



ANSC*6480 Advanced Animal Nutrition and Metabolism II

Winter 2022

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - January 08, 2022

1 Course Details

1.1 Calendar Description

A systematic review of key aspects of lipid, vitamin and mineral utilization and metabolism in farm animals.

1.2 Course Description

The course will help students develop the skills to be able to continuously improve their understanding of the function, utilization, and effects of nutrients and other dietary compounds, and the complex cellular mechanisms involved in nutrient metabolism.

The course is not meant to be comprehensive and systematic. Rather, it will be topic-based and explore recent advances in our understanding of the roles and metabolism of nutrients, the cellular mechanisms involved in nutrient utilization and the regulatory roles that different nutrients can play.

The course will stimulate students to take their learning experience to a higher level. It will present challenging material. It will also foster in the students the notion that whole-body functions of animal can be explained by appealing to cellular metabolism.

1.3 Timetable

Tuesdays 2:30-5:20PM initially online using Zoom and then in MCKN, Room 119A and by Zoom. This may be adjusted in accordance to the University of Guelph safety guidelines or as indicated by instructor on Courselink.

See Courselink for the link to Zoom meeting.

1.4 Final Exam

Not applicable

2 Instructional Support

2.1 Instructional Support Team

Instructor:	Dominique P Bureau
Email:	dbureau@uoguelph.ca
Telephone:	1-519-241-5533
Office:	ANNU 136 - Online
Office Hours:	Online and by appointment only.

2.2 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.

2.3 Netiquette Expectations

Online Behaviour

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
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3 Learning Resources

3.1 Other Resources

Electronic copy of instructor's reviews (copies of the PPT slides) and other material will also be posted on a weekly basis on the course website.

3.1 Course Technology and Technical Support

System and Software Requirements

This course will use a variety of technologies including;

- CourseLink (main classroom)
- Webex
- Zoom

- Teams (via Office 365)
- 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>

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

Teams (via Office 365)

Office 365 Teams is a collaboration service that provides shared conversation spaces to help teams coordinate and communicate information. This course will use Teams for one on one meetings with your Instructor. It is recommended that you use the desktop version of Teams. As a student you are responsible for learning how to use Teams and it's features.

For Teams Support visit the CCS website for more information.

<https://www.uoguelph.ca/ccs/services/office365/teams>

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>

3.1 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.

3.1 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 couriating 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

4.1 Course Learning Outcomes

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

1. Literacy: Students will be required to review scientific papers, comprehend and present ideas and research findings to the class orally, and write a concise review paper on their findings.
2. Understanding of Forms of Inquiry: A major theme of this course will pertain to the process whereby worthwhile research questions are identified and tackled.
3. Depth and Breadth of Understanding: This course will cross several conventional discipline boundaries within the broad areas of animal science, nutrition science and metabolism. Material pertinent to human nutrition or to biological chemistry may be presented as a mean to provide an expanded view of the field of nutritional sciences, the cellular and molecular mechanisms at play and the breath of techniques used. In addition, the students will be encouraged to go beyond material discussed in class.
4. Independence of Thought: Emphasis will be placed on identifying and understanding the

basis for current viewpoints. Inevitably, this results in challenges to orthodoxy.

5. Love of Learning: This course will be aimed at helping students to distinguish between education and training, and to ascribe value to both.

5 Teaching and Learning Activities

The course will be comprised of lectures (reviews) by the course instructor, presentations on cutting-edge research topics made by well-established scientists (guest lecturers), and discussions on the structural, metabolic and regulatory roles of lipids, vitamins, and minerals, as well as, issues related to the dietary supplies of these different nutrients. The instructors will provide a small number of scientific papers to read prior to each class.

5.1 Lecture

Tue, Jan 11

Topics:

Introduction to the course. Presentation of the Evaluation Scheme (0.5h)

Description of Individual Review Paper (general guidelines and expectations) (0.5h)

Instructor Review #1: Lipids, Vitamins and Minerals: Chemical Structures Classification and Properties. Roles and Digestion (1.5h)

Tue, Jan 18

Topics:

Instructor Review #2: Dietary Requirements for Lipids, Vitamins and Minerals : Concepts for Animal Nutritionists (1.5h)

Description of Team Project (General guidelines and expectations) (0.5h)

Selection of Individual Review Paper Topics and Discussion (0.5h)

Tue, Jan 25

Topics:

Instructor Review # 3: Lipids, Vitamins and Minerals as Structural Components (1.5h)

Journal Club 1: What to look for in a scientific paper? Review of a few original scientific articles led by instructor and guided writing exercise (1 h)

Tue, Feb 1

Topics:

Instructor Review #4: Lipids and Fat-Soluble Vitamins as Regulatory Molecules (1.5h)

Journal Club 2: Effective team work: Strategies and tools (1h)

Tue, Feb 8

Topics:

Instructor Review #5: Data Compilation, Mathematical Modeling and Artificial Intelligence in Precision Animal Nutrition (1.5h)

Journal Club 3: Review of a few nutritional modeling papers and guided mathematical modeling exercise (1h)

Tue, Feb 15

Topics:

Team Project Outline Presentations (1.5h)

