
Microbiology
impacts us
WEAR A
FACE MASK

Recent events have highlighted how relevant microbiology is to our lives. Welcome to:

Introductory Microbiology (BIOL 2070)
Introductory Microbiology & Techniques (BIOL 2071)

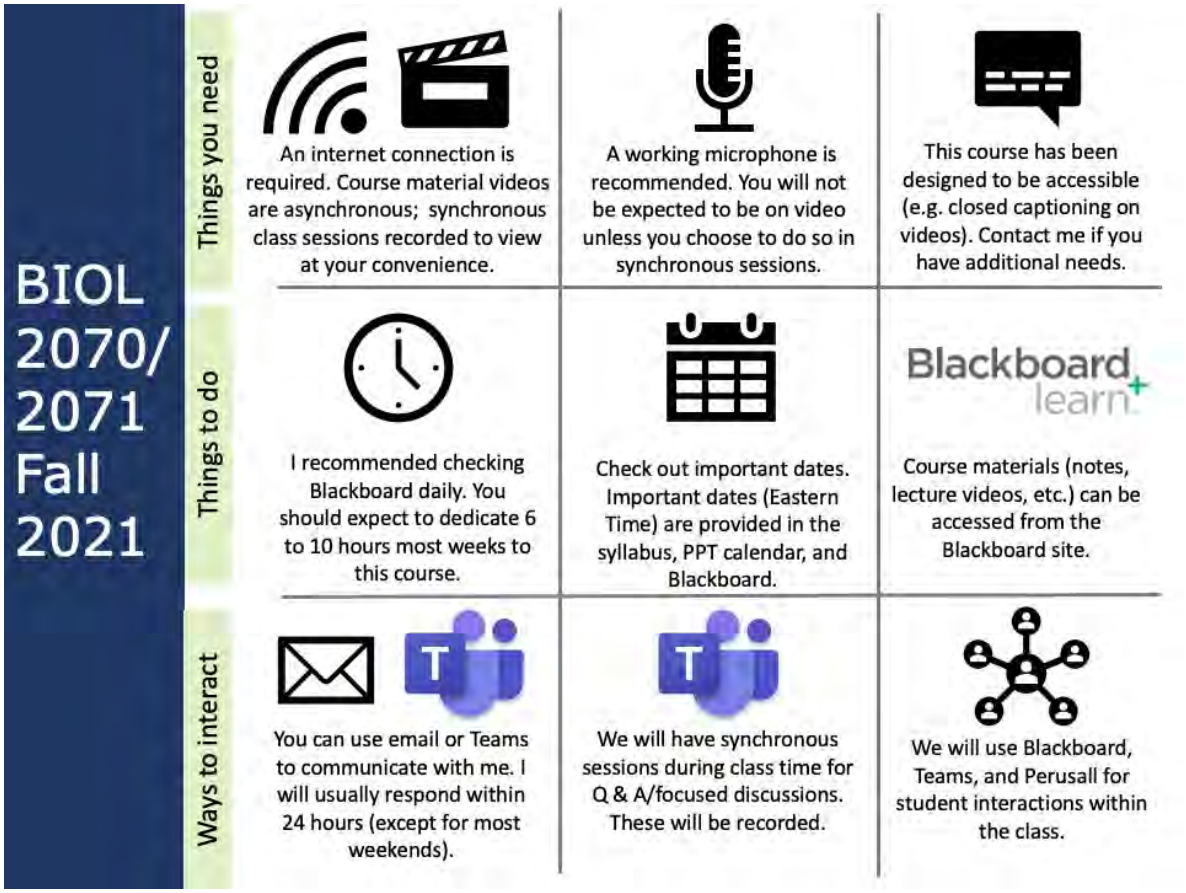
Calendar description: Growth, genetics, structure, physiology, and diversity of microbes and viruses.
Prerequisites: BIOL-1111 (55-140) and BIOL-1101 (55-141)

Although microbes are tiny (often invisible!), they are abundant, almost everywhere, and have a major impact on life as we know it. Microbiology is a huge area of study of very small things!

Big questions driving this course are:

What do you need to know about microbiology as a biology/science student?
What do you need to know about microbiology to be an informed individual in society?

In this course, we'll look at some of the major features of microbes, ways that microbes differ, how we study them, and how microbes impact humans and other organisms. We will consider microbial growth … and how to control/prevent microbial growth. We'll also explore some of the roles of microbes in health and disease, in the environment, and applied settings.



Fall 2021 note:
We are facing another unusual term, with various circumstances and stresses relating to the pandemic. These are not optimal times, but I'll be doing my best to teach, communicate with, challenge and support you. I know that you will also be doing your best. Please remember that your health and well-being are more important than this (or any) course.

