



ANSC*4270 Dairy Cattle Nutrition

Fall 2023

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - August 31, 2023

1 Course Details

1.1 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.

Pre-Requisites: ANSC*3120

1.2 Course Description

Integration of theory and practical concepts in dairy cattle nutrition, digestion and metabolism through topics related to energy, protein, fats, mineral and additive feeding. The concepts taught in lectures will encompass topics relevant to current dairy nutrition, such as calf, heifer, dry cow, transition cow and lactation cow nutrition. Laboratories will involve the formulation of feeds and be case-study driven through collaboration with dairy farms.

1.3 Timetable

MCKN 031 - Lectures Mon, Fri 09:30 – 10:20

MINS 103 - Labs Wed 14:30 – 17:20

Room for labs may change week to week - check CourseLink for most up to date information

1.4 Final Exam

Friday December 8th, 2:30 pm - 4:30 pm. Date and time may change, please check Webadvisor for most current information.

2 Instructional Support

2.1 Instructional Support Team

Instructor:	David Innes
Email:	innesd@uoguelph.ca
Office:	ANNU 220
Office Hours:	In-person and online meetings by appointment.

2.2 GTA Information

GTA Name: ____

GTA Email: ____

2.3 Communicating with your Instructor

Communicating with Your Instructor

During the course, your instructor will interact with you on various course matters on the course website using the following ways of communication:

- **Announcements:** The instructor will use **Announcements** on the Course Home page to provide you with course reminders and updates. Please check this section frequently for course updates from your instructor.
- **Ask Your Instructor Discussion:** Use this discussion forum to ask questions of your instructor about content or course-related issues with which you are unfamiliar. If you encounter difficulties, the instructor is here to help you. Please post general course-related questions to the discussion forum so that all students have an opportunity to review the response. To access this discussion forum, select **Discussions** from the **Tools** dropdown menu.
- **Email:** If you have a conflict that prevents you from completing course requirements, or have a question concerning a personal matter, you can send your instructor a private

message by email. The instructor will attempt to respond to your email within 24 hours.

- **Video Call:** If you have a complex question you would like to discuss with your instructor, you may book a video meeting on Teams (or alternate platform being used by your instructor). Video meetings depend on the availability and are booked on a first come first served basis.
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3 Learning Resources

3.1 Recommended Resources

Recommend Textbooks (Textbook)

The Ruminant Animal Digestive Physiology and Nutrition.

Edited by D.C. Church, Waveland Press, Inc. 1993.

Nutritional Ecology of the Ruminant. P. Van Soest

Cornell Publishing, 1987.

Animal Nutrition Science (Free online through UoG Library)

Gordon McL. Dryden, 2008.

https://ocul-gue.primo.exlibrisgroup.com/permalink/01OCUL_GUE/1gg5hgs/alma9953140845305154

3.2 Additional Resources

NRC, 2001. Nutrient Requirements of Dairy Cattle, 7th rev. ed. National Academies Press, Washington, DC.

Selected publications and ppt slides provided.

3.2 Course Technology and Technical Support

System and Software Requirements

This course will use a variety of technologies including;

- CourseLink (main classroom)
- Zoom

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>

Course Technologies

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

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>

3.2 Field Trips (additional cost)

This course will have a field trip(s) associated with full participation in the course. There will be an additional fee for the bus trips - of \$10/per field trip - per student.

Details of how to pay for the field trip will be provided in class.

4 Learning Outcomes

Upon successful completion of the course, students will be able to:

4.1 Course Learning Outcomes

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

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

5 Teaching and Learning Activities

5.1 Class Schedule

The order of lectures and labs are subject to change. See CourseLink for any changes.

