

# NFS485H1 F – Diet, Microbiome & Health

## OVERVIEW AND LEARNING OUTCOMES

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.

At the end of this course students will be able to:

1. Explain which microorganisms can be found in food and are important for its manufacture and spoilage
2. Discuss the role played by the gut microbiome in body health
3. Understand how gut microbiome dysbiosis relates to gastro-intestinal diseases or influences metabolism
4. Suggest nutritional strategies to modulate gut microbiome composition so to impact body health
5. Understand regulatory issues related to food microorganisms

## CLASSES AND INFORMATION

**Mode of delivery:** Online asynchronous. Lectures will be posted on Quercus weekly.

**Instructor:** **Dr Elena Comelli**, Dept. of Nutritional Sciences  
1 King's College Circle, Medical Sciences Building room 5354A  
- email: elena.comelli@utoronto.ca  
- office hour: every Mon 10:00-11:00 am EST  
(Zoom link: <https://utoronto.zoom.us/j/92134542694> ) or by appointment

**Guest lecturers**  
**Dr Amel Taibi**, Dept of Nutritional Sciences, UofT  
**Dr Dana Philpott**, Dept of Immunology, UofT  
**Dr Krista Power**, School of Nutrition Sciences, University of Ottawa  
**Dr David Jenkins, University Professor**, Depts of Nutritional Sciences and Medicine, UofT  
**Dr Robert Bandsma**, Depts of Paediatrics and Nutritional Sciences, UofT  
**Dr Simone Guglielmetti**, Dep of Food, Environmental and Nutritional Sciences, University of Milan, Italy

**Teaching Assistant** **Bijun Wen**, MSc, PhD candidate  
Dept. of Nutritional Sciences  
Peter Gilgan Centre for Research and Learning (PGCRL), room 10.9420, 686 Bay St, Toronto, ON M5G 0A4  
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## MATERIALS

There are no required or recommended textbooks. Material will be provided during the term and posted on Quercus in "Course materials".

## ANNOUNCEMENTS

Announcements are posted on Quercus. Announcements are used to inform students of new course content, due dates, release of grades and other relevant matters. It is the responsibility of the student to

check the Announcements regularly.

**COMMUNICATION WITH INSTRUCTOR AND TA**

Students are expected to communicate with the instructor and the TA electronically. Two discussion boards are available on Quercus, one to be used for questions related to course content and the other to be used for questions related to the assignments. Please post your questions through the appropriate discussion board. Questions related to the course and the course content, including the assignments, will not be answered via email.

The use of email is limited to questions of a personal nature.

**COURSE OUTLINE****Week 1**

Introduction to Diet, Microbiome and Health. Biochemistry of fermentation. Introduction to microbial ecology.  
Written Assignment: explanation of goals and expectations.

**Week 2      Guest lecture: Dr Amel Taibi**

Microorganisms utilized for food manufacturing (processing and preservation) or implicated in food spoilage. Fermented foods. Regulatory issues.

**Week 3**

Microorganisms endogenous to the host that modulate nutrient availability and metabolism. Oral and gut microbiome.

**Week 4**

Gut microbiota: mechanisms of intestinal colonization and establishment. Molecular techniques in intestinal microbiology.

**Week 5      Guest lecture: Dr Dana Philpott**

Intestinal epithelium responses to non-pathogenic bacteria. Role of the gut microbiome in the mucosal barrier.

**Week 6**

Gastro-intestinal infections and foodborne diseases.

**Week 7      Guest lecture: Dr Simone Guglielmetti**

Dietary modulation of gut microbiota composition. Probiotics. Postbiotics. Regulatory issues, claims.

**Week 8**

The emerging role of gut microorganisms in intestinal and extra-intestinal diseases and the metabolic syndrome.

**Reading week Nov 9 - 13****Week 9      Guest lecture: Dr Krista Power**

Diet and gut microbiome interplay: production of toxic products and cancer.

**Week 10      Guest lecture: Dr Robert Bandsma**

Malnutrition and the microbiome.

*Written Assignment: Summary of scientific article due Nov 23, 2020.*

**Week 11      Guest lecture: Dr David Jenkins**

Gut microbiome, fiber and cardiovascular disease.

**Week 12**

Dietary modulation of gut microbiota composition. Prebiotics and synbiotics. Regulatory issues, claims.

