

Course Outline Form: Fall 2017

General Information

Course Code: ANSC*3120

Course Title: Introduction to Animal Nutrition

Course 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.

Credit Weight: 0.5

Academic Department (or campus): Department of Animal Biosciences

Campus: Guelph

Semester Offering: Fall

Class Schedule and Location: LEC Mon, Wed, Fri 12:30 PM - 1:20 PM [MACN](#) 105

ANSC*3120*0101 (3767), LAB Mon 2:30 PM - 4:20 PM, [ANNU](#) 102

ANSC*3120*0102 (3768), LAB Tues 9:30 AM - 11:20 AM, [ANNU](#) 102

ANSC*3120*0103 (3769), LAB Wed 3:30 PM - 5:20 PM, [ANNU](#) 102

ANSC*3120*0104 (3770), LAB Thurs 9:30 AM - 11:20 AM, [ANNU](#) 102

Final Exam: Friday, December 08, 2017: 11:30 A.M. – 1:30 PM; Room TBA

Instructor Information

Instructor Name: Ira Mandell

Instructor Email: imandell@uoguelph.ca

Office location and office hours: Room 155 ANNU; Tuesday from 4:00 to 5:00 PM or by appointment

GTA Information

GTA Name: Joshua Devos

GTA Email: jdevos@uoguelph.ca

GTA Name: Steven Gee

GTA Email: gees@uoguelph.ca

GTA Name: Alisha Wornath - Vanhumbeck

GTA Email: awornath@uoguelph.ca

Lab Coordinator: Heather Bailey, Room 256A; hbailey@uoguelph.ca

Course Content

Course Learning Outcomes:

- 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.

Specific Course Learning Outcomes for B.Sc. (Agr) - Animal Science:

- 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.

Specific Course Learning Outcomes for B.Sc. Honours Major in Animal Biology:

- 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.

Lecture Content:

- 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)
 - Swine

- Poultry
- Dairy cattle
- Beef cattle

Midterm examination: Week of October 16th: date and time to be determined

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 Monday lecture on October 16. There will be no lab content on the midterm. A calculator may be required for the midterm and final examination.

Final examination: Friday, December 08, 2017: 11:30 A.M. – 1:30 PM.

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.

Labs:

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.**

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. The animal project report is worth 10% of the final mark for the course.

Seminars:

N/A

Course Assignments and Tests:

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Midterm Examination	Date, time, location to be determined	30	1, 2, 5, 6, 9, 17, 18, 20
Feed Formulation Assignments	Lab section dependent from November 9th until November 29 th	15	2, 3, 7, 9, 10, 14, 15, 17, 18, 20
Animal Project Report	Monday, November 20th	10	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
Final	Friday, December 08, 2017: 11:30 A.M. – 1:30 P.M.	45	1, 2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14, 15, 16, 18, 20

Additional Notes (if required):

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.

Final examination date and time:

Friday, December 08, 2017: 11:30 A.M. – 1:30 P.M.; Room TBA

Final exam weighting:

45% of the final mark for the course

Course Resources

Required Texts: There is no textbook required for this course.

Recommended Texts: 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

Lab Manual:

Not applicable.

Other Resources:

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 8th lecture, the lecture outline notes will be handed out in class. For lectures starting September 11th, 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.

Field Trips:

Not applicable.

Additional Costs:

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

Course Policies

Grading Policies:

Completion of both examinations (midterm and final) is required to receive credit for the course. The course will follow the [Undergraduate Grading Procedures found under Grades for VIII. Undergraduate Degree regulations and Procedures in the 2017-2018 undergraduate calendar.](#)

Both the midterm and final may include multiple choice, short answer, calculation, short essay, and long essay questions.

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

Course Policy on 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.

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

Electronic recording of classes is expressly forbidden without 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.

University Policies

Academic Consideration:

The University of Guelph is committed to supporting students in their learning experiences and responding to their individual needs and is aware that a variety of situations or events beyond the student's control may affect academic performance. Support is provided to accommodate academic needs in the face of personal difficulties or unforeseen events in the form of Academic Consideration.

Information on regulations and procedures for Academic Consideration, Appeals and Petitions, including categories, grounds, timelines and appeals can be found in [Section VIII \(Undergraduate Degree Regulations and Procedures\) of the Undergraduate Calendar](#).

Academic Misconduct:

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.

Detailed information regarding the Academic Misconduct policy is available in [Section VIII \(Undergraduate Degree Regulations and Procedures\) of the Undergraduate Calendar](#).

Accessibility:

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services (SAS), formerly Centre for Students with Disabilities (CSD), as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or visit the [Student Accessibility Services website \(http://www.uoguelph.ca/csd/\)](http://www.uoguelph.ca/csd/).

Course Evaluation Information:

End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions used as an important component in the Faculty Tenure and Promotion process, and as valuable feedback to help instructors enhance the quality of their teaching effectiveness and course delivery.

While many course evaluations are conducted in class others are now conducted online. Please refer to the [Course and Instructor Evaluation Website](#) for more information.

Drop period:

The drop period for single semester courses starts at the beginning of the add period and extends to the Fortieth (40th) class day, Friday, November 3rd for the Fall, 2017 semester (the last date to drop a single semester courses without academic penalty) which is listed in [Section III \(Schedule of Dates\) of the Undergraduate Calendar](#).

The drop period for two semester courses starts at the beginning of the add period in the first semester and extends to the last day of the add period in the second semester.

Information about Dropping Courses can be found in [Section VIII \(Undergraduate Degree Regulations and Procedures\) of the Undergraduate Calendar](#).

Additional Course Information

Coveralls or overalls are highly recommended for both animal projects as are steel toed boots or shoes for the nylon bag project. No open toed shoes are allowed in labs or the barns. This rule is in effect starting September 11th with the first week of labs. After working with the feedstuffs for the nylon bag lab and all activities involving the animal projects, students should thoroughly wash their hands to prevent contamination with microorganisms that can lead to illness.

Use of animals:

The laboratory component of the course involves data collection from live animals (dairy cows, piglets, and chicks). Animals are being used in accordance with the Animal Utilization Protocol approved by the University of Guelph Animal Care Committee, based on guidelines and principles of the Canadian Council on Animal Care. Students are required to ensure that research animals (weaned piglets and chicks) have been fed and watered for the assigned animal project. At all times, animal welfare must be maintained to ensure humane treatment of animals used for the lab(s). If you have concerns with the use of animals in these research projects, please contact Dr. Mandell.