

## Department of Biology Course Outline

**Any changes will be highlighted in yellow**

### SC/BIOL 3150 4.00 Microbiology Winter 2022

The lecture component of this course is online until at least January 31<sup>st</sup>.  
After January 31<sup>st</sup>, lectures will tentatively be held in-person.  
The lab component of this course consists of mandatory in-person and online components.  
This course is presented in Toronto time (Eastern Time Zone).

#### Technology Requirements for online lectures

**You must have access to reliable high-speed internet connection (Wi-Fi) and a computer in order to take this course.**

The following are also required:

- Access to audio (including microphone) and a web cam. Some aspects of the course will involve video conferencing software (e.g., Zoom).
- Reliable access to eClass and ability to stream videos from eClass.

#### Course Description

Fundamentals of microbiology; microbial organisms; microbe-host interactions; microbial genetics and evolution; microorganisms and human disease; environmental and applied microbiology.

**Course organization:** This course runs for one term, is worth four credits and consists of the following components:

- **Three lecture hours per week → Held in synchronous format.**
- **5 x 180 minute in-person laboratory sessions**
- **Virtual laboratory work which will be made available via eClass.**

#### Prerequisites

One of the following: (1) SC/BIOL 2020 4.00 or SC/BCHM 2020 4.00; SC/BIOL 2021 4.00 or SC/BCHM 2021

4.00; SC/BIOL 2040 4.00; (2) if the 3-credit course is taken in either one or more of SC/BIOL 2020, SC/BIOL 2021, SC/BIOL 2040 3.00, then SC/BIOL 2070 3.00 is required. Course credit exclusion: SC/BIOL 3150 3.00.

#### Course Instructors and Contact Information

##### **COURSE DIRECTOR**

Dr. Nicole Nivillac

Student hours, held via Zoom: Wednesdays from 11:30am-12:30pm.

E-mail: [nivillac@yorku.ca](mailto:nivillac@yorku.ca)

**Lab Coordinator:** Tamari Chkuaseli ([microlab@yorku.ca](mailto:microlab@yorku.ca))

#### Course Schedule and Format

##### **Lectures**

Lectures times will be on Tuesdays and Thursdays 10:00am – 11:20am.

- Lecture material will be delivered **synchronously** (by video conferencing software during posted lecture times). *Note: Some synchronous sessions may not be recorded.*

- Lecture material (lecture recordings, readings, activities) will be posted on eClass with activities associated with lectures due throughout the week.
- If for some reason a lecture must be held asynchronously, this will be indicated in on the BIOL 3150 eClass site.

### Labs

In-person labs will be on Monday, Tuesday, Wednesday, Thursday, or Friday from 10:00am-1:00pm, 2:30-5:30pm or 6:30-9:30pm in room 126 FRQ.

- Please note that **attendance in the in-person laboratory sessions is mandatory**. If you do not feel comfortable in attending in person labs, you must not remain enrolled in this course.

## Resources – Required Texts and Materials

### LECTURE MATERIALS

- Madigan *et al.* (2021) Brock *Biology of Microorganisms*, 16th ed., Pearson Publishing.
- The e-text version is available through the York Bookstore.
- The 15th Edition of this text is fine, **BUT** you need to determine chapter/pages on your own.
- Additional readings (e.g., review and primary research articles) will be assigned during the course. Articles will be available via the instructor or the York libraries.
- Some assignments will also require additional research.

**During lectures and throughout the course, questions will be asked as we go through the material. This may be done via zoom polling, eClass quizzes or Personal response system (iClicker).**

### Lab Materials (MANDATORY):

- Lab coat + Safety goggles
- Lab exercise for the week (will be posted on eClass one week in advance of each lab)
- Lab notebook (no binder or loose-leaf paper. Your notebook **MUST** be a bound book).
- Turnitin account

### COURSE WEBSITE:

- The BIOL3150 eClass site will include announcements, course materials, online quizzes, resources, and a discussion forum. <http://eclass.yorku.ca>
- This site will be used for posting course information including lecture slides, exam results and supplementary information. Online quizzes will also be completed on eClass.