Fall 2021 BIOL 2070/2071 lecture components are online/virtual. Lectures/lecture assessments are shared by BIOL 2070 & 2071.Synchronous class meetings (in MS Teams): **T/Th: 10 – 11:20 AM**
Most students in BIOL 2071 will have hybrid labs with at home activities and 2 labs on campus.

Tools/sites we will be using:	**Blackboard, Microsoft Teams,** **Perusall:** create account at https://perusall.com/ & enter course code: NOEL-EVMCY Videos on **YouTube** and **Microsoft Stream** *Possibly: Kahoot, Mentimeter, Google Docs*

Instructor: Dr. Tanya Noel

she/her pronouns

tnoel@uwindsor.ca , Biology 112, (519) 253-3000 x2705

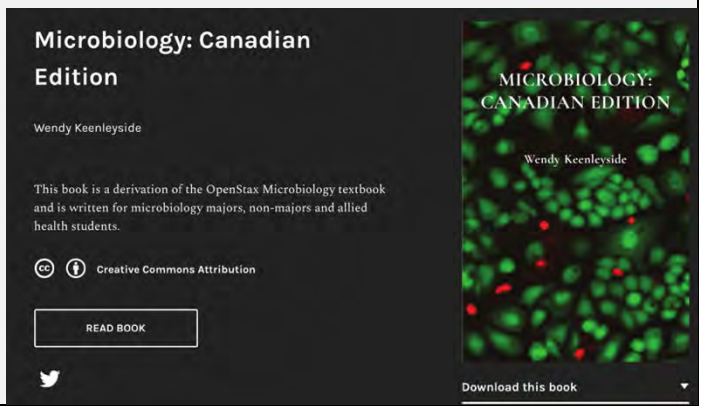
[Note I won't be in my office often this Fall!]

Office/student hours:
Mon. 11 AM-noon, Wed. 12:30-1:30 PM (online). Sign up here: https://doodle.com/bp/tanyanoel/intro-micro-student-hours I'm also happy to set up individual/small group meetings at other times by appointment via Teams/Google Meet/Zoom or to meet outdoors on campus (weather permitting).

Textbook: *Microbiology: Canadian Edition*

This is a **free** online textbook.
(It is based on the OpenStax Microbiology textbook, also free as pdf/on web, but available in hard copy from Amazon. Alternatively, *Brock Biology of Microorganisms* is a good option.)

https://ecampusontario.pressbooks.pub/microbio/



What you'll be learning:

- The scope of microbiology & impact of microbes
- Microbial structure (cell structure/function, & how viruses replicate)
- Diversity of bacteria, archaea, microbial eukaryotes.
- Infectious particles: viruses, viroids, & prions
- Metabolism & growth of microbes
- Microbial growth control
- Microbial genomics & genetics
- Other areas of microbiology (e.g., microbial ecology)

(More details and learning objectives provided in Blackboard.)

Most **BIOL 2071 labs are hybrid** (with in-person lab sessions on campus in BB 305, at-home activities, and online instruction/activities). The labs will introduce you to laboratory safety when working with microbes and allow you to observe and carry out key microbiology methods/techniques and experiments. For those unable to participate in the on-campus and lab kit exercises, there will be online alternatives. Lab syllabus starts on page 9.
BIOL 2070 does not include a lab component.

What goes into my grade?

BIOL 2070 (Introductory Microbiology) graded components:

0. Intro activities 1%
1. Weekly quizzes (8/9 total) 33%
2. Reading/discussion assign. (5/6 total): 14%
3. Personal micro project (total): 37%
   a) Initial interest statement 4%
   b) Reflect & connect 8%
   c) Project plan & references 10%
   d) Project deliverable 15%
4. Final exam: 15%

BIOL 2071 (Introductory Microbiology & Techniques – lab version) graded components:

0. Intro activities 1%
1. Weekly quizzes (8/9 total): 26%
2. Reading/discussion assign. (4/6 total): 11%
3. Personal micro project (total): 30%
   a) Initial interest statement 3%
   b) Reflect & connect 6%
   c) Project plan & references 9%
   d) Project deliverable 12%
4. Final exam: 12%
5. Labs: 20%

Notes:

