



# ANSC\*4560 Pet Nutrition

Fall 2023

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 3.00 - September 19, 2023

---

## 1 Course Details

### 1.1 Calendar Description

This course covers nutrient requirements, feed formulation and nutritional idiosyncrasies for dogs, cats, and exotic pets.

**Pre-Requisites:** NUTR\*3210

### 1.2 Course Description

This course covers nutrient requirements, feed formulation, and nutritional idiosyncrasies of dogs and cats.

### 1.3 Timetable

Lectures: Tuesday/Thursday 13:00-14:20 (MCKN 117, subject to change).

Format for lectures:

**Synchronous** topic focused lectures and subsequent engagement during in-person class to discuss and apply material to create a deeper understanding of how to apply the information presented. Synchronous lectures and discussions will not be recorded except for data supported requests with accompanying rationale.

### 1.4 Final Exam

No final exam for this course.

---

## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:** Kate Shoveller BScH, PhD, Dipl. ACAN  
**Email:** ashovell@uoguelph.ca  
**Office:** ANNU 240  
**Office Hours:** By appointment only.

Primary instructor to be contacted regarding course material. Responsible for supporting group contracts and discussing content for your reflection. Will be responsible for evaluating reflections.

## 2.2 How to contact course instructor(s) and teaching assistants

General questions: If you consider that others will have similar questions, we encourage you to post your question in the associated discussion board for each lecture. This allows all students equal access to this information and is heavily encouraged. If posting on the discussion board is not possible, please e-mail Dr. Shoveller with a clear and concise question or request.

Specific assignment questions: Please contact the teaching assistant responsible for your specific inquiry.

## 3 Learning Resources

### 3.1 Required Resources

L.P. Case, D.P. Carey, D.A. Hirakawa and L. Daristotle (2010) **Canine and Feline Nutrition, 3rd Edition, Mosby, Inc., St. Louis, MO. (Textbook)**

Or through Primo through the University of Guelph library: <https://ebookcentral-proquest-com.subzero.lib.uoguelph.ca/lib/uoguelph/detail.action?docID=1429559>

### 3.2 Recommended Resources

The Mark Morris Institute (MMI). **Small Animal Clinical Nutrition, 5th Edition (Textbook)**

[http://www.markmorrisinstitute.org/sacn5\\_chapters.html](http://www.markmorrisinstitute.org/sacn5_chapters.html)

### 3.3 Additional Resources

#### Other Resources (Notes)

Electronic copies of course notes, handouts (copies of the Powerpoint slides) and other material will also be posted on a weekly basis on the course website. Copies of course notes are not intended to be the sole source of information, but are meant to guide an academic discussion on course material.

#### Lab Manual (Lab Manual)

Not Applicable

### 3.4 Course Technology and Technical Support

#### *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](mailto: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 hours** Teaching assistants will have office hours by appointment online via Office 365 Teams. Additionally, the teaching assistants will be present in some synchronous discussion classes to give detailed tutorial pertaining to the assignments and to answer questions in person.

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>

**3.4 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 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/>

### 3.4 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>

---

## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

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

1. Building on your fundamental nutrition knowledge, develop an understanding of the different needs of dogs and cats.
2. Develop an understanding of the basic digestive, physiological and metabolic processes

- of dogs and cats as they relate to nutrition.
3. Be aware about the relationship between companion animal nutrition, environment, welfare and health.
  4. Compare approaches for establishing nutrient requirements, nutritional specifications, and feed formulation guidelines and be able to discuss some of the limitations and implications of these approaches. Learn about some of the methods and protocols commonly used in pet nutrition research.
  5. Learn about feed ingredients, their origin, and the factors affecting their quality and nutritive value.
  6. Learn about formulation and manufacturing pet foods (pet feeds) and the regulatory issues related to pet foods.
  7. Be exposed to current and emerging issues in the pet food industry.
  8. Learn about available commercial and unconventional pet foods
  9. Acquire some of the skills needed to be able to effectively gather, integrate and analyze scientific information to make informed decisions related to the nutrition and health of companion animals and be able to develop a critical view of nutritional claims and statements found in technical and commercial pet food documentation and advertising.
  10. Understand that optimal feeding of healthy companion animals is important for the prevention of disease

## 4.2 University Level Learning Outcomes

The course is designed to meet the following Learning Objectives of the University:

### 1. **Literacy**

Students will be required to critically review and understand the up-to-date scientific information on pet nutrition compiled in course notes and lecture material (power point slides). The students will also be required to review scientific papers and technical documents, comprehend and present ideas and findings into an imposed format.

### 2. **Understanding of Forms of Inquiry**

A major theme of this course will pertain to the process whereby information is obtained from a variety of sources and presented and interpreted from various perspectives.