## Evaluation

Midterm 1	15%
Midterm 2	15%
Final exam	25%
Laboratory	35% (25% in-person labs and 10% virtual labs)
Activities	10%

*Details on the polices and format of each component provided below.*

**Midterms and the final exam** will be based on the lecture material only

- Specific details regarding the midterm/exam format, activities etc. will be provided in class.
- Midterm 1 and 2 will be written during class time. The final exam will cover the entire course; dates/times for exams are scheduled and published by the Registrar's Office (RO).
- You must write at least one midterm to be able to write the final exam.

### The Format of Midterms and the Final Exam:

- The format of tests and exams will be announced during the lectures.
- If classes do not return to in-person format and midterms are to be administered online, Proctortrack will not be used for midterms or the final exam. *Note: Students may need to*

support written test answers orally through a video conference (Zoom) meeting with the instructor.

### **Policies For Missed Midterms:**

- This course has no make up opportunities for a missed midterm.
- If a midterm is missed, **the weight will be distributed to the final exam.** No documentation is required.
- You must contact the course director within one day (24 hours) of the midterm.
- **You must write at least one midterm exam in order to write the final exam.**
- **If classes do not return to in-person format and midterms are to be administered online: If you access or view a midterm in any way, it will be considered completed. The grade of the midterm (even if you do not complete any part of it) will apply to your final grade.**

### **Policies For Missed Final Exam:**

- If you miss the final exam, you must request deferred standing and notify the course director within 48 hours of missing the exam.
- **All students** who miss the final examination must petition if they are seeking deferred standing. No student will be granted deferred standing by the instructor via a Deferred Standing Agreement Form (DSA). Students will have to seek deferred standing by submitting a petition to their home faculty. It will be the Petition Committee's decision whether deferred standing is granted and, if deferred standing is granted, this committee will also set the deadline for writing the deferred examination.
- **If classes do not return to in-person format and the final exam is to be administered online: If you access or view the final exam in any way, it will be considered completed. The grade of the exam (even if you do not complete any part of it) will apply to your final grade.**

### **Test/Exam Feedback**

- While instructors do their best to provide grades to students in a timely manner, there are several different factors that may delay the process – especially in these uncertain times. Please be patient.
- If classes do not return to in-person format and midterms are to be administered online: Please note that personal/individual test feedback is not possible. General feedback will instead be provided to the class.

### **Test And Exam Reappraisals:**

- For written answers on midterms and the final exam: if you believe that a written answer on a test was marked incorrectly, you must provide written rationale that is based on academic grounds\* within ONE week of the test 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.*

In order to be fair and consistent with regards to the entire class, individual grades are not negotiable. We cannot provide “extra credit” assignments. Marks for assignments and tests will not be “rounded” or “bell-curved”. Contact the Course Director about marks **only** if there is a clear error in your grade (calculation, clerical, etc.) within ONE week of the test score being made available to you.

### **Format of the Activity Component:**

- Activities are varied and designed to support your learning. If used properly, they can be a huge help to keep you on track and up to date with lectures and readings, help you understand the lecture material, identify what you do not understand, and improve your learning. We use evidence-based teaching strategies, which means you do activities that research has shown are effective for improving and supporting your learning.
- Each activity will earn points towards the activity grade. The sum of the activity points will be used to calculate the activity grade.
- You should plan to complete all activities long before the posted deadline, as we cannot provide make-ups or extensions. If you leave everything until the night before and then

encounter a problem and are unable to complete it, you will receive a zero. However, we realize that life happens, and you may miss something due to unforeseen events or technological issues. Therefore, the lowest 10% of your activity points (including zeroes) will be dropped from your Activity Grade to help address these issues.

**Policies For Missed Activities:**

- Quizzes cannot be re-opened after they close. Activity deadlines cannot be extended, so there is already extra time built into the activity deadlines.

