



ANSC*4270 - Dairy Cattle Nutrition

Fall 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

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

Lecture Schedule

TuTh 2:30pm-3:50pm in ANNU*156 (9/10 to 12/22)

The Lectures are on Tuesday and Thursday from 2:30pm-3:50pm in ANNU 156 from 9/10 to 12/3.

Lab / Seminar Schedule

Day	Time	Location
Wed	2:30pm-5:20pm	ANNU 156

Day	Time	Location	Sections
			01

Instructor Information

Michael Steele

Email: masteele@uoguelph.ca

Additional Support

Carmen Vanderwal, TA; email: cvande10@uoguelph.ca

Megan Atkinson, TA; email: matkin12@uoguelph.ca

Textbooks

Group	Title	Author	ISBN
Recommended	The Ruminant Animal Digestive Physiology and Nutrition	D.C. Church	
Recommended	Nutritional Ecology of the Ruminant	P. Van Soest	

Recommended	Nutrient Requirements of Dairy Cattle - 8th Edition	National Academies Press
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Cost of Textbooks and Learning Resources

Textbook / Learning Resource	Required / Recommended	Cost
The Ruminant Animal Digestive Physiology and Nutrition	Recommended	\$83.63 (Kindle on Amazon)
Nutritional Ecology of the Ruminant	Recommended	\$148.95 (Hardcover on Amazon)
Nutrient Requirements of Dairy Cattle - 8th Edition	Recommended	\$131.08 (Kindle on Amazon)

Students are advised that prices are often determined by the publisher or bookstore and may be subject to change.

Field Trip Fees

As per the guidelines from the department of Animal Biosciences, a \$20 fee applies to field trips incurred as part of this course. Efforts are underway to secure funding for these field trips. However, if unsuccessful you may be charged at the end of the semester.

Library Course Reserve (Ares)

For this course, you will be required to access course reserve materials through the University of Guelph McLaughlin Library. To access these items, select **Ares** on the navbar in CourseLink. Note that you will need your Central Login ID and password in order to access items on reserve. For further instructions on accessing reserve resources, visit [How to Get Course Reserve Materials \(https://www.lib.uoguelph.ca/find/course-reserves-ares/\)](https://www.lib.uoguelph.ca/find/course-reserves-ares/).

If at any point during the course you have difficulty accessing reserve materials, please contact the e-Learning Operations and Reserve Services staff at:

Tel: 519-824-4120 ext. 53621 | Email: libres2@uoguelph.ca | Location: McLaughlin Library, First Floor, University of Guelph

Course Learning Outcomes

1. Formulate and evaluate rations for lactating dairy cows on commercial dairy farms
2. Understand can calculate daily nutrient flows through a dairy cow
3. Express performance traits and efficiencies of the dairy enterprise numerically
4. Describe the role of common ingredients in ruminant diets
5. Use mathematical equations to predict animal performance
6. Interpret reports of nutrient analysis of feedstuffs and dairy rations
7. Recommend strategies to diagnose and prevent metabolic diseases of dairy cattle and calves
8. Recommend nutritional strategies to manipulate protein and fat content of milk produced on farm
9. Condition score dairy cows
10. Adjust animal rations for dry matter content of ingredients
11. Estimate nutrient content of feedstuffs and dairy rations from lab analyses of their nutrient contents

Schedule of Topics and Assignments

Week of	Topic	Activities	Due
9/10	Introduction	Introduce the field of dairy cattle nutrition and convince you to consider a future career as a dairy cattle nutritionist	
9/15	Ruminant Physiology Rumen Microbiology	Reviewing the basics of ruminant physiology and microbiology	

9/22	Fermentation Feedstuffs	Reviewing the basics of ruminal fermentation and common feed ingredients
9/29	Energy Protein	Learning the main concepts related to dairy cattle energy and protein nutrition
10/6	Protein/Fat Fat	Learning the main concepts related to dairy cattle protein and fat nutrition
10/13		Fall Study Break
10/15	Water	The forgotten nutrient will receive the attention it deserves
10/20	Minerals, Vitamins and Additives Transition Cow	Introducing the main concepts of mineral, vitamin and additive nutrition followed by the physiology and feeding strategies for transition dairy cattle
10/27	Transition Cow AMS	Introducing applied concepts related to transition cow and AMS nutrition
11/3	Calf Weaning	Focusing on calf nutrition, physiology and management
11/10	Heifer Veal/Dairy Beef	Focusing on heifer and veal/dairy beef nutritional management
11/17	Heifer/Dairy Beef Silage	Learning about heifers, dairy beef and silage - What a week!
11/24	Choose Your Own Adventure Dairy Goat Nutrition	Learning about new topics and an explore the exciting world of dairy goat nutrition
12/1	Choose Your Own Adventure Choose Your Own Adventure/Review for Final	Learning about new topics an a review for a final

Lab / Seminar Schedule

Lab 1 - Sep 16

We will explore the magical world of ruminant physiology

Lab 2 - Sep 23

We will visit a dairy farm and review the role of a dairy nutritionist on a farm.

Lab 3 - Sept 30

We will visit our first case study farm - very exciting indeed!

Lab 4 - Oct 7

In this lab you will visit the second case study farm - wow! Back to back farm tours!

Lab 5 - Oct 14

This lab will teach the art of ration balancing

Lab 6 - Oct 28

During this lab we will review your progress for the case study

Lab 7 - Nov 4

This week we will have an opportunity to re-visit your case study farm to collect the data for the finishing touches of your case study

Lab 8 - Nov 11

We will explore the exciting field of calf nutrition, physiology and managements. Please bring your seat belts as this lab will be fast pace!



Lab 9 - Nov 18

Meet with real life dairy nutritionists to prepare for your future job as a dairy nutritionist

Lab 10 - Nov 25

Presenting your case study recommendations to the dairy producer, nutritionist and class

Lab 11 - Dec 2

Presenting your case study recommendations to the dairy producer, nutritionist and class

Assessment Breakdown

Description	Weighting (%)	Due Date
Assignments #1	5%	Oct 21
Assignment #2	5%	Nov 11
Case Study Presentation	10%	Nov 25, Dec 2
Case Study Report	30%	Dec 3
Midterm	20%	Oct 21
Final	30%	TBD

Assessment Details

Midterm

Midterm

20

Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Exam

Final Exam

30

TBD - Please see WebAdvisor later in the semester for details regarding final exam date, time and location.

Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Lab Assignments

Lab Assignments

10

Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 10, 11

Case Study

Case Study

40

Course Learning Outcomes Assessed: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Grading Schemes

Lab Assignments (10%)

- Ration balancing assignment #1 (5% - Oct 21)
- Ration balancing assignment #2 (5% - Nov 11)

Case Study (40%)

- Case Study Presentation (10% - Nov 25 and Dec 2)
- Case Study Report (30% - Dec 3)

Midterm and Final (50%)

- Midterm (20% - Oct 21)
- Final (30% - TBD)

Last Day to Drop Course

The final day to drop Fall 2026 courses without academic penalty is the last day of classes: December 04

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

All assignment and exams will be submitted via courselink or in person.

Late Assignment

Late submissions are not accepted in this course.

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 business days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). 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/>)