### 3. **Depth and Breadth of Understanding**

This course will cross the boundaries of several conventional disciplines within the broad areas of nutrition, metabolism, physiology, feed technology, etc. 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

### 5.1 Lecture

Thursday, September 7

**Topics:** Introduction to instructor, teaching assistants, and the learning objectives and activities of the course, ANSC\*4560 Pet Nutrition.

Instructor: Shoveller

***\*Diet selection and team to be discussed in class. Team will consist of a graduate student in companion animal nutrition to lead management and evaluation of team members. Team will start to discuss the roles and responsibility and set ground rules for collaboration.***

Tuesday, September 12

**Topics:** History of the pet food industry.

Instructor: Shoveller to host, Dr. Gail Kuhlman and Senior Scientist at Mars Pet Care, Ed Cox.

Thursday, September 14

**Topics:** A brief overview of regulations in the pet food industry.

***\*Diet selection and team to be established in class. Team will consist of a graduate student in companion animal nutrition to lead management and evaluation of team members. Team charter should outline the roles and responsibility and set ground rules for collaboration.***

**September 19 and 21**

**Topics:** A comparison of the gastrointestinal anatomy and physiology of the dog and cat

**September 26 and 28**

**Topics:** Energy metabolism and requirements

**October 3 and 5**

**Topics:** Protein and amino acid metabolism and requirements

**October 12 and 17**

**Topics:** Carbohydrate metabolism, from starch to fiber

OCTOBER 12: Asynchronous lecture available on-line.

October 17 we will return to synchronous.

**October 19**

**Topics:** Lipid metabolism and fatty acid requirements

**October 24**

**Topics:** Fat soluble vitamin metabolism and requirements

Guest Lecturer: Taylor Richards, PhD candidate, Department of Animal Biosciences

**October 26**

**Topics:** Water metabolism and requirements

**October 31**

**Topics:** Water soluble vitamin metabolism and requirements

Guest Lecturer: Taylor Richards, PhD candidate, Department of Animal Biosciences

**November 2 and 7**

**Topics:** Mineral metabolism and requirements

**November 9**

**Topics:** Feeding behaviour of dogs and cats, the importance of managing feeding and the environment it is done in

**November 14**

**Topics:** Pet food ingredients

**November 16 and 21**

**Topics:** Manufacturing pet food: Ingredient quality and processing techniques

**November 23**

**Topics:** Life-cycle nutrition for dogs and cats

**November 28**

**Topics:** Senior cat considerations

**References:** Supplementary reading: Healthy aging in dogs

**November 30**

**Topics:** Our commitment to the sustainability of the pet food sector



## 5.2 Seminar

**Topics:** Not Applicable

## 5.3 Lab

**Topics:** Not Applicable

# 6 Assessments

## 6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Team contract development	5
Commercial food evaluation	25
Formulation	25
Infographic on your product classification	20
Reflection on individual and group experience	5
Quiz #1	5
Quiz #2	5
Quiz #3	5
Quiz #4	5
Total	100

## 6.2 Assessment Details

### Team contract development (5%)

**Date:** Thu, Sep 14 - , 9:00 AM, DROP BOX

**Learning Outcome:** 9

**One submission per group**

Led by the graduate student assigned to the group, groups will convene and discuss what should be included in a team contract. The salient parts of a team contract will have been presented to the class on the first day of class and should act as a guide for your own discussions.

A single contract with all group members name and student ID should be included in a single drop box submission.

**Commercial food evaluation (25%)**

**Date:** Fri, Oct 20 - Mon, Oct 23, 9:00 AM

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

**FLEXIBLE DUE DATE: Assignments are due on Friday, October 20; however, late marks will not be applied to assignments handed in by Monday, October 23 at 9am. After 9am, 10% per day will be deducted except for extenuating circumstances.**

Review a single commercial diet and compare with regulatory guidance

a. Guaranteed Analysis (GA)

b. Ingredient Assessment

c. Claims on bag

- Groups where students are assigned commercial diets in a single "category" are encouraged to support each other and meet to discuss aspects of the products.

- One graduate student is assigned to each group to help the students and to additionally set up and lead an industry connection for the group where that industry scientist has a unique perspective on that type of product and the considerations for the development, product supply, and the scientific support behind any soft or hard claims made with regards to the product.

- Undergraduate students will be evaluated according to the rubric for the full 25% allocation

- Graduate students will be evaluated differently. Five percent of the 25% will be based on

the graduate students leadership.