**Policies For Missed Labs:**

- Virtual labs: exercises and quizzes cannot be re-opened after they close.
- Due to COVID-19 and the mixed format of lab delivery, if you miss an in-person lab session, no make-up lab is possible. If you miss more than one in-person lab session, you will not receive a mark for the in-person lab component.

**EVALUATION: The lectures and labs must be passed independently (each with a 50% or higher) to pass this course.**

**Last Day to drop the course without receiving a grade: March 18, 2022**

**Last Day to withdraw from the course and receive “W” on transcript: April 10, 2022**

*Note: Final course grades may be adjusted to conform to Program/Faculty grades distribution profiles.*

**Important Dates**

Midterm 1	15%	Tuesday February 8 <sup>th</sup>
Midterm 2	15%	Thursday March 10 <sup>th</sup>
Final exam	25%	Will be scheduled by the University Registrar
Laboratory	35%	(25% in-person labs and 10% virtual labs)
Activities	10%	In-lecture questions, Online quizzes, etc.

NOTE: for additional important dates such as holidays, refer to the “Important Dates” section of the Registrar’s Website at <http://www.yorku.ca/yorkweb/cs.htm>

**Learning Outcomes**

**LECTURE LEARNING OUTCOMES:**

- Explain major concepts, methodologies, and issues in microbiology, demonstrating detailed knowledge in certain topics (*i.e.*, planned course topics).
- Gather, review, evaluate and interpret microbiology information (reviews, primary sources, and mass media articles).
- Apply learning from other areas (*e.g.*, biochemistry, genetics) to microbiological problems/situations.
- Solve basic microbiological problems.
- Design simple microbiological experiments.
- Predict the outcome of microbiological experiments.
- Identify problems and suggest possible solutions in terms of microbiology and society.
- Discuss and debate current issues relating to microbiology.

**LABORATORY LEARNING OBJECTIVES:**

- The laboratory exercises have been designed to support and develop concepts from the lectures, text, and related scientific literature. The exercises will also:
- Introduce aseptic techniques and basic microbiological methodology.
- Conduct microbiological experimentation in a laboratory setting.
- Carry out microbiological laboratory activities with safety, reliability, and a good understanding of aseptic technique.

- Provide opportunities to observe and practice microbiological concepts, and determine the importance of microorganisms in the environment, food industry, and in human health.
- Provide opportunities to work effectively and collegially with others in the microbiology laboratory setting.

**Laboratories begin the week of *January 31<sup>st</sup>*. Consult the laboratory schedule on the BIOL 3150 eClass Website to determine when your lab section is scheduled.**

## Course Content

### LECTURE TOPICS

Chapters correspond to Madigan, 16th ed. (2018). Coverage of chapters will not necessarily be complete. We will also not necessarily be working linearly through the textbook. Students are advised to attend all lectures and study those sections of the text relevant to the lecture topics. Midterm and exam questions will relate primarily to the topics covered during lecture, but some self-study will also be required. Lab material will also form part of the midterm and final exam evaluations.

**PLANNED COURSE TOPICS:** In the context of particular issues/cases/problems, we will explore key aspects of:

- History of microbiology
- Cell structure/ function of bacteria and archaea
- Bacterial growth and environmental factors affecting growth of bacteria and archaea
- Control of bacterial growth
- Evolution/ systematics/ taxonomy of bacteria and archaea
- Genetics/ genomics of bacteria
- Bacterial regulation/ signal transduction (e.g., chemotaxis, quorum sensing)
- Human-microbe interactions
- Epidemiology
- Applied microbiology
- Social impact of microbiology

A more detailed lecture schedule will be made available via eClass.

## Experiential Education and E-Learning

### Experiential Education:

- Laboratory work

### E-Learning:

- eClass Website
- Online quizzes (lecture and lab)
- In-lecture questions
- Supplemental videos and presentations for laboratories

## Copyright Protection Of Course Material

All material associated with this course is the intellectual property of the instructor and/or protected under Canadian Copyright Law.

