



ANSC*6480 Advanced Animal Nutrition and Metabolism II

Winter 2020

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - January 06, 2020

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

1.4 Final Exam

Not applicable

2 Instructional Support

2.1 Instructional Support Team

Instructor:	Dominique P Bureau
Email:	dbureau@uoguelph.ca
Telephone:	1-519-824-4120 x53668
Office:	ANNU 136
Office Hours:	By appointment

3 Learning Resources

3.1 Other Resources

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

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 (short reviews) by the course instructor, presentations on cutting-edge research topics made by well-established scientists (guest lecturers), and discussion of published scientific papers 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 7

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

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

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

Tue, Jan 14

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 21

Topics:

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

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

Tue, Jan 28

Topics:

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

Tue, Feb 4

Topics:

Journal Club: Review of scientific papers by students

Tue, Feb 11

Topics:

Guest Lecture: To be announced

Tue, Feb 18

Topics:

Reading week – No class

Tue, Feb 25

Topics:

Guest Lecture: To be determined

Tue, Mar 3

Topics:

Team Project Outline Presentations (60 min)

Instructor Review #5: Mathematical Modeling and Artificial Intelligence in Precision Animal Nutrition (60 min)

Tue, Mar 10

Topics:	Student Presentations on Individual Review Paper
Tue, Mar 17	
Topics:	Guest Lecture: To be determined
Tue, Mar 24	
Topics:	Team Project Showcase Preparation
Tue, Mar 31	
Topics:	Showcase of Team Project (2.5h) – Location to be determined.

6 Assessments

6.1 Assessment Details

Individual Review Paper Outline (10%)

Due: Tue, Jan 21

Learning Outcome: 1, 1, 1, 1, 1, 2, 4

Topic Selection, References and Outline

Team Project Outline (10%)

Due: Tue, Feb 4

Learning Outcome: 1, 1, 1, 1, 1, 1, 2, 4

Sub-Projects Division and Outline

Team Project Outline Presentation (10%)

Due: Tue, Mar 3

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

Seminar

Individual Review Paper Presentation (20%)

Due: Tue, Mar 10

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

Seminar

Journal Club (5%)

Date: Tue, Feb 4

Learning Outcome: 1, 1, 1, 1, 1, 4, 5

Individual Review Paper First Draft (5%)

Due: Tue, Mar 17

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

First rough draft of individual review paper

Team Project Final Showcase (20%)

Due: Tue, Mar 31

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

Individual Review Paper (20%)

Due: Fri, Apr 10

Learning Outcome: 1, 2, 3, 4, 5
Final draft of individual review paper

6.2 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 select one of the original scientific articles and lead a review / critique of this article in class in a journal club format. The student **will be required** to have this article approved by the instructor who will then make it available to the other students at least one week in advance of journal club.

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 an early draft on 17 March 2020 (for brief review by the instructor) and a final version by 14 April 2020. 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).

6.3 Team Project

A team project will be assigned to the students by the instructor. Each student will be responsible for a sub-project or task but ***will be required to work in cooperation*** with the other students. 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 sub-project idea to the instructor for approval by the specified deadline. The team will then present their project (and sub-projects) 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.

6.4 Participation

Participation is an important part of the course. The instructor will provide scientific papers to read and the students will be expected to have read them prior to class and actively participate in the discussion. In addition, the students are expected to actively participate in the planning of the showcase of team project that will be held at the end of the semester. The

student will be asked by the instructor to provide an appreciation of their participation.

6.5 Seminars

Each student will be required to present two seminars (one presenting a team project and one on their individual research project).

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..

Papers, projects and proposals must be submitted by 5 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.

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 book their exams at least 7 days in advance and not later than the 40th Class Day.

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>