



ANSC*3120 Introduction to Animal Nutrition

Fall 2019
Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 2.00 - September 04, 2019

1 Course Details

1.1 Calendar Description

This course applies the principles of nutrition to the development of diets and feeding programs for the various species of animals of agricultural importance.

Co-Requisites: NUTR*3210
Restrictions: Registration in BSC(Agr) or BSC.ABIO

1.2 Timetable

LEC Mon, Wed, Fri 9:30 AM - 10:20 AM ROZH 103 or ROZH 106
ANSC*3120*0101 (2657), LAB Mon 2:30 PM - 4:20 PM, ANNU 102
ANSC*3120*0102 (2658), LAB Tues 9:30 AM - 11:20 AM, ANNU 102
ANSC*3120*0103 (2659), LAB Wed 2:30 PM - 4:20 PM, ANNU 102
ANSC*3120*0104 (2660), LAB Thurs 9:30 AM - 11:20 AM, ANNU 102

ANSC*3120*0105 (2661), LAB Tues 2:30 PM - 4:20 PM, ANNU 102

1.3 Final Exam

Final Examination Date and Time: Friday, December 13 from 7:00 P.M. to 9:00 P.M.
Weight:45%

2 Instructional Support

2.1 Instructional Support Team

Instructor: Ira Mandell
Email: imandell@uoguelph.ca
Telephone: +1-519-824-4120 x53337

Office: ANNU 155
Office Hours: Tuesday from 4:30 to 5:30 PM or by appointment

Lab Co-ordinator: Heather Bailey
Email: hbailey@uoguelph.ca
Telephone: +1-519-824-4120 x58367
Office: ANNU 256

2.2 Teaching Assistants

Teaching Assistant: Kaitlyn Lawson
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Teaching Assistant: Jannelle Morrison
Email: jannelle@uoguelph.ca

Teaching Assistant: Felipe Henrique de Padua Santos
Email: fpaduada@uoguelph.ca

Teaching Assistant: Tianna Sullivan
Email: tsulli03@uoguelph.ca

3 Learning Resources

3.1 Recommended Resources

Recommended Texts (Textbook)

Following are texts on reserve which you may want to refer to if a concept(s) is(are) not clear:

Feeds & feeding by Perry, Cullison, and Lowrey

Animal nutrition by McDonald et al.

Applied animal nutrition by Peter Cheeke

Livestock feeds and feeding by Kellems and Church

Animal Nutrition Seventh Edition McDonald et al will be placed on CourseLink

Additional Costs (Equipment)

Coveralls/lab coats are encouraged for working with animals in the course.

3.2 Additional Resources

Other Resources (Other)

CourseLink will be used to distribute 1) distribute lecture outline notes, 2) answer questions from students that will be beneficial to the entire class, 3) provide a source of lab

information and group animal project data when available, 4) provide a source of lab handouts when a student has lost the handout that was distributed in the lab (this includes animal project assignments and feed formulation exercises), 5) as a source of the course and laboratory outlines, and 6) Midterm answer key, and 7) access to a video on the nylon bag trial. For the Friday, September 6th lecture, the lecture outline notes will be handed out in class. For lectures starting September 9th, students will have to print off their own copies of the lecture outlines. The lecture outlines are not full class notes. The purpose of the lecture outlines is to provide the student with the main topics of interest, major points, and discussion topics for a given lecture. Students will be provided with paper copies of animal project assignments and feed formulation exercises.

4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Introduce the principles of farm animal nutrition and identification of feed ingredients.
2. Introduce species and stage of production differences in nutritional requirements.
3. Introduce ration or diet formulation for farm animals.
4. Work together as a team to collect data and present findings.
5. Exercise critical thinking.
6. Integrate knowledge of diverse agricultural animal disciplines and sectors to identify local and global problems and to design solutions for animal production systems, the agricultural animal industry and society at large.
7. Acquire and develop relevant, practical, and theoretical skills based on the needs of the agricultural animal industry to support future employment and / or continued studies (e.g. graduate studies, veterinary medicine and care, professional certification).
8. Critically evaluate and accurately explain scientific information for problem solving and applications in animal production.
9. Demonstrate advanced, contemporary and relevant knowledge in animal nutrition, physiology, welfare, genetics and biotechnology.
10. Apply scientific methods and processes by formulating questions, designing investigations and generating, analyzing and interpreting data to draw conclusions and make evidence based decisions relevant to animal agriculture.
11. Critically evaluate ideas and arguments by gathering and integrating relevant information, assessing its credibility, and synthesizing evidence to formulate a

position.

12. Accurately and effectively communicate ideas, arguments and analyses, to a range of audiences, in graphic, oral and written form.
 13. Collaborate effectively as part of a team by demonstrating mutual respect, leadership, and an ability to set goals and manage tasks and timelines.
 14. Plan for professional growth and personal development within and beyond the undergraduate program.
 15. Acquire and develop relevant practical and theoretical skills to support continued studies (e.g. graduate studies, veterinary medicine, etc.) and/or potential employment (e.g. veterinary care, animal industry, zoological institutions, etc.).
 16. Generate and interpret scientific data using quantitative, qualitative and analytical methodologies and techniques.
 17. Interpret current scientific concepts and gaps in knowledge (and methods) in light of the historical development of a chosen discipline.
 18. Demonstrate knowledge encompassing genetics, nutrition, physiology and behavior and their interactions on the health and welfare of domesticated, companion and wildlife animal species.
 19. Apply contemporary research methods, skills and techniques to conduct independent inquiry in a chosen scientific discipline.
 20. Apply knowledge of nutrient metabolism to improve animal wellness and productivity.
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5 Teaching and Learning Activities