All material associated with this course, including lecture recordings, slides, activities, quizzes, tests/exam and laboratories, are to be used for personal study purposes only. **Unauthorized distribution in any form can lead to a violation under Canadian Copyright Law and/or Academic Misconduct charges under York University Senate Policy.** Unauthorized distribution includes sharing and/or uploading of material anywhere and with anyone.

Penalties under Academic Misconduct can include failure in the course, a transcript notation and/or suspension.

## Netiquette And Electronic Communication

### E-MAIL POLICIES AND NETIQUETTE

We want you to get the most out of this course, and that will involve regular electronic communication. We also want everyone to have a positive and supportive experience, so we ask for your help in making this course a positive and safe space for everyone:

- Please use respectful and professional correspondence for all aspects of this course, including email, discussion forums, chat sessions, video sessions and any other online means of communication.
- Remember that tone can be misinterpreted through written means as we do not have physical cues to help guide us. Avoid using all capitals (which can represent yelling) and multiple exclamation marks (which can also represent yelling).
- Use proper sentences and grammar so your ideas are clearly conveyed.
- Consider this an opportunity to practise professional correspondence which you will use throughout your career.

Posts to discussion forums that are not on topic, not relevant to BIOL 3150, or that contain personal insults/ attacks/ intimidation/ profanity will be deleted. Please remember that as per the York University Code of Student Rights and Responsibilities, students have “The responsibility to consider and respect the perspectives and ideas of others, even when the student does not agree with their perspectives or ideas “.

If you notice any inappropriate threads in the Discussion forums, please email [nivillac@yorku.ca](mailto:nivillac@yorku.ca)

I will try to respond to email within two working days (48 hours), but this is not always possible. I may also answer 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.

Emails that do not meet the requirements below may not be answered:

- 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.** I work with hundreds of students and 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.

**ECLASS DISCUSSION BOARDS:** Students are encouraged to participate in the online eClass 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 eClass 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 eClass 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.*

## 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 (**i.e., the 1<sup>st</sup> week of term**). 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 (in the 1<sup>st</sup> week of term). 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 SAS Accommodation letters to the Biology Document Submission System (link posted on eClass) by January 18<sup>th</sup>, 2022.

Please also inform instructor of any religious observance conflicts occurring at any point during the semester, for which accommodation will be required, by January 18<sup>th</sup>, 2022. Please email these dates to [nivillac@yorku.ca](mailto:nivillac@yorku.ca).

## University Policies

### 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/academicintegrity/>

### 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.

*Accordingly, to avoid this risk, students are urged not to upload their work to these sites. Whenever a student submits work obtained through a third-party site (e.g., Course Hero, One Class etc.), 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.

**Penalties associated with charges of Academic Misconduct can include zero on the assignment, letter grade reduction, failure in the course, notation on the transcript, and/or suspension.**

**Please Do Not Cheat, it is not worth it, and ultimately hurts your learning.**

### **Student Accessibility**

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.

Students in need of these services are asked to register with Student Accessibility 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:

Student Accessibility Services - <https://accessibility.students.yorku.ca/>

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

- **Students Registered with Student Accessibility Services:** please email your letter to [nivillac@yorku.ca](mailto:nivillac@yorku.ca) by Tuesday January 18, 2022.

### **Religious 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 two weeks of 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 period, students must complete and submit an Examination Accommodation Form at least 3 weeks before the exam period begins. The form can be obtained from Student Client Services, Student Services Centre or online at <https://registrar.yorku.ca/pdf/exam-accommodation.pdf>

- **Students with Religious Conflict:** email [nivillac@yorku.ca](mailto:nivillac@yorku.ca) by Tuesday January 18, 2022. Indicate the day(s) of conflict and the course activity.

### **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-andor-harassing-behaviour-in-academic-situations-senate-policy/>

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