

Department of Biology Course Outline

SC/BIOL 4154 3.00, Human Microbiome
Winter 2022

Course Description (Subject to change until January 23, 2022)

This course focuses on the microbial world that is part of the complex ecosystem of human body. It explores the mechanisms and consequences of microbial interactions with the human body, including the microbial communities that inhabit our bodies, their essentiality to our health, and the delicate balance between health-promoting and disease-causing microbial behaviour. The application aspect of the human microbiome also is discussed in terms of factors that lead to the alteration of human microbiota, and their implication in treatment of human disorders.

The course is organized as 2 x90 min Lectures per week. The Course is In Person.

Prerequisites

Prerequisites: *SC BIOL3150 4.0 or SC/BIOL 3150 3.0.*

Course Instructors and Contact Information

Course Director

Dr. Dasantila Golemi-Kotra

E-mail(*): biol4154@yorku.ca

(* Send any correspondence to this **email** or through **eClass** to ensure a timely response. When making an appointment for meeting, please include your questions/concerns in the email.

Schedule

Lectures Day/Time: **Tue/Thr 10:00-11:30 am**

Lectures: **In-Person**

Class Meeting Venue: **@ 108 CC Calumet College**

Office hours: **By appointment**

Test/Assignments: In-person

Evaluation (Subject of Change until January 23, 2022)

Test: 1 x 20% ^(a)

Presentation: 1 x 20% ^(b)

Essay: 2 x 20% ^(c)

In-Class/E-Class Discussion: 4 x 5% ^(d)

No Final Exam

(a) One Test on the content of one of the topics (Topic 1).

(b) There will be one presentation required for one of the topics (Topic 2).

(c) There will be two 800 words (each) essays for two of the topics (Topics 3 and 4).

(d) There will be in-class and e-class question and answer periods throughout the course.

Evaluation Format:

1. The Test will include questions based on the lecture material and reading assignments.
2. Test/Presentation/Essay reviewing will be done on a case by case base. An appointment is required within one week of the released mark.
3. In-class and e-class assessment will be based on participation.

Important Dates (Subject to change until January 23 2022)

First day of Class: January 10

Last day of Class: April 10

NOTE: for additional important dates such as holidays, refer to the "Important Dates" section of the Registrar's Website at <https://registrar.yorku.ca/enrol/dates/2021-2022/fall-winter>

The following dates are tentative only. They are subject of change. Do not schedule trips and/or important events on these dates.

Test (20%): Jan 27

Reading week Feb. 19-25

Presentation Feb. 28 (due at 11:59 pm)

1st Essay March 21 (due 11:59 pm)

2nd Essay April 11 (due 11:59 pm)

Course Drop date: March 18

Resources

1. Lecture Materials

- The lecture notes will be based on primary scientific literature (posted on the lecture notes).
- Additional lecture material will be posted on eClass.

2. Course Website

- Any course material will be posted on eClass, including lecture slides and supplementary information.
- Announcements related to the course will be posted on eClass.
- Any discussion related to the course material should be made on eClass.

Learning Outcomes

LECTURE LEARNING OUTCOMES:

- Explain major concepts, methodologies, and issues in studying the human microbiota, demonstrating detailed knowledge in certain topics (*i.e.*, course topics).
- Gather, synthesize, interpret, and critically evaluate, information (including experiments and data) about the role of the human microbiota in a number of human disorders from a variety of sources (*e.g.*, reviews, primary sources).
- Apply scientific knowledge and critical thinking to identify, define, and analyze problems, and design/suggest solutions or opinions.
- Summarize key points from a piece of scientific literature to provide relevant information and support in a written scientific assignment.
- Critique a primary research article, assessing the link between a particular microorganism and a human disorder and providing evidence to support the assessment.
- Design and evaluate a methodology that would test various hypotheses related to the role of the human microbiota in human health and well-being.
- Apply learning from other areas (*e.g.*, genetics, biochemistry, microbiology) to prove or disapprove scientific claims made about the human microbiota.
- Explain the use of model organisms in making correlations between the human microbiota and

human disorders.

- Communicate (orally and in writing) scientific discoveries clearly to peers and a scientific audience.
- Edit and/or evaluate classmates' written and oral assignments, providing constructive suggestions for improvement.
- Discuss and debate issues relating to human microbiota that are not discussed by the instructor.
- Work effectively, responsibly, and collegially with peers in and out of class.

