



We wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

NFS485H1– Diet, Microbiome & Health

2024 Fall Term

Course Instructor: Dr. Amel Taibi

Email: amel.taibi@utoronto.ca

Lecture Hours: Tuesdays from 1 pm to 4 pm

Course Description

This course provides an integrated approach to how prokaryotes modulate nutrient availability and how they interact with the host to impact human health from a molecular perspective.

The course will provide fundamentals of food microbiology, information on the gut microbiota and its impact on host metabolism and examples of nutritional strategies to modulate its composition.

Prerequisites

NFS284H1, BCH210H1, CSB349H1/ PSL350H1/ BCH311H1/MGY311Y1, (PSL300H1, PSL301H1)/ PSL302Y1 or permission of the instructor

Learning Objectives

By the end of this course, students will be able to:

1. **Understand Basic Concepts:** Explain the fundamental concepts related to the human microbiota, including its role in maintaining health and contributing to disease.
2. **Identify Key Microorganisms in Food:** Recognize and describe the key microorganisms involved in food production, preservation, and spoilage, and understand their significance for food safety and public health.
3. **Analyze Gut Colonization:** Explain the process of gut colonization and its dietary influences, while demonstrating a basic understanding of microbial-omics techniques.
4. **Evaluate Gut Microbiome Dysbiosis:** Assess the relationship between gut microbiome dysbiosis and gastrointestinal diseases, as well as its broader implications for human metabolism.
5. **Examine the Dietary Impact on the Microbiome:** Investigate how different diets influence the gut microbiome, including the production of toxic metabolites and their potential links to disease development.
6. **Propose Nutritional Strategies:** Develop evidence-based nutritional strategies to modulate the gut microbiome in ways that promote health and prevent disease.
7. **Critically Discuss Controversial Issues:** Engage in informed discussions on controversial topics related to nutrition and the microbiome, fostering critical thinking and the ability to evaluate scientific evidence.



Teaching Assistant

Celine Cuinat | Email: celine.cuinat@mail.utoronto.ca

Course materials

No textbook is required for this course. Materials and readings will be posted on Quercus.

Office Hours

Online: over Zoom.

In-person: Tuesdays after class.

Consultations are welcomed and highly encouraged. Please contact your instructor by email to arrange a meeting.

Any emails addressed to Dr. Taibi must have a brief, relevant subject line and come from a **@utoronto.ca email account**.

Course communication

All the announcements will be made on the course website; it is the student's responsibility to remain updated with the course messages and to activate the course notifications.

The course website includes a discussion board for students to ask questions about lecture material and general course content.

If you have a question about course material, please post it there for the benefit of everyone.

Individual queries to the instructor about marks or personal matters should be emailed.



Course Overview and Assessment
Course Schedule

Date	Lecture Topics	Learning Activities & deadlines
Week 1 (Sep 03)	Discussion of the course organization Lecture 1: Introduction and basic concepts	-Assortment of students in groups and assignment of topics
Week 2 (Sep 10)	Lecture 2: Human Microbiome	-Selection of topics -Finalizing the groups
Week 3 (Sep 17)	Lecture 3: Nutrition and Microbiota 101: A Study Guide	-Reading of supporting documents -Online Quiz 1 (Research papers)
Week 4 (Sep 24)	Lecture 4: Microbial World of Food: Roles in Processing, Preservation, and Public Health	-Selection of the research paper to be presented in the gut debates series -Online Activity 1
Week 5 (Oct 01)	Lecture 5: Malnutrition and the Microbiome	-Reading of supporting documents -Online Quiz 2
Week 6 (Oct 08)	Lecture 6 Diet and Gut Microbiome Interplay: Production of Toxic Products & Diseases	-Online Activity 2
Week 7 (Oct 15)	Gut Debates: Nutrition, Microbiota, and Health (Part 1)	-Group presentations 1 (Part 1)
Week 8 (Oct 22)	Gut Debates: Nutrition, Microbiota, and Health (Part 2)	-Group presentations 1 (Part 2)
Week 9 (Oct. 29)	No classes - Fall Reading Week	
Week 10 (Nov. 05)	Lecture 7: Microbiota-targeted therapy: Probiotics and Prebiotics	-Read the supporting document -Outline of review due -Online Quiz 3
Week11 (Nov. 12)	Lecture 8: Microbiota, diet, and the gut-brain axis Guest lecture Mind-Gut Connection: Exploring Endocannabinoids, Microbiota, and Dietary Impacts	-Online Activity.3
Week 12 (Nov. 19)	Gut Insights: Critical Reviews on Nutrition and Microbiota (Part 1)	-Group presentations 2 (Part 1)
Week 13 (Nov. 26)	Gut Insights: Critical Reviews on Nutrition and Microbiota (Part 2)	-Group presentations 2 (Part 2)
Week 14 (Dec. 03)	No class!	-Review paper due (Online submission) -Take-home exam due (Online submission)



Assessment breakdown

Assessment	Weight	Date
Online activities (Individual; 3 X 3%)	09%	Sep 27, Oct. 11, Nov. 15
Online Quizzes (Individual; 3 X 2%)	06%	Sep 20, Oct. 04, Nov. 08
Group Presentations (Group; 2 x 15%)	30%	Oct. 15, Oct. 22, Nov. 19. Nov. 26
Review Paper: Outline (Group)	04%	Nov. 05
Review Paper: Final Report (Group)	20%	Dec. 03
Written Exam (Individual)	25%	Dec. 03
Participation (Individual)	04%	All the semester
Course Engagement (Individual)	02%	All the semester

1. Online Activities (9% of course grade):

- Description: The activities (3% each) must be submitted as per the schedule. Task details for each activity will be posted and briefly reviewed in class. Comprehensive instructions will be available online

2. Online Quizzes (6% of course grade):

- Description: Each quiz counts for 2%. These open-book assessments, completed online through Quercus, aim to evaluate students' learning progress. The quizzes will include multiple-choice (MCQ) and true/false questions. Students will be given a 24-hour window, with the quiz lasting 30 minutes, and they have a range of 24 hours to complete the assignment. One attempt per quiz is allowed.

