

## Department of Biology Course Outline

SC/BIOL 3150 4.00 Microbiology  
Winter 2016

### Course Description

Fundamentals of microbiology; microbial organisms; microbe-host interactions; microbial genetics and evolution; microorganisms and human disease; environmental and applied microbiology. Three lecture hours, three laboratory hours. One term. Four credits.

### 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  
Office hours: By appointment  
E-mail: [nivillac@yorku.ca](mailto:nivillac@yorku.ca)

**Lab coordinator:** Alexander Klenov ([microlab@yorku.ca](mailto:microlab@yorku.ca))

### Schedule

Lectures will be on Tuesday 10:00am – 11:30am in SLH F and Thursday 10:00am – 11:30am in CLH F  
Labs will be on Tuesday, Wednesday or Thursday from 2:30-5:30pm or 6:30-9:30pm in 109 or 110 LUM

### Evaluation

Midterm 1	15%
Midterm 2	15%
Final exam	25%
Laboratory	35%
In class activities	3%*
Project	7%

Midterms and the final exam will include 2 sections:

1. Questions based on the lecture material
2. Lab-related items

- Marks from each section will count towards midterm/final lecture marks and laboratory marks respectively.
- Details regarding the midterm/exam format, project components and mini-assignments and activities will be provided in class. See below for more format details.
- Midterm 1 and 2 will be during class time. The final exam will cover the entire course; dates/times/rooms for exams are scheduled and published by the Registrar's Office (RO).

\* Many of the items in this category will include points for participation/completion. This can include

clicker questions, weekly reading quizzes and/or in-class exercises. The lowest 20% of clicker questions/ quizzes (including zeroes) will be dropped from your grade. This is to account for an occasional missed class (e.g., due to illness or other reasons) or for forgotten/ malfunctioning clickers, etc. there

#### THE FORMAT OF MIDTERMS:

- The format of tests and exams will be a combination of multiple choice and short answer questions.

**EVALUATION: The lectures and labs must be passed independently to pass this course. The course drop date is March 4, 2016**

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

### Important Dates

Midterm 1	15%	Thursday Feb 4 <sup>th</sup>
Midterm 2	15%	Thursday March 3 <sup>d</sup>
Final exam	25%	Will be scheduled by the University Registrar
Laboratory	35%	Includes 22% from lab assignments/ performance and 13% from Questions on Midterms (3% per midterm; 7% for the final exam)
In class activities	3%	Clicker activities, Online quizzes, etc.
Project	7%	Includes components → Due dates will be announced in class

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>

### Resources

#### LECTURE MATERIALS

- Madigan *et al.* (2015) Brock *Biology of Microorganisms*, 14th ed., Pearson Publishing.
- The 13th or 12th Edition of this text are fine **BUT** you'll need to determine chapter and page locations on your own.
- There may be copies of the text on reserve (2h) in the Steacie Library.
- 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.

#### REQUIRED CLICKERS (PERSONAL RESPONSE SYSTEM)

- Turning Point Clickers will be used in this course. Bring your clicker to every lecture. We will NOT use clickers during the first week of class.
- If you do not already have one, each student must purchase his or her own clicker. Using a clicker not registered to you (or answering clicker questions for a friend) is considered a breach of Academic Honesty.
- **Turning Point Clickers are purchased through York University Computing Services.**
  - New clickers are \$42 (charged to your student account) and are ordered online with pickup at the William Small Centre.
  - Course Instructors and TAs are NOT involved with the sale or registration of clickers.
  - To purchase: Go to [www.yorku.ca/prs/students/](http://www.yorku.ca/prs/students/) → Click on "Purchasing Your Clicker"
  - **Register your clicker by January 15<sup>th</sup>, 2016:** Go to [www.yorku.ca/prs/students/](http://www.yorku.ca/prs/students/) → Click on "Registering Your Clicker" → Follow the instructions.

**Lab Materials (MANDATORY):**

- Lab coat + Safety goggles
- Lab manual (will be posted on Moodle)
- Lab notebook (no binder or loose leaf paper. Your notebook MUST be a bound book).

