



ANSC*3170 Nutrition of Fish and Crustacea

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

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.

Pre-Requisites: NUTR*3210

1.2 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 understand, search, and critically evaluate information on nutrition of fishes and crustaceans, and subsequently use this information to address various practical issues and challenges in aquaculture.

1.3 Timetable

Lectures on Tuesdays, Thursdays at 8:30 a.m. - 9:50 a.m. in MCKN 115.

1.4 Final Exam

The final exam will be in class on Thursday 2 April 2020.

2 Instructional Support

2.1 Instructional Support Team

Instructor: Dominique Bureau

Email: dbureau@uoguelph.ca
Telephone: +1-519-824-4120 x53668
Office: ANNU 136
Office Hours: Tuesday 10:30 a.m. - 11:30 a.m. and Thursday 10:30 a.m. – 11:30 a.m. or by appointment (contact by email to schedule) or video conference (Google Meet, Whatsapp, etc.).

Email inquiries are preferred and generally answered rapidly.

2.2 Teaching Assistants

Teaching Assistant: Sharareh Jahanbin
Email: sjahanbi@uoguelph.ca
Telephone: 519-824-4120 ext. 56688
Office: ANNU 047
Office Hours: Thursday & Friday 1:00 – 2:00 p.m. ANNU047

Teaching Assistant: Fiona Tansil
Email: ftansil@uoguelph.ca
Telephone: 519-824-4120 ext. XXXX
Office: ANNU XX
Office Hours: Monday and Tuesday at 10.30 -11.30 am, ANNU 129.

3 Learning Resources

3.1 Additional Resources

Electronic copy of handout (copies of the PPT slides) and other material will be posted on a weekly basis on the course website. (Other)

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 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.

4.2 Specific 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.
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5 Teaching and Learning Activities

5.1 Lecture

Tue, Jan 7 Topics:	Introduction to Course - Module 1: Feeds & Feeding in Aquaculture
Thu, Jan 9 Topics:	Module 1: Feeds & Feeding in Aquaculture (Cont'd) + Tutorial Task #1
Tue, Jan 14 Topics:	Module 2: Nutritional Concepts
Thu, Jan 16 Topics:	Module 2: Nutritional Concepts (Cont'd) + Tutorial Task #2
Tue, Jan 21 Topics:	Module 3: Growth Biology
Thu, Jan 23 Topics:	Module 3: Growth Biology (Cont'd) - Tutorial Task #3 (First part)
Tue, Jan 28 Topics:	Module 4: Digestion
Thu, Jan 30 Topics:	Module 4: Digestion – Digestibility
Tue, Feb 4 Topics:	Module 5: Nutritional Energetics
Thu, Feb 6 Topics:	Module 6 Protein and Amino Acids - Mid-Term Exam Review
Tue, Feb 11 Topics:	Mid-Term Exam (in class)
Thu, Feb 13 Topics:	Guest Lecture: Factorial Amino Acid Requirement Models - Tutorial Task #3 (Second Part)

Tue, Feb 18 Topics:	Reading Week / No Class
Thu, Feb 20 Topics:	Reading Week / No Class
Tue, Feb 25 Topics:	Guest Lecture: Feed Formulation and Manufacturing - Tutorial Task 4
Thu, Feb 27 Topics:	Module 7: Lipids
Tue, Mar 3 Topics:	Module 7: Lipids (Cont'd) - Tutorial Task #5
Thu, Mar 5 Topics:	Module 8: Carbohydrates
Tue, Mar 10 Topics:	Module 9: Vitamins and Carotenoid Pigments
Thu, Mar 12 Topics:	Module 9: Vitamins and Carotenoid Pigments (Cont'd) - Module 10: Minerals
Tue, Mar 17 Topics:	Module 10: Minerals (Cont'd)
Thu, Mar 19 Topics:	Module 11: Broodstock and Early Life Nutrition
Tue, Mar 24 Topics:	Module 12: Shrimp Nutrition
Thu, Mar 26	

Topics: Module 13: Nutritional Management of Waste Outputs, Water Quality and Environmental Impacts

Tue, Mar 31

Topics: Module 13: Nutritional Management of Waste Outputs, Water Quality and Environmental Impacts (Cont'd) - Final Exam Review

Thu, Apr 2

Topics: Final Exam (in class)

5.2 Tentative Dates

All dates except exams are tentative as of 2 January 2020

6 Assessments

6.1 Marking Schemes & Distributions

Term Project (five tasks) = 45%

Quizzes (2) = 10%

Mid-Term Exam (in class) = 20%

Final Exam (Mid-Term 2) (in class) = 20%

Take Home Exam Question = 10%

6.2 Assessment Details

Term Project - Five Tasks (45%)

Date: Tue, Jan 7 - Thu, Apr 2

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

Five different tasks (assignments) with various due dates.

Due dates: Task 1: Jan. 16, 2020 (5%); Task 2: Jan. 30, 2020 (10%); Task 3: Feb.27, 2020 (10%); Task 4: March 12, 2020 (10%); Task 5: Mar. 26, 2020 (10%).

Detailed instructions on how to complete the five tasks are provided in a document posted on the course website. Tutorial sessions will be offered for each tasks. The teaching assistants will be available several hours every week to guide and assist the students with the completion of the tasks.

Quiz 1 (5%)

Date: Mon, Jan 27 - Fri, Jan 31, Courselink

Learning Outcome: 3, 4, 5

Short online quiz to survey students. Three (3) to five (5) short questions. No calculations required.

Midterm (20%)

Date: Tue, Feb 11, In class

Learning Outcome: 3, 4, 5

Mid-term exam covering material reviewed in class from January 7, 2020 to Feb 6, 2020. Eight to 10 questions with short and medium length answers. No calculations required.

Quiz 2 (5%)

Date: Mon, Mar 16 - Fri, Mar 20, Courselink

Learning Outcome: 3, 4, 5

Short online quiz to survey students. Three (3) to five (5) short questions. No calculations required.

Final Exam (Mid-Term 2) (20%)

Date: Thu, Apr 4, In class

Learning Outcome: 3, 4, 5

Final exam covering material reviewed in class from February 13, 2020 to March 31, 2020. Not cumulative. Eight to 10 questions requiring short (i.e. a few words) to medium length (i.e. a few lines) answers. No calculations.

Take Home Question (10%) (0%)

Date: Fri, Mar 20 - Tue, Apr 14, Home

Take home exam involving two essay-style questions. Answer to be returned by email to instructor before 14 April 2020.

7 Course Statements

7.1 Grading Policies

Assignments (tasks) and exams will be graded in a timely fashion (within 10 days) and they returned to the students (except the final exam) with either personalized feedback or general feedback in class to highlight some of the shortcomings in the students' work or understanding of the concepts.

Assignments (term project tasks) must be submitted by 11 p.m. on the due date. Assignments submitted late will be subjected to 10% penalty per day late.

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>