- [0] Intro activities in the discussion board, BB assign and Perusall by Sept. 15.
- Weekly lecture modules/videos available by Sunday afternoons.
- [1] Quizzes open Tues. 6 PM, due Fri. 6 PM (Best 8/9 counted.)
- Planned timing of reading/discussion assignments (RDAs) and Personal Microbiology Project (PMP) items (due Mondays 11:59 PM):
  [2] RDAs: Sept. 20, Oct. 4, Oct. 25, Nov. 8, Nov. 15, Dec. 1.
  [3] PMP components:
  a) Initial interest statement: Sept. 27
  b) Reflect & connect: Oct. 18
  c) Project plan & references: Nov. 1
  d) Project deliverable: Nov. 29

- [4] The December exam is cumulative, online, open book, and includes a reflection component. Date/start time TBD by Registrar's Office. Format is likely to include both multiple-choice and written answer questions, designed to be completed within an hour (but you'll have 90 minutes).
- [5 – BIOL 2071 only] Lab timing/assessment details provided in lab syllabus (see pages 9-12) and in Blackboard.

More information about all items can be found in Blackboard. If changes are made, they will be communicated as quickly as possible in Blackboard. (You can also see a calendar view of lecture components/due dates starting on page 13 of this document.)

Flexibility elements:

- [1] Quizzes: Best 8/9 scores averaged in mark.
- [2] Read/discuss assignment: 6 assignments will be available, but best 5/6 (BIOL 2070), 4/6 (BIOL 2071) used in grade (i.e., students do not need to do all 6 assignments if they choose not to).
- [3] PMP: Deliverable format can take different forms.
- [5 – BIOL 2071 only] Lowest/missed lab quiz and regular lab assignment not included in mark.

Why Is the Course Set Up This Way?

This course is designed in consideration of cognitive science evidence-backed best practices, which recommend the use of frequent quizzing, exercises, interleaving, and varied practice. (More info about this is in Module 0!) You'll have regular opportunities to retrieve and connect concepts, helping retain and build your knowledge and skills. Expectations about learning objectives and a regular structure help with time management and scheduling. Self-reflection components (in PMP, lab assignments and the final exam) help support deep and experiential learning. I'm happy to discuss this (and other aspects of science education) if you're interested!

As everyone is still dealing with constraints and challenges relating to COVID-19 and living through over a year and a half of a pandemic, I tried to include aspects of flexibility and choice where possible. (A challenge for me is providing flexibility while maintaining consistency across a large class during a continuing pandemic.)

Modules, timing, relevant chapters in textbook (Microbiology: Canadian Edition & OpenStax version)

(Note that additional readings/resources are present in some modules.) Modules will typically open on Sundays by 1 PM.

Module 0: Orientation – **Sept. 8**

Module 1: Intro to microbiology & different microbes - Ch 1, **week of Sept. 12**

Module 2: Working with microbes - Ch 2, **week of Sept. 19**

Module 3: Viruses & other acellular pathogens - Ch 6, **week of Sept. 26**

Module 4: Microbial cells (structure/function in bacteria, archaea, microbial eukaryotes) - Ch 3, **week of Oct. 3**

*[**Week of Oct. 10 -** Reading/Thanksgiving week]*

Module 5: Diversity of bacteria, archaea, & microbial eukaryotes - Ch 4, 5, 8, **week of Oct. 17**

Module 6: Microbial metabolism, growth - Ch 8, 9, **week of Oct. 24**

Module 7: Microbial growth control - Ch 14, 15 (Ch. 13, 14 in OpenStax version), **week of Oct.31**

[**Week of Nov. 7** – review, reflection, and integration]

Module 8: Intro to microbial genomics, genetics - Ch 12 (Ch. 11 in OpenStax), **week of Nov. 14**

Module 9: Introduction to other areas of microbiology (e.g., applied micro/biotech, microbial ecology) – portions of Ch 4, 8, 10, 12, 13 (Ch. 4, 8, 12 in OpenStax – note that OpenStax version does not include Ch. 10 of Keenleyside), **week of Nov. 21**

[**Week of Nov. 28** – review, reflection, and integration]

Your health and wellness are important!

If you anticipate issues related to the format or requirements of this course, or encounter problems during the term, please let me know. I would like us to discuss ways to ensure your full participation in the course, and work with you to consider options and plan how to best coordinate accommodations. Students who require accommodations are encouraged to consult with Student Accessibility Services: http://www.uwindsor.ca/studentaccessibility/

Student Counselling Centre
http://www.uwindsor.ca/studentcounselling/
Room 293 CAW Centre
519-253-3000 ext 4616
Monday – Friday: 8:30 am -12 pm; 1 pm - 4:30 pm.
scc@uwindsor.ca

Student Health Services
http://www.uwindsor.ca/studenthealthservices/
519-973-7002 or ext. 7002
(To make or cancel a Doctor's appt.)
Room 242 CAWSC
Monday-Friday: 9 am- 12 pm; 1 pm - 4 pm

Full list of UWindsor student support services:
http://www.uwindsor.ca/156/lots-student-support-services

Good2Talk: 24 hour Student Helpline
1-866-925-5454

I want the course to be challenging, but also foster an inclusive, equitable environment supporting your learning, growth, and success.