**COURSE WEBSITE**

- The BIOL3150 Moodle site will include announcements, course materials, online quizzes, resources and a discussion forum. <http://moodle.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 Moodle.

**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 (in 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.
- Communicate (orally and in writing) microbiological concepts clearly to peers and a scientific audience.
- Discuss and debate current issues relating to microbiology.
- Effectively and collegially work with others in the microbiology laboratory and class setting.

**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.
- 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.

**Laboratories begin the week of *January 18<sup>th</sup>*. Consult the laboratory schedule on the BIOL 3150 Moodle Website to determine when your lab section is scheduled.**

**Course Content****LECTURE TOPICS**

Chapters correspond to Madigan, 14th ed. (2015). 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
- Please see Moodle for more detailed lecture schedule.

## Experiential Education and E-Learning

### Experiential Education:

- Laboratory work

### E-Learning:

- Moodle Website
- Online quizzes (lecture and lab)
- Clickers in the classroom
- Supplemental videos and presentations for laboratories

## Course Policies

### MISSED MIDTERMS:

- If a midterm is missed with a valid excuse and documentation (e.g. illness with a doctor's note), the weight will be distributed between the remaining midterm and the final exam.
- You must contact the course director within two days (48 hours) of the midterm exam and present valid documentation within one week of the exam to qualify for exemption.
- **IMPORTANT: If you miss because of illness, you MUST see a Physician within 24 hours of the missed test – normally on the same day - so that the Physician can confirm you are too ill to attend the test based on medical examination. Valid documentation for medical situations** consists of an "Attending Physician's Statement" from the petitions package [http://www.registrar.yorku.ca/pdf/attend\\_physician\\_statement.pdf](http://www.registrar.yorku.ca/pdf/attend_physician_statement.pdf) or letter/document of similar detail. **A note that simply says you were seen in the clinic will not be accepted.** Any documentation should cover the date of the missed test.
- Death of an immediate family member: death certificate or letter from the funeral director
- Contact your instructor to determine the appropriate documentation required for other circumstances.
- If appropriate documentation is NOT provided within ONE week, a zero will be earned on the missed midterm.
- NOT all situations will be accommodated, meaning that a zero will be earned on the missed test or exam.
- Circumstances not accommodated include, but are not limited to, schedule confusion, sleeping in, missing the bus, personal endeavors (including a job), and busy lives.

### MISSED FINAL EXAM:

- If you miss the final exam for a valid reason (e.g. medical emergency, death of an immediate family member) 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.

### 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 submit a written rationale that is based on academic grounds\* with your test to the Biology Office (FS 108) within ONE week of the test being made available to you. **Only those answers written in ink will be eligible for regrading.** 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.**

#### **RECORDING LECTURES:**

Photographs or video recordings of any portion of the lectures (including slides) are PROHIBITED. Images and material presented are subject to Canadian copyright law.

Audio recordings are permitted provided they are used ONLY as a personal study aid, and are NOT sold, passed on to others or posted online. Remember the lectures are the intellectual property of the professor and cannot be distributed without permission. Lectures can ONLY be recorded from your seat. No recording devices are permitted at the front of the room, including front table(s), the lectern and computer area.

#### **E-MAIL POLICIES AND ETIQUETTE:**

I will try to respond to email within two working days, 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.

**MOODLE DISCUSSION BOARDS:** Students are encouraged to participate in the online Moodle 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 Moodle 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 CDS Accommodation letters to the Instructor (me) or Undergraduate Office (108FS) by January 15<sup>th</sup>, 2016. Please email [nivillac@yorku.ca](mailto:nivillac@yorku.ca) and [microlab@yorku.ca](mailto:microlab@yorku.ca) to make us aware of submissions.
- Please also inform instructor of any religious observance conflicts occurring at any point during the semester, for which accommodation will be required, by January 15th, 2016. Please email these dates to [nivillac@yorku.ca](mailto:nivillac@yorku.ca) and submit supporting documentation to the undergraduate office (108 FS).

## **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/>

### **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.

Students 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.html>

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

### **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.

### **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 three 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 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](http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf) (PDF)

### **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/>