ANSC*3170 - Nutrition of Fish and Crustacea

Winter 2025 Course Outline
Section: 01
Credits: 0.50

Land Acknowledgement: Guelph

The University of Guelph resides on the ancestral lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit. We recognize the significance of the Dish with One Spoon Covenant to this land and offer respect to our Anishinaabe, Haudenosaunee and Métis neighbours. Today, this gathering place is home to many First Nations, Inuit, and Métis peoples and acknowledging them reminds us of our important connection to this land where we work and learn.

Calendar Description

This course examines growth, digestive and metabolic processes, nutritional requirements and practical feeding programs for fish and crustaceans with an emphasis on those species used in aquaculture.
Department(s): Department of Animal Biosciences

Course Description

The course will provide the student with a broad overview of the state-of-the-art on nutrition and feeding of fishes and crustaceans from an aquaculture perspective. The course will also help the students cultivate the skills needed to be able to search, understand and critically evaluate information on the biology and nutrition of fishes and crustaceans, and subsequently use this information to address various practical issues and challenges in aquaculture.

Lecture Schedule

TuTh 8:30am-9:50am in AD-S*VIRTUAL (1/6 to 4/21)

Lectures will broadcasted live from MACS 209.

Section 01 is AD-S*VIRTUAL

Section 02 - is in-person in MACS 209

Instructor Information

Dominique Bureau
Email: dbureau@uoguelph.ca

Additional Support

Graduate Teaching Assistants (TAs)

Yann Malini Ferreira (yferreir@uoguelph.ca)

Samantha Bezner (sbezner@uoguelph.ca)

Learning Resources

Required Resources

Lecture material (lecture slides, recording of the lectures and tutorials will be posted regularly on the course website on CourseLink. Students are required to refer and review this material throughout the semester: https://courselink.uoguelph.ca/d2l/home/938134

The class will be broadcasted live from the classroom and recorded. Students can join the live classroom broadcast on Zoom. The classroom broadcast will be recorded and shared with all the students in a timely fashion (within 12h) on the Courselink site for the course.

Course Resources

*Students will have to use MS Excel and MS Word *or equivalent software) to complete the various assignments (tasks). Course material posted will be in pdf, MS Word, MS Excel and MP4 formats.*

Campus Resources

If you are concerned about any aspect of your academic program: Make an appointment with a Program Counsellor (https://www.uoguelph.ca/uaic/programcounsellors/) in your degree program. If you are struggling to succeed academically: There are numerous academic resources offered by the Learning Commons (https://www.lib.uoguelph.ca/using-library/spaces/learning-commons/) including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills.

Cost of Textbooks and Learning Resources

Textbook / Learning Resource	Required / Recommended	Cost
Not Applicable		

Course Learning Outcomes

1. Literacy: Students will be required to critically review and understand the up-to-date scientific information on fish 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 research 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 searched in a variety of source to achieve a series of tasks with strong practical applications.
3. Depth and Breadth of Understanding: This course will cross several conventional discipline boundaries within the broad areas of nutrition, metabolism, physiology, chemistry, aquaculture, natural history and biology of fish, environmental biology, 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.

Course Level Learning Outcomes

1. Review nutrition and feeding in the context of the conversion of dietary inputs into aquatic animal biomass and marketable products under controlled conditions (aquaculture context).

2. Develop an understanding of the basic digestive, physiological and metabolic processes in fish and crustaceans that are relevant to nutrient utilization.

3. Learn to follow and identify the fate of ingested nutrients and understand the basis of their essentiality, deficiency signs, and interactions between nutrients and/or different dietary components.

4. Develop an understanding growth processes and factors affecting growth, and learning how to describe and analyze growth performance of fish and crustaceans using simple mathematical equations.

5. Learn about some of the methods and protocols commonly used in fish nutrition research.

6. 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.

7. Learn about feed ingredients, their origin, and the factors affecting their quality and nutritive value.

8. Learn about formulation and manufacturing artificial diets (feeds) suitable for fish and crustaceans production.

9. Be exposed to current and emerging issues in aquaculture (environmental impacts, product quality and safety, profitability, etc.) upon which nutrition and feeding may have major impacts/effects.

10. Acquire some of the skills needed to be able to effectively gather, integrate and analyze scientific and practical information and use this information to develop practical applications for aquaculture and fisheries management.