**EVALUATION**

The course will contain the following evaluations:

Assignment	Due Date	Weight
Lecture 1-3: quizzes	30 Sept 2020	5%
Lecture 4-6: quizzes	21 Oct 2020	5%
Lectures 1-6: short essays	21 Oct 2020	20%
Lecture 7-9: quizzes	18 Nov 2020	5%
Written assignment (summary of scientific article)	23 Nov 2020, 11:59 pm EST	25%
Lecture 10-12: quizzes	9 Dec 2020	5%
Lectures 7-12: short essays	9 Dec 2020	20%
Final Cumulative Assessment	15 Dec 2020, 11:59 pm EST	15%
<b>Total</b>		<b>100%</b>

*NOTE: the time of submission of lectures-specific quizzes and assignments will be communicated during the term.*

**Lecture-specific quizzes (20%)**

These may include definition, true and false and very short answers.

**Written assignments; short essays (40%) and summary of scientific paper (25%)**

- Short essays: these are essay-type questions that are focused on specific lectures, as indicated in the table above. These essays will be submitted to Turnitin (see Turnitin Policy below) before being submitted through Quercus by their respective due date, which is indicated in the table above.
- Summary of scientific paper: students will have to write a summary of a scientific article proposed by the instructor, followed by a critical evaluation and suggestion for future work. Template and additional information on requirements and expectations will be available on Quercus under “Assignment”. The assignment will be submitted to Turnitin (see Turnitin Policy below) before being submitted through Quercus. Due date: Nov 23, 2020.

**Final assessment (15%)**

A final assessment will take place during the Final Assessment Period. It will cover the entire course content. This final assessment will have a completion window of 72 hours and will be due on Tue Dec 15, 2020.

**POLICIES****Turnitin**

“Normally, students will be required to submit their course essays to Turnitin.com 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 Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.”

Turnitin is available via Quercus via file upload. In order to submit your Turnitin Assignment, you will use Quercus; in the Course Menu, choose the item “Assignment” and proceed.

Please note that: “Submission of a Turnitin Assignment **will not** be possible if the email address on record is not a University of Toronto issued email address, as required by the University of Toronto policy concerning email addresses. Please [check and update your email address](#) before attempting to submit a Turnitin Assignment”.

If you have problems that prevent you from submitting to Turnitin, please contact Dr. Comelli to discuss alternatives. All students are expected to either submit to Turnitin, which is voluntary, or provide an alternative. Failure to do so could result in a grade of ZERO for the assignment.

Those who do not submit to Turnitin will be expected to meet with Dr. Comelli 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.

### **Missed quizzes and short essays**

Except for compelling reasons such as illness or personal distress, all students will be given a grade of ZERO if they miss a quiz or a short essay. There are NO MAKE-UPS and NO EXTENSIONS. If you miss one of the lecture-specific quizzes or short essays for compelling reasons, the weight of the missed lecture-specific quiz or short essay will be added to the weight of your cumulative final assessment.

If you miss a quiz or short essay, please contact Dr. Comelli IMMEDIATELY. You are required to provide a brief explanation for missing a quiz or short essay (illness, personal distress, family emergency etc). All information is kept confidential. In addition, please refer to the “Change of policy for verification of illness (VOI) and other documented absences for 2020-21” at the end of this document.

*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 and consider contacting Accessibility Services (see below).*

### **Late submission of the written assignment: summary of scientific article**

Any assignment of this type submitted later than the due date and time will be considered late and a 10% reduction in the grade will be given every day that it is late (including weekends). No email submissions will be accepted.

Note: Submitting your assignment to Turnitin or by e-mail as “proof” of its timely completion is NOT acceptable; timely completion includes the final submission via Quercus.

### **Lecture material, video recordings, and intellectual property**

This course will be pre-recorded on video and will be available to students in the course for viewing remotely and after each session.

Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation, and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the instructor.

### **Academic Integrity**

Students are expected to conduct themselves with academic integrity.

Academic misconduct at the University of Toronto is defined by the [Code of Behaviour on Academic Matters](#).

All students, faculty and staff are expected to follow the University's guidelines and policies on academic integrity. For students, this means following the standards of academic honesty when writing assignments, collaborating with fellow students, and writing tests and exams. Ensure that the work you submit for grading represents your own honest efforts. Plagiarism—representing someone else's work as your own or submitting work that you have previously submitted for marks in another class or program—is a serious offence that can result in sanctions. Speak to me or your TA for advice on anything that you find unclear. To learn more about how to cite and use source material

appropriately and for other writing support, see the U of T writing support website at <http://www.writing.utoronto.ca>. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see <http://www.artsci.utoronto.ca/osai> and <http://academicintegrity.utoronto.ca>.

**Students: please review “how not to plagiarize” website** <https://advice.writing.utoronto.ca/using-sources/how-not-to-plagiarize/>. It is your responsibility to know the rules and that the University expects all work to be completed in accordance with the [Code](#). Please ensure your work complies with the rules before submitting any course assignments.