Course Content

This course focuses on the communities of microorganisms that have developed a symbiotic relationship with the human body, commonly referred to as the human microbiota. The four objectives of the course are: (1) to explore the diversity of microorganisms that inhabit regions of the human body such as skin, gastrointestinal tract, urinary tract and respiratory tract as revealed by genomic studies; (2) to analyze their impact on the well-being of the host; (3) to explore the molecular mechanisms proposed to link a number of human disorders to the integrity of the human microbiota, (3) to assemble and analyze evidence on the importance of diet and the impact of antimicrobial agents in the human microbiota; and lastly (4), to explore efforts by the medical community to exploit our knowledge of the human microbiota for the treatment of human disorders.

In this course, students will explore/learn about the microorganisms that inhabit the human body, the mechanisms that underlie interactions between the host and the microorganisms, the impact of those interactions on human health, and the parameters being developed to assess proposed links between human diseases and the human microbiota. In addition, students will acquire skills to assemble scientific evidence and critically assess the scientific literature on the human microbiota as a causative agent of human diseases, summarize pro and con theories on the impact of microorganisms on particular human disorders, and verbally communicate those discoveries to a lay and diverse audience such as their own peers.

Topics in this course include:

- 1) Microbial Ecosystems: Humans as a unique and complex ecosystem
- 2) Microbial symbioses with humans
- 3) Disorders linked to the human microbiome
- 4) Factors that alter the human microbiome (such as antibiotics & diet)
- 5) The human microbiota as a tool for the treatment of human disorders (such as fecal transplants, prebiotics, probiotics).

Experiential Education and E-Learning

Experiential Education:

- Laboratory work

E-learning:

- Course website on eClass
- Supplemental videos and presentations

Course Policies

1. MISSED Test/Assignments:

- Due to the COVID-19, for this term (Winter 2021), I will not ask for doctor's note to document the reason of the missed test.
 - If you miss the test, its weight will not be shifted to the other assignments.
 - For each day that any of the assignment is late a 10% penalty will be administered.
- 1.1 Students that require accommodation for religious reasons should inform the instructor by January 20th via email at biol4154@yorku.ca. Please get more information regarding religious accommodation at <https://registrar.yorku.ca/pdf/exam-accommodation.pdf>.
- 1.2 Students that have an accommodation letter from OPD should provide this letter to the Instructor no later than **January 23. Those that may think need a letter from OPD**

should do so before the beginning of the Winter semester.

- Students are responsible to contact the OPD if needed. The instructor will not make arrangements on their behalf, or in the middle of the semester.

2. TEST AND EXAM REAPPRAISALS:

2.1 If there are concerns about marking, you **must submit a written rationale** that is based on academic grounds (*) within **ONE week** of the test/assignment mark being made available to you.

Note: Regrading can result in the grade being raised, confirmed or lowered.

(*) *Academic grounds means you make an academic argument for why your answer is correct – statements such as “this grade does not reflect my knowledge” or “I really studied hard and I deserve a better grade” are not academic grounds.*

2.2 In order to be fair and consistent with regards to the entire class, individual grades are not negotiable. **I cannot provide “extra credit” assignments. Marks for assignments and tests will not be “rounded” or “bell-curved”.**

2.3 Contact the Course Director about marks if there is a clear error in your grade (calculation, clerical, etc.) within **ONE week** of the test score being made available to you.

3. E-MAIL POLICIES AND ETIQUETTE: The contact address for this course is biol4154@yorku.ca

3.1 Before you send an e-mail with an inquiry regarding the course or course material, please check the Course Outline document and other documentation posted on eClass for answer. No response will be provided to inquiries for which the response is already provided on Moodle.

3.2 A response will be provided within two working days, but this is not always possible. I may also answer to your question in the next class meeting if appropriate. Questions and answers that I deem of interest to the entire class will be posted on the appropriate discussion board or sent via course announcements if urgent.

3.3 Emails that do not meet the requirements below will not receive a response:

- Use your @yorku.ca email address when emailing instructors and others within the university. Email from other sources may be filtered out and not reach the intended recipient.
- **SUBJECT LINE** - Include the course code, course section and brief indication of topic. For example: BIOL3150 – Question Regarding Gram Staining
- **Include your NAME and STUDENT NUMBER at the end of each email.** This is the only way I can access your course information is via your student number.
- Remember, you are in a professional environment and thus all your written correspondence, including emails, should be professional. This means full sentences, proper grammar, NO text message lingo.

