

# **EQN\*4020 – Advanced Equine Nutrition**

Winter 2026 Course Outline

Section: 01

Credits: 0.50

Edited and improved using AI tools to enhance student understanding.

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## **Calendar Description**

This course focuses on the nutrition of horses at peak levels of performance or endurance. The use of real-world, case-study scenarios allows for the evaluation of practical feeding programs across a range of equine performance situations. Prerequisite(s): EQN\*2050 or NUTR\*3210

Department(s): Department of Animal Biosciences

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## **Course Description**

A course in which students will learn about nutrient requirements and nutritional idiosyncrasies of horses, formulation and manufacturing of horse feed and supplements, and be introduced to the principles of clinical nutrition of horses and important health issues that are related to nutrition and/or treated through nutritional approaches.

Students should have an established understanding of the general principle of animal nutrition and physiology. The material in the course will build on this background to enhance the understanding of nutrient metabolism and requirements in performance horses.

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## **Lecture Schedule**

Tues/Thurs 1 pm – 2:20pm, ANNU 156

BLENDED FORMAT. Some lectures will be recorded and class time will be used to work through problems and calculations. These are identified in the course schedule.

A simple summary of the lecture schedule is:

Weeks 1–6: Digestive anatomy and physiology, feed ingredients and processing, behaviour or horses that affects ingestion, energy metabolism and carbohydrate metabolism

Weeks 6–10: Dietary protein, fat, vitamins and minerals

Weeks 10–12: Applying your knowledge to feeding horses

Week	Lecture Topic	Instructor
06-Jan	Introduction to course and how to read a scientific paper	Shoveller
08-Jan	Equine digestive anatomy and physiology	Shoveller
13-Jan	Feed ingredients and processing	Huber
15-Jan	Forage and Feed analyses	Huber
	<b>RECORDED LECTURE: Managing the diet of sport horses</b> <b>Dr. Priska Stahl, Madbarn</b>	Dr. Priska Stahl
20-Jan	Socioecology of horses	Shoveller
22-Jan	Feeding behaviour of horses	Shoveller
27-Jan	Equine energy metabolism	Huber
29-Jan	Calculations associated with predicting energy requirements and energy intake <b>In class help completing calculations and applying to understanding your horses diet</b>	Huber
3-Feb	Equine carbohydrate metabolism, Guest Lecturer: Dr. Priska Stahl, Madbarn	Dr. Priska Stahl
5-Feb	Calculations associated with predicting starch and fiber intake and how to adjust when feeding different horses	Dr. Priska Stahl
10-Feb	<b>MIDTERM</b> <b>**IN PERSON</b>	
12-Feb	<b>RECORDED LECTURE: Equine protein and amino acid metabolism and Equine protein and amino acid requirements and calculations associated with protein intake and amino acid sufficiency</b>  <b>In class will work through calculations putting energy, carbohydrate and protein metabolism together</b>	Huber
17-Feb	<b>READING WEEK/NO CLASSES</b>	

24-Feb	Equine lipid and fatty acid digestion and metabolism and requirements	Shoveller
26-Feb	<b>RECORDED LECTURE: Nutritionally related equine diseases</b>  <b>In class we will work through using different amounts of oils and what to consider</b>	Shoveller
03-Mar	Fat soluble vitamin metabolism, requirements and dietary sources	Shoveller
05-Mar	Water soluble vitamin metabolism, requirements and dietary sources	Shoveller
10-Mar	Macro-mineral digestion and metabolism	Huber
12-Mar	Mineral requirements and how to consider in formulation of diets and consideration of supplements	Huber
17-Mar	The importance of water and electrolytes and how to manage appropriately	Shoveller
19-Mar	Feeding horses at maintenance and performance horses, pregnant and lactating mares	Shoveller
24-Mar	<b>MIDTERM 2</b> <b>**IN PERSON</b>	
26-Mar	Feeding young horses and donkeys (tentative)	Huber
31-Mar	Group presentations	LAH/AKS

## Instructor Information

Anna Kate Shoveller, BSc, PhD, PAS  
Email: [ashovell@uoguelph.ca](mailto:ashovell@uoguelph.ca)

Lee-Anne Huber, BSc, MSc, PhD  
Email: [huberl@uoguelph.ca](mailto:huberl@uoguelph.ca)

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## Additional Support

Taylor Richards  
Email: [tricha16@uoguelph.ca](mailto:tricha16@uoguelph.ca)

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## Learning Resources

### Electronic Notes

Electronic copy of course slides, and additional material will also be posted on a weekly basis on the course website. Copies of course notes are not intended to be the sole source of information but guide an academic discussion on course material. Students are expected to utilize other materials, such as scientific literature and recommended textbooks to further enhance their learning.

### Additional Resources

None, but there are a number that will be valuable as you put together your assignments. These will be discussed in class, but please use the library and Web of Science/Google Scholar/Medline etc. There are also a myriad of books available that can build on your understanding. **Be cautious about website, even from professionals.**

Students are encouraged to follow up lecture material with reading. Some good texts and white papers have been added if you are interested in enhancing your learning.

