; discussion	
Wed	9/11	Bones, tendons and ligaments: adaptive responses to exercise and training	lecture; discussion	
Fri	9/13	Bones, tendons and ligaments: adaptive responses to exercise and training	lecture; discussion	
Mon	9/16	Articulating joints and cartilage	lecture; discussion	
Wed	9/18	Articulating joints and cartilage	lecture; discussion	
Fri	9/20	Articulating joints and cartilage	lecture; discussion	
Mon	9/23	Muscles: adaptive responses to exercise and training	lecture; discussion	
Wed	9/25	Muscles: adaptative responses to exercise and training	lecture; discussion	
Fri	9/27	Muscles: adaptive responses to exercise and training	lecture; discussion	
Mon	9/30	Respiratory physiology in exercise and training	lecture; discussion	
Wed	10/2	Respiratory physiology in exercise and training	lecture; discussion	
Fri	10/4	Respiratory physiology in exercise and training	lecture; discussion	

Mon	10/7	Cardiovascular function and oxygen transport: adaptations to exercise and training	lecture; discussion
Wed	10/9	Cardiovascular function and oxygen transport: adaptations to exercise and training	lecture; discussion
Fri	10/11	Cardiovascular function and oxygen transport: adaptations to exercise and training	lecture; discussion
Mon	10/14	Thanksgiving Holiday	
Wed	10/16	Metabolic and endocrine responses to exercise and training	lecture; discussion
Fri	10/18	Metabolic and endocrine responses to exercise and training	lecture; discussion
Mon	10/21	Gastrointestinal responses to exercise and training	lecture; discussion
Wed	10/23	Gastrointestinal responses to exercise and training	lecture; discussion
Fri	10/25	Gastrointestinal responses to exercise and training	lecture; discussion
Mon	10/28	Hydration and thermoregulation	lecture; discussion
Wed	10/30	Hydration and thermoregulation	lecture; discussion
Fri	11/1	Hydration and thermoregulation	lecture; discussion
Mon	11/4	Biomechanics	lecture; discussion
Wed	11/6	Biomechanics	lecture; discussion
Fri	11/8	Biomechanics	lecture; discussion
Mon	11/11	The role of inflammation in the training effect	lecture; discussion
Wed	11/13	The role of inflammation in the training effect	lecture; discussion
Fri	11/15	The role of inflammation in the training effect	lecture; discussion
Mon	11/18	Exercise testing in the field	lecture; discussion
Wed	11/20	Exercise testing in the field	lecture; discussion
Fri	11/22	Exercise testing in the field	lecture; discussion
Mon	11/25	Recent advances in equine exercise physiology	lecture; discussion
Wed	11/27	Recent advances in equine exercise physiology	lecture; discussion
Fri	11/29	Ethics in equine sport and social license to operate	lecture; discussion Last class

## Lab / Seminar Schedule

### Week 2 (Sept 15): Lower limb dissection

Lab #1

Location: TBA

Activity: Students will work in groups to visually evaluate dissection specimens of equine lower limbs, identifying and assessing relevant anatomical structures.

Assignment: A short lab assignment will be due at the end of the lab period based on the lab activity.

### **Week 3 (Sept 22): Equine muscles and joints**

Lab #2

Location: Equine Sports Medicine Building.

Activity: Students will evaluate how muscle groups and joints activate together on live horses during different gaits.

Assignment: A short lab assignment will be due at the end of the lab period based on the lab activity.

### **Week 4 (Sept 29) \*QUIZ #1\* NO LABS**

QUIZ 1 (topic wk 1-3).

Students will be responsible for completing their quiz the Friday of this week between 830 AM - 11:59 PM.

### **Week 5 (Oct 6): Heart data workshop**

Lab #3

Location: Scheduled lab space

Activity: Current equine heart monitoring research will be presented. Students will be provided with a small dataset they will be expected to work with during the lab.

Requirements: Students will be required to bring laptops to this lab.

Assignment: A short lab assignment will be due at the end of the lab period based on the lab activity.

### **Week 6 (Oct 13) \*THANKSGIVING\* NO LABS**

No labs this week

Enjoy some extra time!

### **Week 7 (Oct 20): \*QUIZ #2\* NO LABS**

QUIZ 2 (topic wk 4-6).

Students will be responsible for completing their quiz the Friday of this week between 830 AM - 11:59 PM.

### **Week 8 (Oct 27): Biomechanics data workshop**

Lab #4

Location: Scheduled lab space

Activity: Current equine biomechanics research will be presented. Students will be provided with a small dataset they will be expected to work with during the lab.

Requirements: Students will be required to bring laptops to this lab.

Assignment: A short lab assignment will be due at the end of the lab period based on the lab activity.

### **Week 9 (Nov 3): Field trip to Arkell equine research station \*\*OPTIONAL TRIP\*\***

Lab #5

Location: Students taking the bus will be expected to meet at ANNU North Loading Dock 10min prior to the start of their lab. Students driving will be expected to leave for the research station from the University at the start time of their lab.