Schedule of Topics and Assignments

Day	Date:	Topic	Activities	Due
Tue	1/7	Module 0. Intro to course and instructor	Tasks 0 & 1. Tutorial	
Thu	1/9	Module 1. Feeds and Feeding in Aquaculture		
Tue	1/14	Module 2. Nutritional Concepts	Task 2. Production Outline tutorial	Task 0. Species Selection due
Thu	1/16	Module 2. Nutritional Concepts		
Tue	1/21	Module 2. Nutritional Concepts		Task1. Reference List due
Thu	1/23	Module 3. Biology of Growth		
Tue	1/28	Module 3. Biology of Growth		
Thu	1/30	Module 3. Biology of Growth	Module 3. Growth Modeling tutorial.	Task2 Production Outline due
Tue	2/4	Module 4. Digestion and Digestibility		Course Quiz #1 due
Thu	2/6	Module 4. Digestion and Digestibility		
Tue	2/11	Module 4. Digestion and Digestibility	Task 4. Feed Formulation tutorial	
Thu	2/13	Module 5. Feed Ingredients and Feed Manufacturing		
Tue	2/18	Winter Break		
Thu	2/20	Winter Break		
Tue	2/25	Module 6. Nutritional Energetics		Task 3. Growth Modeling due
Thu	2/27	Module 7. Protein and Amino Acids		
Tue	3/4	Module 7. Protein and Amino Acids	Task 5. Nutrient Mass Balance tutorial	Course Quiz #2 due
Thu	3/6	Module 8. Lipids		
Tue	3/11	Module 8. Lipids		
Thu	3/13	Module 9. Carbohydrates		Task 4. Feed Formulation due
Tue	3/18	Module 10. Vitamins and Carotenoids		
Thu	3/20	Module 10. Vitamins and Carotenoids		
Tue	3/25	Module 11. Minerals		
Thu	3/27	Module 12. Nutrition and Health		Course Quiz #3 due
Tue	4/1	Module 13. Nutrition, Wastes, Water Quality and Environmental Impacts		
Thu	4/3	Module 13. Nutrition, Wastes, Water Quality and Environmental Impacts		Task 5 Nutrient Mass Balance due
Thu	4/10			Online Take-Home Exam due

Assessment Breakdown

Description	Weighting (%)	Due Date
Task # 0 Species Selection	5%	14 Jan 2025
Task # 1 List of References	5%	21 Jan 2025
Task # 2 Production Outline	10%	30 Jan 2025
Task # 3 Growth Modeling	10%	25 Feb 2025
Task # 4 Feed Formulation	10%	13 Mar 2025
Task # 5 Nutrient Mass Balance	10%	3 Apr 2025
Course Quiz #1	10%	4 Feb 2025
Course Quiz #2	10%	4 Mar 2025

Course Quiz #3	10%	27 Mar 2025
Online Take-Home Exam	20%	10 Apr 2025

Assessment Details

Assignment

Task #0 - Species Selection **5%**
Assessed Course Level Learning Outcomes: 1, 10

Task #1 List of References **5%**
Assessed Course Level Learning Outcomes: 1, 9, 10

Task #2 Production Outline **10%**
Assessed Course Level Learning Outcomes: 1, 5, 8, 9, 10

Task #3 Growth Modeling **10%**
Assessed Course Level Learning Outcomes: 4, 5, 10

Task #4 Feed Formulation **10%**
Assessed Course Level Learning Outcomes: 6, 7, 8

Task #5 Nutrient Mass Balance **10%**
Assessed Course Level Learning Outcomes: 1, 3, 5, 9, 10

Quizzes

Course Quiz #1 **10%**
Assessed Course level Learning Outcomes: 1, 2, 3, 5, 6, 9

Course Quiz #2 **10%**
Assessed Course Level Learning Outcomes: 3, 4, 5, 8, 9

Course Quiz #3 **10%**
Assess Course Level Learning Outcomes: 5, 6, 8, 9

Exam

Online Take-Home Exam **20%**
Assess Course Level Learning Outcomes: 1, 2, 3, 5, 6, 7, 8, 9, 10

Last Day to Drop Course

The final day to drop Winter 2025 courses without academic penalty is the last day of classes: April 04

After this date, a mark will be recorded, whether course work is completed or not (a zero is assigned for missed tests/assignments). This mark will show on the student's transcript and will be calculated into their average.

Course Grading Policies

Submission of Assignments

The completed tasks will have to be submitted in the appropriate Dropbox folder created for each task. When the task involves submitting a file (Task 3, Task 4, Task 5), the file uploaded by the student will have to be labelled according to the specific naming format defined by the instructor.

Late Assignment

All information and guidance required to complete the tasks will be provided in advance with sufficient time to successfully complete these. It is the responsibility of the students to complete and submit tasks before the due date. Tasks submitted after the due date will be subject to a penalty equivalent to 25% of the grade per day late (4 days late = 0%). Students facing serious health or personal situations and cannot submit a task on time should contact the instructor as soon as possible, before the due date. The instructor will assess on a case-by-case basis.

Assignment Grading Policies

Tasks will be marked and grades will be returned in a timely manner by the teaching assistants. Given the large number of students registered in the course, grading of tasks will generally require 2 to 3 weeks.

Standard Statements for Undergraduate Courses

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 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.

The Academic Misconduct Policy (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-misconduct/) is outlined in the Undergraduate Calendar.

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 10 days in advance, and no later than the first business day in November, March or July as appropriate for the semester. Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time. For students at the Guelph campus, information can be found on the SAS website. (https://www.uoguelph.ca/sas/)

Accommodation of Religious Obligations

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements.

See the Academic calendar for information on regulations and procedures for Academic Accommodations of Religious Obligations (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-accommodation-religious-obligations/).

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.

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 undergraduate students 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 the Undergraduate Calendar - Dropping Courses (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/dropping-courses/).

Email Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

Health and Wellbeing

The University of Guelph provides a wide range of health and wellbeing services at the Vaccarino Centre for Student Wellness (https://wellness.uoguelph.ca/). If you are concerned about your mental health and not sure where to start, connect with a Student Wellness Navigator (https://wellness.uoguelph.ca/navigators/) who can help develop a plan to manage and support your mental health or check out our mental wellbeing resources (https://wellness.uoguelph.ca/shine-this-year/). The Student Wellness team are here to help and welcome the opportunity to connect with you.

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).

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.

Resources

The Academic Calendars (http://www.uoguelph.ca/registrar/calendars/?index) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

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. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration. (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/)