Date	Day	Lecture	Lab	Assessment
08-Sep	Fri	01 Introduction		
11-Sep	Mon	02 Rumen Physiology		
13-Sep	Wed		Ruminant Physiology Lab	
15-Sep	Fri	03 Rumen Microbiology		

18-Sep	Mon	04 Fermentation		
20-Sep	Wed		Visit Case Study Example Farm	
22-Sep	Fri	05 Feedstuffs		
25-Sep	Mon	06 Energy		
27-Sep	Wed		Visit Case Study Farm	
29-Sep	Fri	07 Protein		
02-Oct	Mon	08 Energy/Protein revision + Fat		
04-Oct	Wed		Intro to ration formulation	
06-Oct	Fri	09 Fat		
09-Oct	Mon	Holiday		
11-Oct	Wed		Ration formulation for Industry	
13-Oct	Fri	10 Minerals, Vitamins, Additives		Assign. 1 D
16-Oct	Mon	11 Water		
18-Oct	Wed		Midterm	Midterm
20-Oct	Fri	12 Transition Cow		
23-Oct	Mon	13 Transition Cow		
25-Oct	Wed		Case Study Review	
27-Oct	Fri	14 Calf nutrition		
30-Oct	Mon	15 Silage & Feed Management		
01-Nov	Wed		Precision feeding tour - Elora research	
03-Nov	Fri	16 Weaning		Assign. 2 D
06-Nov	Mon	17 Heifer		
08-Nov	Wed		TBA	
10-Nov	Fri	18 Global/Tropical Dairy Nutrition		
13-Nov	Mon	19 Automatic Milking Systems		
15-Nov	Wed		Career Roundtable with Dairy Nutritionists	
17-Nov	Fri	20 Feeding Behaviour		
20-Nov	Mon	21 Feeding for reduced emissions		
22-Nov	Wed		Case Study Presentations	
24-Nov	Fri	22 Beef on Dairy		
27-Nov	Mon	23 Precision & Futuristic feeding		
29-Nov	Wed		Case Study Presentations	
01-Dec	Fri	Review for Final		
8-Dec	Fri			Final Exam

6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Ration Balancing Assignment #1	5
Ration Balancing Assignment #2	5
Case Study	40
Midterm Exam	20
Final Exam	30
Total	100

6.2 Assessment Details

Ration Balancing Assignment #1 (5%)

Date: Fri, Oct 13

Learning Outcome: 1, 2, 3, 4, 5, 6, 7, 8, 10, 11

Introductory ration balancing exercise. Includes:

- 1) Manual estimation of energy requirements based on the equations taught in-class.

- 2) Formulating a lactating cow ration using the software taught in-class

Ration Balancing Assignment #2 (5%)

Date: Fri, Nov 3

Learning Outcome: 1, 2, 3, 4, 5, 6, 7, 8, 10, 11

Ration balancing tasks to compliment the requirements for case study. Includes:

- 1) Formulating rations for dry and lactating cows using provided feed analyses

2) Manual calculation of DCAD for transition cow diet

Case Study (40%)

Date: Fri, Dec 2

Case Study: The purpose of case studies is to apply scientific principles in real-life situations. All students will visit a dairy operation to complete an interview with the farmer and collect samples and data. The data will be analyzed in order to make recommendations, including an updated ration and management guidelines. The recommendations will be transferred to the farmer directly and presented in class to allow opportunity for discussion and feedback.

The 40% allocated for the case study will comprise of a dairy farm consultation report (30%) and a presentation (10%)

Midterm Exam (20%)

Date: Wed, Oct 18

Learning Outcome: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Final Exam (30%)

Date: Fri, Dec 8, 2:30 PM

Learning Outcome: 1, 2, 3, 4, 5, 6, 7, 8, 10, 11
Friday December 8th, 2:30 pm - 4:30 pm.

6.3 Dropbox Submissions

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/>

7 Course Statements

7.1 Netiquette Expectations

Netiquette Expectations

The course website is considered the classroom and the same protections, expectations, guidelines, and regulations used in face-to-face settings apply. Inappropriate 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; and
- Sharing your username and password
- Recording lectures without the permission of the instructor

7.2 Late Policy

If you choose to submit assignments to the **Dropbox** tool late, the full allocated mark will be reduced by **25% per day** after the deadline for the submission of the assignment to a limit of six days at which time access to the **Dropbox** folder will be closed. Late Graded Homework Assignments will NOT be graded if they are submitted after the solutions have been posted to CourseLink.

Extensions will be considered for medical reasons or other extenuating circumstances. If you require an extension, discuss this with the instructor as soon as possible and well before the due date. Barring exceptional circumstances, extensions will not be granted once the due date has passed. These rules are not designed to be arbitrary, nor are they inflexible. They are designed to keep you organized, to ensure that all students have the same amount of time to work on assignments, and to help to return marked materials to you in the shortest possible time.

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 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).