Please talk to me if you have any concerns or questions!

Stuff I have to include – course policies:

1**. MISSED QUIZ OR READING/DISCUSSION ASSIGNMENT**: It is anticipated that some students may miss (or choose not to complete) a quiz and a reading/discussion assignment (RDA). For the quizzes component, the grade will be calculated excluding one quiz (lowest score or missing). For the RDAs, 6 assignments will be available, but the best 5/6 (BIOL 2070), 4/6 (BIOL 2071) will be used in the grade. Please don't notify me for missing a quiz or RDA. ***If you miss more than one quiz, more than one assignment (if in BIOL 2070) or two assignments (BIOL 2071), please let me know*** as soon as possible to discuss your circumstances and what options (if any) there are.

2. **LATE WORK:** For some assessments it will not be possible to submit late work - (e.g., quizzes, as quiz answers are available after the due date). For items where late work is accepted, penalties apply. Details of penalties are provided in Blackboard/assignments. (Note: I've tried to be as flexible and provide as much time as possible for due dates that allow us to provide feedback/marks to students in a reasonable timeframe.) If you are dealing with circumstances that are interfering (or likely to interfere) with your ability to submit work on time, please contact me as soon as possible.

3. FINAL EXAM CONFLICTS: Final exam conflicts must be brought to the attention of the Registrar's Office once final exam dates/times are posted. (This must be done shortly after the final exam times are made available.)

4. **Self-reporting of medical and compassionate absences**: Doctor's notes are not required for medical absences. Please use **UWinsite Student** to report an illness (if necessary – see policies 1 & 2 above). For how-to information, please read this **ask.UWindsor article**. Please do NOT come to campus if you are unwell.

5 **REMARKING OF GRADED WORK**: If you believe that a written answer on an assignment was marked incorrectly, you can provide your rationale for remarking **within 1 week of the item being made available to you**. Please discuss concerns (politely) with your marking GA/TA first before contacting me. Note: Remarking can result in the mark being raised, confirmed or lowered.

6. **DISCUSSION OF MARKS/GRADES**: In order to be fair and consistent with regards to the entire class, individual grades are **not** negotiable. Once grades are posted, there will be no further changes (including "rounding up" or curving) aside from error corrections. It is not possible to provide more opportunities for "extra credit" assignments to all students, and inappropriate to provide such assignments to individuals. **If there is a clear error in your mark (calculation, clerical, etc.) contact me as soon as possible at tnoel@uwindsor.ca.** It is unlikely that you will receive a response regarding any other mark-related queries.

7. **EMAIL POLICY**: Students should use their uwindsor.ca email address for correspondence relating to the course. (Email from other addresses, such as Hotmail or Yahoo, are likely to be filtered as spam/junk.) It's helpful to have an indication of your email topic in the subject line. The body of the email should have a clearly written message and include your **full name and student number**. It helps me if I know the specific course you're in (Intro Micro or 2070/2071). Please check to see if your question has been addressed in the syllabus or in Blackboard before emailing (as I get a lot of emails).

Note: In an attempt to use my professional and personal time more effectively, I only check email a few times a day during business hours, so you may not get a response right away (particularly if you email in the evening or on the weekend). If your email is urgent, please indicate that in your subject line.

8. **BLACKBOARD AND MS TEAMS PROBLEMS** should be directed to IT services - submit a request through the TeamDynamix support portal: http://www.uwindsor.ca/its/

9. Student Evaluation of Teaching forms will be administered online by the university.

10. Final grades will use the percentage scale as described in the University of Windsor Policy on Grading and Calculation of Averages.

11. **DISCUSSION BOARD/PERUSALL CODE OF CONDUCT**. Students are asked to participate in online forums in this course. In my experience, the discussion on course forums has typically been polite and respectful, and I hope this will continue. Students are expected to follow the University of Windsor student code of conduct (see next section), and:

i. **Check to see if your question has already been posted**. (You can **search** the forums – you don't have to read each post!)
ii. **Use a clear, informative subject line**. Try to be as specific as possible.
iii. **Post comments appropriate to the particular discussion**. Off-topic posts may be moved or deleted.
iv. **Be respectful**. Posts containing personal insults/attacks/intimidation/profanity will be deleted. (It is also worth remembering that your instructor reads forum posts!)
v. **Post only material relevant to the course/microbiology**. Other posts are likely to be deleted.
vi. 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 or your instructor if you are not sure!
vii. Any posts which appear to violate our code of conduct may be edited, moved to a hidden forum or deleted at the discretion of instructors/moderators. If posts give indications of violations of academic honesty or the University student code of conduct, further action will be taken.