4. eClass DISCUSSION BOARDS: Students are encouraged to participate in the e-Class forums to discuss course concepts, organize study groups, and ask questions relating to Biology. The discussion on the forums has typically been polite and respectful, and we hope this will continue. Students are expected to follow the code of conduct when using the Moodle forums:

- Be sure to read the other threads before you post a question to see if your question has already been answered. If your question hasn't already been asked, please post in the most appropriate area. (e.g., if your question is about a lab submission, your post should be in the “Laboratory” forum.)
- When posting, use a clear, informative subject line and be clear specific and professional.
- Post comments appropriate to the particular discussion. Off-topic posts may be moved or deleted.
- Post only material relevant to BIOL 3150. Other posts will be deleted.
- While it is appropriate to engage in debate/ discourse on biological topics, such discussions should be respectful and evidence-based. Evidence should be from trusted sources – consult with the library if you are not sure! (See: <http://www.yorku.ca/webclass/module4a.html>)
- Discussions are monitored. Messages containing personal attacks, inappropriate language, or other disrespectful contents will be removed. Irrelevant material will also be removed. Follow the York University Student Code of Conduct <http://www.yorku.ca/oscr/codeofrr.html>
- If you notice any inappropriate threads please contact the Course Director.
- Any posts which appear to violate our code of conduct may be edited, moved or deleted at the

discretion of instructors/moderators. If posts give indications of violations of academic honesty or the York University student code of conduct, further action will be taken.

Disclaimer: While e-Class moderators / instructors will attempt to remove (or edit) objectionable/inappropriate material as quickly as possible, it is not always possible to review every post. All posts made on the forums express the views and opinions of the author and not the moderators / instructors (except for posts by these people) and they cannot be held liable.

5. ACCOMMODATION STATEMENT:

Students who feel that there are extenuating circumstances that may interfere with their ability to successfully complete the course requirements are encouraged to discuss the matter with the Course Instructor as soon as possible (**deadline by January 23**). Students with physical, learning or psychiatric disabilities who require reasonable accommodations in teaching style or evaluation methods are encouraged to consult with the Office for Persons with Disabilities (OPD) and ensure that requests for appropriate accommodations are arranged with the course instructor (**deadline by January 23**). Please note: "Senate policy states that students are expected to monitor their progress in courses, taking into account their personal and academic circumstances, and to make the necessary adjustments to their workload to meet the requirements and deadlines." (From Senate Policy of Students' Responsibilities in the Petition/Appeal Processes: <http://www.yorku.ca/univsec/senate/committees/sac/sturesp.htm>)

- Please submit CDS Accommodation letters to the Instructor (**biol4154@yorku.ca**).
- Please also inform instructor of any religious observance conflicts occurring at any point during the semester, for which accommodation will be required, by **January 23**. Please email these dates to **biol4154@yorku.ca**.

University Policies

1. Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - http://www.yorku.ca/spark/academic_integrity/index.html

VERY IMPORTANT- A note from the Faculty of Science Committee on Examinations and Academic Standards

Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g. Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. The Faculty's Committee on Examinations and Academic Standards (CEAS) found in these cases that the burden of proof in a charge of aiding and abetting had been met, since the uploading students had been found in all cases to be willfully blind to the reasonable likelihood of supporting plagiarism in this manner. Accordingly, to avoid this risk, students are urged not to upload their work to these sites. **Whenever a student submits work obtained through Course Hero or One Class, or previous students' course work, the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting.**

Note also that exams, tests, and other assignments are the copyrighted works of the professor assigning them, whether copyright is overtly claimed or not (i.e. whether the © is used or not). Scanning these documents constitutes copying, which is a breach of Canadian copyright law, and the breach is aggravated when scans are shared or uploaded to third party repository sites."

2. Access/Disability

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

Student's in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are

encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Additional information is available at the following websites:

Counselling & Disability Services - <http://cds.info.yorku.ca/>

Counselling & Disability Services at Glendon –

<http://www.glendon.yorku.ca/counselling/personal-counselling/what-is-counselling/>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

3. Ethics Review Process

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants*. In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

4. Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first week of the class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online at

http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf

5. Student Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at -

<http://secretariat-policies.info.yorku.ca/policies/disruptive-and-or-harassing-behaviour-in-academic-situations-senate-policy/>.