Activity: A tour of the University of Guelph Equine Research Station located on Arkell Road will be provided.

Assignment: A short lab assignment will be due at the end of the lab period based on the lab activity. For students unable to travel to the research station an alternative assignment will be provided online. Students will be expected to submit the assignment at the end of their scheduled lab time.

### **Week 10 (Nov 10): \*QUIZ #3\* NO LABS**

QUIZ 3 (topic wk 7-9).

Students will be responsible for completing their quiz the Friday of this week between 830 AM - 11:59 PM.

## Week 11 (Nov 17): Veterinary lameness evaluation

Lab #6

Location: Equine Sports Medicine Building.

Activity: Students will learn about clinical veterinary lameness evaluations through discussion and demonstrations.

Assignment: A short lab assignment will be due at the end of the lab period based on the lab activity.

## Week 12 (Nov 24): \*LAST WEEK OF CLASSES\* NO LABS

No labs this week!

Happy end of the semester!

### NOTES RE. LABS

1. All quizzes will be held ONLINE via the Courselink 'Quizzes' tool. You do not have to come to campus to complete your quiz. The quiz will open at 8:30 AM the Friday of Quiz Week and close 11:59 PM that day.
2. If you are taking the bus on a field trip, there is a \$20 per student fee that will be collected as you get onto the bus.
3. All field trips will leave via bus from the ANNU North Loading Dock. Bus will leave at the start of your lab time SHARP, so don't be late! You may drive and/or car pool if you prefer.

## Assessment Breakdown

Description	Weighting (%)	Due Date
Lab assignments	15%	End of each lab
Quiz #1	15% *lowest score dropped	Fri Oct 4
Quiz #2	15% *lowest score dropped	Fri Oct 25
Quiz #3	15% *lowest score dropped	Fri Nov 15
Final Exam	25%	Thur Dec 12, 2:30 PM
First Assignment	10%	Fri Oct 18 (11:59 PM)
Second Assignment	20%	Fri Nov 29 (11:59 PM)

## Assessment Details

### Assignment

#### Lab assignments

Course Learning Outcomes Assessed: 3

15%

### Quizzes

#### Quiz #1

Course Learning Outcomes Assessed: 1, 2, 3

15%

#### Quiz #2

Course Learning Outcomes Assessed: 1, 2, 3

15%

#### Quiz #3

Course Learning Outcomes Assessed: 1, 2, 3

15%

### Exam

#### Final Exam

Course Learning Outcomes Assessed: 1, 2, 3

25%

## Assignment

### First Assignment

Course Learning Outcomes Assessed: 3

10%

### Second Assignment

Course Learning Outcomes Assessed: 3

20%

## Final Exam

Date: Dec 12

Time: Th 2:30pm-4:30pm

Location: TBA *Please see Web Advisor closer to the date of scheduled final for location.*

To understand rules and regulations regarding Examinations students are encouraged to read Student's Responsibilities (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/examinations/>)

If the student is unable to meet the final exam requirements due to medical, psychological or compassionate circumstances they are encouraged to review Student's Responsibilities in the Academic Consideration, Appeals and Petitions (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/>) section of the Academic Calendar.

Final exam will be provided online via Courselink during the designated exam time slot.

## Last Day to Drop Course

The final day to drop Fall 2024 courses without academic penalty is the last day of classes: November 29

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

*Late assignments will receive a 10% per day reduction for a maximum of 3 days past the due date. After 3 days, the assignment will not be accepted and will be given a grade of 0.*

### University of Guelph Grading Rubric

*Students are encouraged to review the University of Guelph Grading Procedures outlined below to understand assessments in this course. This and additional information can be found on the university website (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/grades/>).*

**80 - 100 (A) Excellent.** An outstanding performance in which the student demonstrates a superior grasp of the subject matter, and an ability to go beyond the given material in a critical and constructive manner. The student demonstrates a high degree of creative and/or logical thinking, a superior ability to organize, to analyze, and to integrate ideas, and a thorough familiarity with the appropriate literature and techniques.

**70 - 79 (B) Good.** A more than adequate performance in which the student demonstrates a thorough grasp of the subject matter, and an ability to organize and examine the material in a critical and constructive manner. The student demonstrates a good understanding of the relevant issues and a familiarity with the appropriate literature and techniques.

**60 - 69 (C) Acceptable.** An adequate performance in which the student demonstrates a generally adequate grasp of the subject matter and a moderate ability to examine the material in a critical and constructive manner. The student displays an adequate understanding of the relevant issues, and a general familiarity with the appropriate literature and techniques.

**50 - 59 (D) Minimally Acceptable.** A barely adequate performance in which the student demonstrates a familiarity with the subject matter, but whose attempts to examine the material in a critical and constructive manner are only partially successful. The student displays some understanding of the relevant issues, and some familiarity with the appropriate literature and techniques.

**0 - 49 (F) Fail.** An inadequate performance.

## 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/>)