University of Windsor Honour Code:

Students at the University of Windsor consistently strive to attain the highest standards of academic performance. As part of these upmost principles, students of the University of Windsor pursue all endeavours with honour and integrity, and will not tolerate or engage in academic or personal dishonesty.

Student conduct

Students are expected to be familiar with and follow University of Windsor policies, including policies regarding conduct and academic integrity.

UNIVERSITY OF WINDOR STUDENT CODE OF CONDUCT (Senate Policy Excerpt)

Principles

The University of Windsor is a community of scholars committed to the motto of: Goodness, Discipline, and Knowledge. As in any community, integrity is the foundation upon which all else is built. Fundamentally, a university is a place where those eager to

learn gather to advance knowledge in an open, accepting and friendly manner with a goal to making important contributions to society.

• It is a place where freedom of expression is protected vigorously and uncompromisingly and where civility of expression in word and deed is the code of conduct.
• It is a place where all people are treated fairly without concern to religion, race, colour, national origin, sex, sexual orientation, disability or age.

As such, students are expected to commit to a code of behaviour that stresses respect for the dignity and individuality of all persons, and the rights and property of others. They are expected to practice personal and academic integrity, to take responsibility for their own personal and academic commitments, and to contribute to the University community to gain fair, cooperative and honest inquiry and learning. They are also expected to respect and strive to learn from differences in people, ideas, and opinions, and refrain from and discourage behaviours which threaten the freedom and respect that every individual deserves.

All students, student groups, and organizations have the responsibility to maintain a high standard of conduct based on these principles. It is important to understand that transgressing the code of behaviour or assisting others in a transgression are equally wrong. Students are expected to be individually responsible for their actions whether acting individually or in a group. All students should know that the Senate Bylaw on Academic Integrity (Bylaw 31) addresses this issue as it relates to academic misconduct and all students should be familiar with the content of this Bylaw. Further, students should know that non-academic misconduct is addressed under the purview of the Board.
https://lawlibrary.uwindsor.ca/Presto/content/Detail.aspx?ctID=OTdhY2QzODgtNjhlYi00ZWY0LTg2OTUtNmU5NjEzY2JkMWYx&rID=NTk=&qrs=RmFsc2U=&q=KFVuaXZlcnNpdHlfb2ZfV2luZHNvcl9DZW50cmFsX1BvbGljaWVzLkFsbFRleHQ6KFN0dWRlbnQgQ29kZSBvZiBDb25kdWN0KSk=&ph=VHJ1ZQ==&bckToL=VHJ1ZQ==&rrtc=VHJ1ZQ==

Students are expected to be familiar with and follow University of Windsor policies, including policies regarding academic integrity. Academic integrity involves avoiding plagiarism, cheating and other ethical breaches. Plagiarism and other forms of academic dishonesty will not be tolerated, and all instances will be reported to the Associate Dean of Science for disciplinary action under Senate Bylaw 31: Student Affairs and Integrity. Tests, assignments and lecture recordings in this course are protected by copyright; reproduction or dissemination of their contents or format is strictly prohibited. Students who violate this rule or engage in any other form of academic dishonesty will be subject to disciplinary action.

Use of SafeAssign® Plagiarism-Detection Service in This Course

1. Rationale. The University believes in the right of all students to be part of a University community where academic integrity is expected, maintained, enforced, and safeguarded; it expects that all students will be evaluated and graded on their own individual work; it recognizes that students often have to use the ideas of others as expressed in written, published, or unpublished work in the preparation of essays, papers, reports, theses, and publications. However, it expects that both the data and ideas obtained from any and all published or unpublished material will be properly acknowledged and sources disclosed. Failure to follow this practice constitutes plagiarism. The University, through the availability of SafeAssign ®, desires to encourage responsible student behaviour, deter plagiarism, improve student learning, and ensure greater accountability.
2. Procedure. SafeAssign ® may be used for student assignments/papers in this course. You will be advised how to submit your papers to SafeAssign ® yourself. Note that students' papers that are submitted to SafeAssign ® become part of the SafeAssign ® database. This assists in protecting your intellectual property. However, you also have the right to request that your paper(s) not be run through the student papers database of SafeAssign ®. If you choose to do so, that request must be communicated to me in writing at the beginning of the course, and as an alternative, you must submit your final work along with extensive documentation (dated printouts of your literature/library searches, hand-written and typed drafts, and photocopies of all references).