3. Group Presentations (30% of course grade):

- Description: Groups of 4-5 students will conduct two presentations on the association between nutrition, microbiota, and health outcomes. Detailed instructions and marking rubrics will be provided online.

4. Review Paper (24% of course grade):

- Description: Groups will synthesize scientific literature and write a critical review on a selected topic related to "Diet, Microbiome, and Health," applying the concepts and knowledge gained in class. The assignment includes an outline and a final review paper.

5. Written Exam (25% of course grade):

- Description: The test, constituting 25% of the overall course grade, is an open-book assessment covering material presented in class, including lectures, group presentations, and online class activities. More details will be provided online.

6. Participation (4% of course grade):

- Description: Reflects active and visible involvement in class activities, including participation during oral presentations, asking questions, peer evaluation of group presentations, and consistent attendance.

7. Course Engagement (2% of course grade):

- Description: Reflects students' overall involvement in the learning process, including initiating discussions in class or online, completing course surveys, and contributing ideas such as suggesting readings or new course content

Missed term tests and late work.

Individual Assignments:

Online Quizzes: NO SUBMISSIONS WILL BE ACCEPTED after the due date and time for online quizzes.

Online activities Students may submit their assignment up to 24 hours late without penalty. No additional accommodations will be provided beyond this grace period.

Late submissions will result in a 10% deduction per day, starting from the due date, for students without



a valid justification. With a valid justification (i.e. medical certificate), assignments submitted more than three days late will receive a penalty of 10% percent per **day past the original deadlines.**

Online Quizzes: No submissions will be accepted after the due date and time.

Online Activities: Students may submit their assignments up to 24 hours late without penalty. Beyond this grace period, late submissions will result in a **10% deduction per day**, starting from the original due date, unless a valid justification (e.g., medical certificate) is provided. For assignments submitted more than three days late, even with a valid justification, a 10% penalty will apply for each additional day past the original deadline.

Group Assignments:

Group presentations are **not subject to a grace period** and must be given on the assigned date, as per the presentation planning time set at the start of the term. Any group member missing the oral presentation must submit a valid justification. They may either receive the group mark (with proof of participation in the assignment's preparation) or arrange a presentation time with the instructor. The remaining group members are still expected to present on the assigned date.

Review paper (paper outline and final review), a 30% deduction per day will be applied to late presentations.

In-Class Written Exam:

Missed test: There are no make-up tests for missed exams. If a student misses the written exam, they will receive a grade of 0 unless an acceptable explanation, backed up with documentation, is presented. In this case, the overall grade will be redistributed among the remaining assessments.

Required documentation for missed work:

A justified medical excuse, with the University of Toronto Verification of Student Illness or Injury form completed by a health care provider. These forms are available from the following website: <https://registrar.utoronto.ca/policies-and-guidelines/verification-of-illness-or-injury/>

Personal distress. A written or verbal explanation to the instructor is required. All discussions with the instructor will be confidential. Students dealing with intense or ongoing personal distress or chronic illness, who may need special and continuing accommodation, may be asked for additional documentation and are advised to discuss their situation with their college registrar.

Please note that poor time management, having several assignments due at the same time, having to study for term tests, etc are NOT compelling reasons for an extension. Students are expected to complete their assignments as best they can, hand them in on time, even if incomplete, and accept that they may not get as high a grade as they would like.

The instructor is dedicated to working with you to help you achieve the best learning experience during this course, however, last-minute (i.e. the night before tests or deadlines for assignments) responses to requests cannot be promised. Work and study ahead of deadlines so the instructor can be of most assistance to you.

Regrade Policy

The students will have one week from the date that the grade is posted to appeal their marks. If the students would like to contest a mark, they must submit a written proposal by email to Dr. Taibi explaining why a re-grade is warranted. The instructor may or may not choose to re-grade, it will depend on how



well each student presents their case. The instructor reserves the right to re-read and re-grade the entire work. Be aware that the mark may go up, down, or stay the same.

Plagiarism detection tool (PDT)

“Normally, students will be required to submit their course essays to the University’s plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool’s reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University’s use of this tool are described on the Centre for Teaching Support & Innovation website (<https://uoft.me/pdt-faq>)”

A link for submitting assignments to PDT will be available on Quercus. If you have problems that prevent you from submitting to PDT, please contact Dr. Taibi to discuss alternatives. All students are expected to either submit to PDT, which is voluntary or provide an alternative. Failure to do so could result in a grade of ZERO for the assignment. For those who do not submit to PDT, as an alternative you will be expected to meet with Dr. Taibi for a short oral test during which you will be asked questions about the writing of the assignment and its content. Your assignment grade may be changed based on how well you answer these questions. Dr. Taibi and/or the teaching assistants review the PDT submissions and will e-mail students if there are any concerns about their writing.

Copyright and sharing permissions.

Lecture slides, videos, tutorials, and any other course material **belong to the instructor, the University, and/or other sources** depending on the specific facts of each situation and are protected by copyright. In this course, the students are permitted to download session materials for their academic use, but they **should not copy, share, or use them for any other purpose without the explicit permission of the instructor.**

Accessibility Needs

The University of Toronto is committed to accessibility. If you require accommodations for a disability or have any accessibility concerns about the course, the classroom, or course materials, please contact Accessibility Services as soon as possible at accessibility.services@utoronto.ca or <http://www.studentlife.utoronto.ca/as>