### **Formulation (25%)**

**Date:** Fri, Nov 17 - Mon, Nov 20, 9:00 AM

**Learning Outcome:** 1, 5, 6, 7, 8, 9, 10

Using BalancePaws attempt to formulate the same diet and recommend what kind of pet this diet should be considered for and compare GA and ingredient composition. Second, students will make a recommendation of one ingredient to be added as a supplement or topper and defend the rationale that this "topper" or supplement would not pose a risk to the dog or cat.

### **Infographic on your product classification (20%)**

**Date:** Mon, Dec 4 - , 9:00 AM, DROP BOX

**Learning Outcome:** 4, 5, 6, 7, 9, 10

***One submission per group***

Please add reference list as a separate document.

### **Reflection on individual and group experience (5%)**

**Date:** Mon, Dec 4 - , 9:00 AM

#### **Quiz #1 (5%)**

**Date:** Thu, Sep 21, In class

2 question quiz in class covering gastrointestinal anatomy and physiology

#### **Quiz #2 (5%)**

**Date:** Thu, Sep 28, In class

2 question quiz in class covering energy metabolism and requirements

#### **Quiz #3 (5%)**

**Date:** Thu, Oct 5, In class

2 question quiz in class covering protein metabolism and requirements

#### **Quiz #4 (5%)**

**Date:** Thu, Oct 19, In class

2 question quiz in class covering carbohydrate and fiber metabolism and requirements

## **6.3 Late Policy**

**\* 10% per day will be deducted for late assignments. It is the student's responsibility to request consideration for late assignments or missed exams a minimum of 5 days prior to the deadline. Failure to adhere to the regulations pertaining to graded assignments and midterms as described in this document may result in a mark of zero and consultation with the Dean's office regarding academic misconduct.**

## **6.4 Term Projects Description and Details**

**Quizzes:** Quizzes will assess your understanding of material by presenting you data from published studies and asking you pointed questions about how to interpret the data. Quizzes up front in the semester are designed to encourage students to think deeply about how to apply scientific data.

**Product development:** The project will focus on the selection of current commercial diets (nutrient levels, ingredients utilized, and claims made), subsequent development of a similar formulation, and a summary of the scientific support for that type of diet.

The students will choose one of the diets presented in the diet selection list. The diet list will be available as a doodle poll for selection **on the first class and the class will be encouraged to complete while in class**. A commercial product must be chosen from the list of options available, which will additionally predict the final groups for the contract development and infographic project.

Students should look at what claims appear on the food package that relate to the formulation and seek to understand whether scientific support exists to substantiate these claims. Understanding the ingredient selection to meet the guaranteed analyses is critical and underpins attempts to match the formula using the formulation spreadsheet. Understanding the support required for on bag and website claims needs to be demonstrated. For more details on how these will be evaluated please see the individual rubric on CourseLink.

**Formulation:** Students will use software developed by former teaching assistant Ilona Parenteau, MSc (currently industrial nutritionist) and Professor Shoveller, and updated by Whitney Van Straten (currently MSc student at University of Alberta) and Professor Julia Pezzali, to try and duplicate the diet researched.

We encourage you to consider new nutritional technologies from the scientific peer-reviewed literature to incorporate into your product and “tell your story”. Attempts to improve diets and provide scientific or patent support will be required to demonstrate a thorough understanding of the formulation approach. You will be required to properly calculate moisture and metabolizable energy content of the foods and you should put your guaranteed analyses together based on your predicted macronutrient and micronutrient content. Finally, the type of animal and feeding instructions should be provided. For more details on how these will be evaluated please see the individual rubric on CourseLink.

**Reflection:** Each student is to write a reflection that discusses, in 500 words or less, why the

student took the course and then the thinking, learning and work required in the course and whether this helped to achieve your own, the course specific, and the university specific goals. In addition, reflecting on how the team agreed upon a contract and then followed that contract should also be discussed as part of students overall reflection of the semester of work,

## **GROUP PROJECTS**

**Group contract:** Group work is hard, but talking about ways of working and the roles and responsibilities up front can make team work very effective and improve the work you do individually. On the first day of class, Shoveller will go through considerations for your group to discuss. Rubrics for group projects will provide further detail on what is needed and what is encouraged.

**Infographic:** A scientifically supportable public infographic video should a result of the learnings from your product development and formulation assignments. Students will be primarily evaluated on scientific accuracy and level of understandability. Infographics will also be scored by individuals employed in Communications at the University of Guelph in addition to your peers, the instructor (Shoveller), teaching assistants, industry representatives and government representatives.

---

## **7 Course Statements**

### **7.1 Lecture Availability**

Lectures are synchronous, no recorded sessions will be provided.

### **7.2 Course Policy on Group Work**

Working in groups is challenging, but certainly a “real life” experience. Please show compassion, consideration and respect for each other.

### **7.3 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.

## 7.4 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 offensive language;
- 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;
- 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.

## 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).

---