General learning outcomes of this course:

At the end of this course, the successful student will know and be able to:	**A UWindsor graduate will have the ability to demonstrate:**
A. - describe, relate, and apply a wide range of microbiology concepts/knowledge, including: the different types of microbes and infectious particles (including viruses and prions); structure and function of microbes and infectious particles; microbial diversity; microbial metabolism and growth; control of microbial growth; bacterial genetics and genomics. - describe key biochemical and biological principles relevant in microbiology concepts.	A. the acquisition, application and integration of knowledge

- apply key biochemical and biological principles in a microbiology context (e.g., comparing and contrasting the nature and structure of cell wall polymers in bacteria, archaea, and fungi and considering respective susceptibilities to peptidoglycan-affecting antibiotics). - reflect on microbiology knowledge, identifying aspects relating to everyday life, careers, and other courses.	
B. - collect, read, analyse, synthesize and evaluate relevant microbiology information in the textbook, secondary scientific literature, and popular science publications. - (2071 only) make, record, and analyse microbiological observations; record and present analyses in written and/or graphical form.	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
C. - apply the scientific method and microbiology knowledge to solve problems involving basic microbiology scenarios. - critically analyse case studies involving key microbiology concepts. - access and effectively utilize secondary research literature for solving microbiology problems. - (2071 only) collect and analyse data from common microbiology tests/procedures.	C. critical thinking and problem-solving skills
D. - summarize and explain key microbiological concepts from a reference book, review article, and/or popular science article. - express microbiological concepts in written form. - analyse microbiological data (e.g., bacterial growth curve values) and interpret results. - solve quantitative problems relating to microbiology (e.g., calculating dilutions, bacterial growth rates). - (2071 only) solve quantitative problems relating to microbiology laboratory experiments (e.g., converting spectographic transmittance to absorption values).	D. literacy and numeracy skills
E. - follow the rules of academic integrity. - (2071 only) demonstrate microbiology technical techniques, use of common microbiology lab equipment, appropriate disposal procedures, and safe laboratory practice following WHMIS and BSL-II guidelines.	E. responsible behaviour to self, others and society
F. - communicate microbiology concepts verbally in class through discussions and/or debates. - communicate microbiology concepts in writing through assignments and written examinations. - (2071 only) communicate microbiology via preparation of laboratory assignments and reports. - (2071 only) communicate verbally with graduate assistants, lab partner(s), and neighbouring laboratory groups to effectively carry out experiments and share data where appropriate.	F. interpersonal and communications skills
G. - participate constructively and cooperatively in small group activities in class. - (2071 only) work effectively with a partner/lab group to carry out microbiology experiments, including time management for follow-up work.	G. teamwork, and personal and group leadership skills
H. - express or illustrate microbiology concepts creatively (e.g., through artwork, poetry, or music).	H. creativity and aesthetic appreciation
I. - identify aspects of microbiology that are relevant for personal reasons and/or academic/professional goals.	I. the ability and desire for continuous learning

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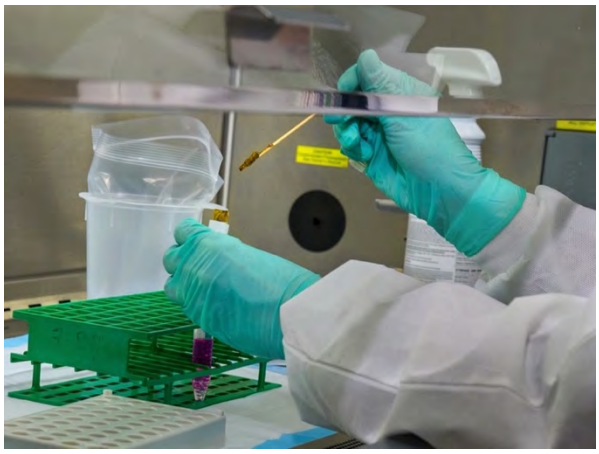
Fall 2021 Introductory Microbiology & Techniques (BIOL 2071) – Lab syllabus



In Fall 2021, **labs are hybrid** (with in-person lab sessions on campus in BB 305, at-home activities, and online instruction/activities). The labs will introduce you to laboratory safety when working with microbes and allow you to observe and carry out key microbiology methods/techniques and experiments. For those unable to participate in the on-campus and lab kit exercises, there will be online alternatives.