### Course Website

This course is being offered using CourseLink (<https://courselink.uoguelph.ca/shared/login/login.html?target=%2fd2l%2fhome>), the University of Guelph's online learning management system. 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.

## **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= \$0**

## Course Level Learning Outcomes

1. Critical thinking and creative thinking: Inquiry of analysis, problem solving, creativity and breadth of understanding
2. Literacy: Information literacy, quantitative literacy, technological literacy, visual literacy
3. Communicating: Oral communication, written communication, reading comprehension, integrative communication
4. Professional and ethical behaviour: Teamwork, ethical reasoning, leadership, personal organization, and time management

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## Assessment Details

### Assessment Breakdown

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Midterm exam #1	February 10th	25%	1, 2, 3, and 4
Midterm exam #2	March 24	25%	1, 2, 3, and 4
Formulation assignment 1 and 2	#1- February 27, no mark deduction until 9am March 2. #2- April 3rd, 9am.	30% (15% each)	1, 2
5 minute video	March 30, 9am.	20%	1, 2, 3, and 4

Assignments handed in late will receive a 10% per day of the week (includes Saturdays and Sundays) reduction in total marks available.

### Midterm examinations (50% total, 25% each)

In person on Thursday, February 10<sup>th</sup> and Thursday, March 24.

The exam will cover key information covered in lectures and meant to help students identify areas where they need to learn more deeply for their assignments. Questions will include: calculations, short answer, research review, and case examples.

## Assignments

### **Group establishment and agreement that will be tied to reflection (0%)**

Students are asked to find 3 or 4 other students and include at least one BBRM and one Animal Biology student. The remainder of the individuals can duplicate or include other degree programs. Ensuring individuals from different programs will bring a new understanding of ways of working, promote peer support networks outside of friend groups, and provide diversity of opinion to all assignments.

This group will complete the video together, at minimum, and are encouraged to work together throughout the semester. At minimum, if a student in a group cannot attend lecture, then the group should be responsible for providing notes and supporting that students' learning journey. Students are encouraged to seek input from Shoveller or Huber at the beginning of the semester to help you navigate your team work and to provide practical guidance. Students also must present a professional and positive mindset and seek to find learning opportunities and provide critical introspection on how they plan to tackle the class. Individual students should reflect on whether the group contract will support their personal learning objectives, those of the course and those of the university. This contract and introspection among group members should be revisited for the final personal reflection, but on an individual basis.

Course Learning Outcomes Assessed: 4

### **Assignment**

#### **Formulation assignment 1 and 2 (30% total, 15% each)**

Course Learning Outcomes Assessed: 1, 2, 3, 4

Students will have two formulation assignments which will build on each other, starting with simple calculations to determine intake of hay and nutrients and then building in complexity with an added concentrate to meet requirements of performance horses.

Assignments will be posted during the semester and further details will be provided as material is taught to students.

### **Group Presentation (20%)**

Students must contact the instructor(s) or teaching assistant prior to February with their group and a topic they will cover. Specifically, this semester groups will be reviewing equine diet supplements on the market.

This last assignment focuses on a topic of interest to the horse community. Students will work in groups of 3 or 4, and complete a review of commercial equine supplement by: reviewing the literature on the topic, complete an annotated bibliography for the papers that they will intend to use to support the information shared in the video. **Your annotated bibliography will help the instructors understand the information and breadth that you used and while not marked is central to providing accurate scientific information.** Students will be graded on depth of research

and accuracy of interpretation for the annotated bibliography and on the extent to which the video post provides an engaging and scientifically accurate format. Creativity is a plus! Videos will only be marked by your instructors and you are highly encouraged to talk to them as you work through your topic on a group basis.

Course Learning Outcomes Assessed: 1, 2, 3, 4

Your explanation must be:

- Scientifically accurate and supported by peer-reviewed references
- Communicated clearly for an upper-year biology audience
- Visually engaging (diagrams, animations, demonstrations, or footage encouraged)
- Well-organized and within the 5-minute limit

Creativity is welcome as long as scientific rigour is maintained.

Your group's mark will reflect your performance in the following areas:

1. Scientific accuracy and depth (30%)
2. Clarity of explanation of the metabolic idiosyncrasy (20%)
3. Strength of the link between metabolism and nutrition/feeding (30%)
4. Quality of communication, visuals, and video coherence (15%)
5. Referencing and professionalism (5%)

Deliverables

- A 5-minute video ( $\pm 10\%$ )
- An annotated bibliography with references in APA or journal-style formatting
- A brief (1-page) group contribution statement listing each member's role

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## Last Day to Drop Course

The final day to drop Winter 2026 courses without academic penalty is the last day of classes, April 6th. 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 Standard Statements

### Email Communication

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

### Grading Policies

Assignments will be graded in a timely fashion (within 10 days) and they will be returned to the students with personalized feedback and/or general feedback in class to highlight some of the shortcomings in the students' work or understanding of the concepts.

### **Group Work**

Assignments are expected to be unique work. All group members will receive the same grade for group work assignment unless otherwise approved by the Instructor(s). Any problems associated with group work should be brought to the attention of the instructor as soon as possible.

### **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 instructors 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 CourseLinkSupport.

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

### **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.

### **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 well-being 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.

### **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/>)