5.1 Lecture

Topics:

Lecture Content

- First Class on Friday, September 6th
- Overview of course and Review of Nutrients (water, carbohydrates, proteins/amino acids, lipids vitamins, minerals)
- Nutrient Analyses, Energy Systems, and Digestibility
- Species Differences in Anatomy (Gastrointestinal Tracts) and Digestion
- Basics of Ration Formulation
- Classification of Feedstuffs – Energy Sources
- Classification of Feedstuffs – Protein Sources
- Classification of Feedstuffs – Roughages

- Forage Harvesting
- Feed Additives
- Antinutritive Factors (Anti-quality components)
- Farm animal species nutrition lectures (3 lectures per species)(Companion Animal, Swine, Poultry, Dairy cattle)

5.2 Lab

Topics: Labs

The laboratory portion of ANSC 3120 includes 2 feed formulation (FF) assignments and 1 animal project report.

6 Assessments

6.1 Marking Schemes & Distributions

| Name | Scheme A (%) |
|------------------------------|--------------|
| Midterm | 30 |
| Feed Formulation Assignments | 15 |
| Animal Project Report | 10 |
| Final | 45 |
| Total | 100 |

6.2 Assessment Details

Midterm (30%)

Date: Sat, Oct 19

Learning Outcome: 1, 2, 3, 5, 6, 7, 9, 15, 17, 18

Questions will include multiple choice, short answer, and long essay questions. The midterm will cover lecture material from the start of the semester until the end of the Wednesday lecture on October 16. There will be no lab content on the midterm. A calculator may be required for the midterm and final examination.

Feed Formulation Assignments (15%)

Due: Lab section dependent from November 4th until November 28th

Learning Outcome: 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 15, 16, 18

The laboratory portion of ANSC 3120 is worth 25% of the total mark for the course and includes 2 feed formulation (FF) assignments and 1 animal project report.

Feed Formulation 1 is worth 10% of the final mark for the course while Feed

Formulation 2 is worth 5% of the final mark for the course. All students are required to complete 2 feed formulation assignments on an individual student basis.

Animal Project Report (10%)

Due: Mon, Nov 25

Learning Outcome: 1, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

All students will be involved in 2 animal projects which include a monogastric (swine or chick) growth performance trial and a nylon bag trial involving dairy cows. The animal projects are group efforts from data collection to submission of a final report with the exception that each student must complete a thorough peer evaluation for all members in his/her group. Data collection will be conducted such that each group collects a unique set of data which is shared with other groups in their lab section. Students should be aware that data collection and care and feeding of animals will take place outside of designated lab and lecture times. Each lab group will compile and tabulate data for both animal projects but will only be responsible for submission of a group lab report for one of the animal projects (each group decides which animal project that they would like to write up). There will be a mark component on the animal project report for compiling and tabulating data for the animal project that your group does not prepare a report for.

Final (45%)

Date: Fri, Dec 13, 7:00 PM - , 9:00 PM

Learning Outcome: 1, 2, 3, 5, 6, 7, 9, 15, 17, 18

The final exam will cover: 1) lecture material not covered on the midterm, 2) all principles of feed formulation and feedstuffs that are covered in the lab and 3) the animal projects. A calculator may be required for the midterm and final examination.

6.3 Additional Notes

Each lab group will decide which animal project report that they want to hand in for marking. Each lab group will be responsible for compiling and tabulating data for both animal projects. There will be a mark component on the animal project report for compiling and tabulating data for the animal project that your group does not prepare a report for.

7 Course Statements**7.1 Grading Policies**

Completion of both examinations (midterm and final) is required to receive credit for the course.

Examples of exam questions:

1) Multiple choice question:

Which of the following is (are) gluconeogenic volatile fatty acids?

- a) Butyrate
- b) Acetate
- c) Methane
- d) Acetate and butyrate
- e) None of the above

2) Short answer question: Name a gluconeogenic volatile fatty acid.

3) SHORT ESSAY QUESTION: What components are determined when you run a proximate analysis of feedstuffs based on the techniques developed in the 1800's. Discuss the limitations of each technique regarding the nutritional information that is provided. (5 to 7 sentences may be required to answer this question).

4) LONG ESSAY QUESTION: Outline the fate of ingested nitrogen in the ruminant. Include protein nitrogen, nonprotein nitrogen, and heat damaged protein in your discussion (this question may require up to a full page of writing to complete the answer).

For students who have missed an exam, we reserve the right to change the format of the exam for students who miss the scheduled midterm and final.

Late feed formulation assignments will have marks deducted:

Feed Formulation 1: 3.5-mark deduction will be levied to the assignment if handed in after 5 minutes have elapsed for the start of the Feed Formulation 2 lab

Feed Formulation 2: 1.75-mark deduction

7.2 Group Work

All students will be involved in 2 animal projects which include a monogastric (swine or chick) growth performance trial and a nylon bag trial involving dairy cows. The animal projects are group efforts from data collection to submission of a final report with the exception that each student must complete a thorough peer evaluation for all members in his/her group. Data collection will be conducted such that each group collects a unique set of data which is shared with other groups in their lab section. Students should be aware that data collection and care and feeding of animals will take place outside of designated lab and lecture times.

Each lab group will compile and tabulate data for both animal projects but will only be responsible for submission of a group lab report for one of the animal projects (each group decides which animal project that they would like to write up). The animal project report is worth 10% of the final mark for the course. Failure to compile and tabulate data for both animal projects will result in a 2.5-mark deduction on the animal project report that is submitted for grading. Failure to submit a proper peer evaluation will result in a 2.5-mark deduction from the animal project report mark.

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>