After these sessions and activities, students will be able to

1. describe how microbiologists work with microbes in the lab with aseptic technique and safety measures;
2. prepare living specimen slides and use a Foldscope to observe live and prepared microbial specimens;
3. describe advantages and limitations of the Foldscope for viewing microbes;
4. describe ways (and the sequence of steps) to isolate and subculture bacteria and/or yeast from pure and mixed cultures;
5. **use common microbiological lab methods, including the streak plate technique and aseptic transfer/inoculation**;
6. carry out serial dilutions (using a micropipettor) and viable plate counts;
7. **carry out slide preparation and basic staining techniques (e.g., Gram staining)**;
8. analyze microbiological results (e.g., bacterial growth, stained specimens, differential tests);
9. compare and contrast the Foldscope and the compound light microscope;
10. **use the compound light microscope to observe bacterial specimens**;
11. analyze turbidity and viable plate count results to measure bacterial growth and determine phases of growth (i.e., a growth curve);
12. describe differences in microbial growth in terms of requirements, environmental effects, presence of antimicrobial chemicals, and/or other factors, and how these can be studied;
13. compare and contrast various differential tests/media used in isolating and identifying bacteria;
14. analyze differential test results (and other data) for bacterial identification;
15. communicate microbiological data/results and analysis in written form;
16. properly cite and list reference sources in lab assignments and reports;
17. use bioinformatics tools (GenBank, BLAST, UniProt) with microbiological data/queries and interpret results.

Notes about learning outcomes above:

- Blue indicates outcomes aligned with at-home kit activities; **bold** indicates outcomes aligned with on-campus labs. (Outcome 5 is associated with both on-campus and kit activities, using different microbes/equipment.)
- Students in Lab 57 (who won't have kits nor attend on-campus labs) will **not** participate in activities aligning with outcomes: 2, 5, 6, 7, 10.

Lab sections/timing (A/B have same timing, but schedule varies for in-person labs):

Tuesday	Wednesday	Thursday
	53: **8:30**-11:30 AM	
51: **2:30**-5:30 PM	54: **2:30**-5:30 PM	55: **2:30**-5:30 PM
52: **6:30**-9:30 PM		56: **6:30**-9:30 PM

Lab 57 is fully online and asynchronous.
GA/TA information will be available in Blackboard.

Lab schedule (Lab sections 51-56; Lab 57 will be all online, with similar topics in these weeks.)

Week	Start date	Topic(s)
1	Sept. 13	**PICK UP LAB KITS** At-home lab #1: Introduction to microbes, safety/WHMIS and the Foldscope Videos: Foldscope: making a slide, inserting slides, viewing slides
2	Sept. 20	At-home lab #2: Growing your microbes and isolating your yeast strains Videos: Aseptic technique, Solid media preparation, Liquid media preparation, Isolation of pure culture
3	Sept. 27	At-home lab #3: Serial dilutions & working with microbiological data in Excel Videos: Bacterial growth curve measurements, Using Excel
4	Oct. 4	At-home lab #4: Getting ready for working in the microbiology laboratory and start of your unknown project Videos: Microbiology lab tour, Spill cleanup & accidents, Aseptic technique, Microscopy, Bacterial staining.
	Oct. 11	**THANKSGIVING & READING WEEK – NO LABS ☺**
5	Oct. 18	**A: On-campus lab #5: Aseptic technique & isolating bacteria using the streak plate technique** B: Online lab #6: Differential bacterial tests & fermentation [Videos: CHO fermentation & differential tests, Alcohol fermentation, Bread starter experiment]
6	Oct. 26	**B: On-campus lab #5: Aseptic technique & isolating bacteria using the streak plate technique** A: Online lab #6: Differential bacterial tests & fermentation [Videos: CHO fermentation & differential tests, Alcohol fermentation, Bread starter experiment]
7	Nov. 1	**A: On-campus lab #7: Bacterial staining & compound light microscopy** B: Online lab #8: Bioinformatics All: *Unknown hypotheses due by end of Fri. Nov. 5 (11:59 PM).*
8	Nov. 8	**B: On-campus lab #7: Bacterial staining & compound light microscopy** A: Online lab #8: Bioinformatics All: *Receive unknown sequence data*
9	Nov. 15	Work on final lab assignment
10	Nov. 22	*Final lab assignment due by end of Monday Nov. 22 (11:59 PM).*

If changes/updates are made to planned lab activities, this will be announced in Blackboard ahead of the relevant week(s). Note that in-person labs will run if campus and public health regulations allow. If you are unwell, please do NOT come to campus (and report your illness online).

How will the labs run this year?