### **Accessibility and Accommodations Needs**

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting <http://www.studentlife.utoronto.ca/as/new-registration>. Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructors will not reveal that you are registered with AS.

### **WRITING AND LANGUAGE SUPPORT IN ARTS AND SCIENCE**

A wide range of resources is available at the Faculty of Arts and Science for writing support ([www.writing.utoronto.ca](http://www.writing.utoronto.ca)). You can find information about college writing centres at: <http://www.writing.utoronto.ca/writing-centres/arts-and-science>. The teaching approach of the college writing centres is described at: <http://www.writing.utoronto.ca/writing-centres/learning>. Many Advice files on all aspects of academic writing are available at: [www.writing.utoronto.ca/advice](http://www.writing.utoronto.ca/advice). Printable PDF versions are listed at: <http://www.writing.utoronto.ca/about-this-site/pdf-links-for-students>. Must read: "How Not to Plagiarize" at: [www.writing.utoronto.ca/advice/using-sources](http://www.writing.utoronto.ca/advice/using-sources).

Students interested in the English Language Learning program (ELL) are encouraged to visit their website at: <http://www.artsci.utoronto.ca/current/advising/ell>. A useful activity for this course is “Reading eWriting”, an online program that helps students “to strengthen the speed and ease with which you read, reason, and write”.

### **CHANGE OF POLICY FOR VERIFICATION OF ILLNESS (VOI) AND OTHER DOCUMENTED ABSENCES FOR 2020-21**

For this year, the [University has announced](#) that students will not require a Verification of Illness (VOI) form. The updated FAQ for students reads as follows:

#### **What should I do if I can't attend class (in-person or remote) and it is affecting my academic work?**

Students who are absent from class for any reason (e.g., COVID, other illness or injury, family situation) and who require consideration for missed academic work should report their absence through the online absence declaration. The declaration is available on [ACORN](#) under the Profile and Settings menu. Students should also advise their instructor of their absence.

### **Resources & supports**

If you or someone you know is in distress and there is an immediate risk, call 911.

The following includes supports available to students on all three campuses:

- [U of T St. George \(Downtown Toronto\)](#)
- [U of T Scarborough](#)
- [U of T Mississauga](#)

Additionally, students have access to [U of T My Student Support Program](#) (My SSP) | 1-844-451-9700 24/7. Outside of North America, call 001-416-380-6578.

Culturally-competent mental health and counseling services in 146 languages for all U of T students.

For reference, when students log into the Absence Declaration in [ACORN](#), the top of the screen displays:

**i Absence Declaration Tool**  
 Students should record all absences through the [Absence Declaration tool](#). Please contact your Registrar's Office if you have any questions.

After clicking on the Absence Declaration tool above, the following is displayed:

**Absence Declaration**

**Declare New Absences**

**i** You should use this system to formally declare an absence from academic participation in the University if you require consideration for missed academic work based on the procedures specific to your faculty or campus. Please note:

- In addition to this declaration, you are responsible for contacting your instructors to request the accommodations you are seeking.
- You are also responsible for familiarizing yourself with the procedures specific to your faculty or campus.

**Date of Absence**

You can record absences for up to 14 consecutive days, one of which must be today (if you are still absent) or yesterday (if you have returned). If you need to record an absence outside of this range, please contact your registrar's office.

1	yyyy-mm-dd	8	yyyy-mm-dd
2	yyyy-mm-dd	9	yyyy-mm-dd
3	yyyy-mm-dd	10	yyyy-mm-dd
4	yyyy-mm-dd	11	yyyy-mm-dd
5	yyyy-mm-dd	12	yyyy-mm-dd
6	yyyy-mm-dd	13	yyyy-mm-dd
7	yyyy-mm-dd	14	yyyy-mm-dd

**Consent to Release COVID-19 Medical Information**

The University requires information about students who are asked to self-isolate for monitoring purposes. Please complete this consent form to allow us to access this information [Cf](#).

**Declarations**

I hereby declare that it has been necessary for me to be absent from the University for the period identified above.

By making this declaration I am affirming these statements to be true and that I understand that my declaration is submitted for the purpose of receiving academic accommodation. I also understand and acknowledge that it is my responsibility to complete the requirements of the course and to confirm any necessary academic accommodation arrangements upon my return as directed by my instructor and the policies of my Campus or Faculty.

I understand and acknowledge that making a false declaration would constitute academic misconduct and could be subject to sanctions under the Code of Behaviour on Academic Matters [Cf](#).

I have completed the Consent to Release COVID-19 Medical Information, if applicable, and I understand the above declarations.