Journal Club 4: Tips and approaches to the preparation of scientific and technical documents. Guided writing exercise (1h)

Tue, Feb 22

Topics: Reading Week - No Class

Tue, Mar 1

Topics: Guest Lecture: Dr. David Huyben. Title: Nutrition and Gut Microbiome

Tue, Mar 8

Topics: Team Projects Preparation : Time with instructor and other resource persons to work on the team projects

Tue, Mar 15

Topics: Team Projects Preparation : Time with instructor and other resource persons to work on the team projects

Tue, Mar 22

Topics: Student Presentations on Individual Review Paper (1.5h)

Time with instructor to discuss individual review paper or team project

Tue, Mar 29

Topics: Student Presentations on Individual Review Paper (1.5h)

Time with instructor to discuss individual review paper or team project

Tue, Apr 5

Topics: Showcase of Team Projects - Online - Open to public or Recorded?

6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Individual Review Paper Outline	10
Team Project Outline	10
Team Project Outline Presentation	10
Individual Review Paper Presentation	15
Journal Club Participation	10
Team Project Final Showcase	25
Individual Review Paper	20
Total	100

6.2 Assessment Details

Individual Review Paper Outline (10%)

Due: Mon, Jan 24, 11:59 PM, Courselink Dropbox

Learning Outcome: 1, 2, 4

Topic Selection, References and Outline

Team Project Outline (10%)

Due: Mon, Feb 7, 11:59 PM, Courselink Dropbox

Learning Outcome: 1, 2, 4

Sub-Projects Division and Outline

Team Project Outline Presentation (10%)

Due: Tue, Feb 15, In class or online

Learning Outcome: 1, 2, 3, 4, 5

Seminar

Individual Review Paper Presentation (15%)

Due: Various dates, In class or online

Learning Outcome: 1, 2, 3, 4, 5

Seminar

Journal Club Participation (10%)

Date: Various dates

Learning Outcome: 1, 4, 5

Team Project Final Showcase (25%)

Due: Tue, Apr 5

Learning Outcome: 1, 2, 3, 4, 5

Showcase

Individual Review Paper (20%)

Due: Fri, Apr 15, 11:59 PM, Courselink Dropbox

Learning Outcome: 1, 2, 3, 4, 5

Final draft of individual review paper

6.3 Individual Review Paper

Each student will be expected to write a review paper on a cutting-edge topic on a specific nutrient, which can either be a lipid, vitamin, mineral or related compound (e.g. nucleotides, choline, etc.). The topic has to be on a recently elucidated chemical, digestive, metabolic, cellular, or physiological mechanism or process related to this nutrient or molecule.

The preparation of the review will follow a series of step. Early in the semester, each student will submit a *short outline of the topic*, comprised of a tentative title and reference for three key scientific papers (preferably original research articles) and a short summary (300 words max) by the specified deadline. The students are **required** to consult with the instructor on the suitability of their topic in advance of the deadline. A list of suggested topics for individual research projects are provided in the Additional Course Information section of this course outline.

The student will be required to prepare a *seminar (10 min max.) on the specific topic of their review*. The seminar should provide a good overview of the topic but doesn't have to be exhaustive or fully representative of the entire review paper. The instructor and fellow students will provide feedback on the content and format of the seminar as well as on the presentation style of the student.

The student will prepare a *review paper* (10 pages max.) and submit it by 15 April 2022.

Guidelines on the format of the review will be provided by the instructor during the semester. The review should be as scientific and systematic as possible. The review should be written for a readership composed of your peers (i.e. graduate level animal nutritionists/ scientists).

6.4 Team Project

Teams of students (2-3 students/team) will work on a common project. The projects will be selected by the students in close consultation with the instructor. Each student will be responsible for a sub-project or specific tasks within each project. Student ***will be required to work in cooperation*** with the other students in the team. The instructor will provide general guidelines for the team project in class throughout the semester.

Each student will submit a *brief outline* (200 words max.) of their overall project and sub-project idea to the instructor for approval by the specified deadline. The team will then present their project to the instructor in a *short seminar* (15 min max.) at around the mid-point of the semester and seek feedback. At the end of the semester, the students will prepare a *showcase of their project* for the department and industry stakeholders. The students will play an active role in organizing and promoting the showcase. A significant part of the mark for the Team Project will be for the organization of the showcase.

6.5 Participation

Participation is an important part of the course. Four journal club/discussions will be organized throughout the semester. The instructor will lead the discussion and the students will be expected to have read documents/papers prior to class and actively participate in the discussion.

6.6 Seminars

Each student will be required to present two seminars: One with their team presenting their project and one on their individual review paper.

7 Course Statements

7.1 Grading Policies

Outlines will be graded in a timely fashion (within 10 days). The students will receive personalized feedback on their seminars to highlight some of the shortcomings in the students' work, presentation style, etc..

Outline and papers must be submitted by 11:59 pm on the due date. Assignments submitted late will be subjected to 10% penalty per day late.

7.2 Course Policy on Group Work

All individuals are expected to contribute equally to any team project/ task.

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

Electronic recording of classes is allowed with the consent of the instructor. When recordings are permitted they 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 recommends 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-campus/how-u-of-g-is-preparing-for-your-safe-return/>

- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

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