For most* students, there will be three different types of activities that you'll do:

At-home activities using the provided kit. There are short videos and readings that you can view asynchronously ahead of the lab time, and a GA/TA will run a synchronous MS Teams session for the week's activity. These sessions will be recorded, and you can do the activity on your own if you need to. (Instructions for picking up/receiving the kits will be emailed and posted in Blackboard.)

In-person lab exercises. There will be two lab sessions that are on-campus in the microbiology lab (Biology Building room 305) – see the schedule for which dates apply to your subgroup (A/B) in your lab section. Some videos will be available to help prepare you ahead of the labs. A GA or TA will instruct you in the lab, and you'll carry out key microbiology techniques there under their supervision. PPE requirements: bring a **lab coat and safety glasses**. **Gloves and masks will be provided**.

Online lab activities. There are lab videos that show microbiology techniques, equipment, and experiments that you can view asynchronously. Depending on the topic, there may be additional resources to view/use. For some of these labs, during scheduled lab times your GA/TA will be present online in MS Teams. The GA/TA may provide you with some additional information/clarifications on the lab activities, and address questions you have on the lab material and assignments.

Students who are unable to come to campus will have online lab activities in place of the in-person/kit exercises.* ***Lab 57 is completely online and asynchronous.*

Teams meetings (for at-home and synchronous online labs) will be recorded. If you miss your session, please watch the video recording before emailing your GA or TA with questions.

The lab manual and resources will be in Blackboard in folders on the "Labs (2071)" page.

Ingrid Churchill and Rodica Leu are the stockroom technicians who support the labs for this course and have been instrumental in developing all of these lab activities. You'll hear/see them in some of the videos (and possibly on campus when you come for the in-person labs)!

What goes into my lab grade?

The lab assessments count for 20% of the total grade in BIOL 2071, and include:

Completion of WHMIS training/certification.	0.5
Regular lab quizzes (lowest score dropped).	7
Regular lab assignments (lowest score dropped).	6
Unknown hypothesis.	1
Final unknown project report & lab reflection.	5.5
Maximum total:	*20*

Assessments (overview)

WHMIS training is required for all students: https://ctl2.uwindsor.ca/safety/HS-0056/ . Save your completion code!

Regular lab quizzes will be in Blackboard, and may include different question types, including multiple choice, matching, and short answer questions. Depending on the week and topic, the quiz may be quite short (e.g., 5 questions) or longer (e.g., 20 questions). This part of the grade will be calculated by averaging the scores of the quizzes, not including the lowest score (or zero if a quiz was missed). Lab quizzes will usually be weekly, opening Friday mornings, due by 2:20 PM on the following Tuesday. You'll have at least 12 minutes for an attempt (time is based on the quiz length/question types), and 2 attempts for each quiz with the higher score counted. Most quizzes will focus on the current (and/or recent) lab activities. The last lab quiz will be cumulative (and is optional if you've done all the others).

Regular assignments on lab questions/data will be usually be made available on Mondays, and due the following Friday at 11:59 PM. These assignments are designed to be completed within a couple of hours, and we recommend that students start the assignment before their lab session if possible. For online and at-home labs (Sections 51-56), you're encouraged to attend the live Teams session with your GA, work on/update your assignment during your scheduled lab time, ask questions and discuss concepts with others. This part of the grade will be calculated by averaging the scores of the assignments, not including the lowest score (or zero if an assignment was missed). Some assignments will be individual, while others may be completed by pairs or small groups. If you are not sure, check with your GA. Assignments submitted after the deadline will have a 5%/day late penalty unless otherwise stated.

There will be **an individual project to identify an unknown microbe** based on provided information, simulating the process carried out by professional microbiologists who work in medical, industrial or environmental microbiology identification labs. A hypothesis assignment will be submitted prior to receiving additional information that will be used to complete your final identification. You'll prepare and submit a report with a brief reflection in which you'll describe something meaningful (to you) that you learned during the labs.

More details about assessments will be provided in Blackboard.

Additional notes:

Students who are in Lab 57 (i.e., without kits and not attending in-person labs) will carry out no hands-on activities; students who do not attend the in-person labs will have no microbiological laboratory experience. **Students in who do not attend in-person labs and who are taking the course in preparation for a professional or graduate program that require a microbiology laboratory component are encouraged to check with schools of interest to confirm that the course will be acceptable without hands-on/lab components**. We anticipate returning to a full in-person laboratory component next year, assuming public health recommendations permit.

Students who complete the lab kit and in-person labs (and pass the course) can request a letter of completion of those components at the end of the course. Details will be provided in Blackboard.