

Welcome to Microbiology & Virology!



What is this course all about?

This course will focus on the impact of microorganisms on human health. The characteristics of bacteria, viruses, and eukaryotic microorganisms will be examined, with emphasis on pathogenicity and resistance. Students will be introduced to the role of the immune system in fighting infection and at methods used to control microbial growth. A survey of select pathological microorganisms will deepen understanding of infections relevant to health studies, including public health. Students will also learn basic techniques in the microbiology lab and have the opportunity to conduct original research which they will present as science posters to the Carleton community.

What will I take away from this course?

These are called learning outcomes. By the end of this course, you will be able to:

1. Compare characteristics of pathogenic microorganisms and viruses;
2. Justify pathogen identification and disease diagnosis using evidence;
3. Evaluate strategies for controlling microbial growth;
4. Explain host-microbe interactions;
5. Conduct successful fundamental experiments in the microbiology lab;
6. Effectively communicate microbiology concepts and research findings to scientific audiences;
7. Build a science identity and sense of belonging in the sciences.

Who will be teaching us? Your teaching team is committed to fostering a safe, equitable and inclusive learning environment for all. As such, we expect that everyone will be treated with respect during all interactions, in-person and online. Please reach out to us with ways that we can help facilitate your learning or if you have any concerns at any time.

Course Instructor:
Dr. Katie Lucas (she/her)

Lab Instructor:
Dr. Anil Gollapudi (he/him)

How do I ask questions or get help?

These are called “office hours” but we prefer “student hours”, as it’s your time! Wherever and whenever is best for you! Come and meet with any member of our teaching team. Say hi, ask questions or discuss whatever’s on your mind. Book a time to meet with Katie in-person or by Zoom by emailing me. Book a time to meet with Anil (over Zoom) by email.

Your TAs are also a great support and resource. Information about how to reach them can be found on our Brightspace page.

Where and when will we be meeting?

This course is being delivered in-person. All course materials, learning activities, and assessments can be found on our Brightspace course and lab pages.

Theory (“lecture”) Time:

Lab Time:

- HLTH 2004: 4hr mandatory weekly lab, either Tues, Wed, or Thurs 2h30-6h30 pm
- HLTH 2024: One 3 hr mandatory lab; available dates for sign-up will be available on Brightspace:
 - Monday September 21st from 12:00 – 3:00 pm
 - Friday September 28th from 8:00 – 11:00 am
 - Friday October 2nd from 8:00 – 11:00 am
 - Monday October 5th from 12:00 – 3:00 pm

What do I need for this course?

Item	Required Resource	Estimated cost	Where to find it
1	Norton e-text with quizzing software	\$84.98	Follow link on Brightspace
2	Lab bound notebook (HLTH 2004 only)	\$10	Anywhere
3	Lab pencil/pen & black Sharpie	\$10	Anywhere
4	Poster printing cost	\$40-60	Staples, etc.
Total		\$134.98-\$164.98	

Textbook & Online Quizzing Platform is required and must be accessed through the link provided in BrightSpace (to have the right quizzes and link grades to our gradebook):

Foster, J, Zarrintaj, A & Slonczewski, J (2026). *Microbiology: The Human Experience*, 3rd Ed. WW Norton & Company.

Purchase the Digital Access: This option gives students 180 days of access to the interactive e-book plus access to Smartwork, InQuizitive, animations, and Infectious Disease flashcards.

Norton's online quizzing platform that accompanies the textbook will be used for chapter quizzes to help you prepare for class and the tests. The **InQuizitive** quizzes assigned will be graded, while the SmarWork questions are just for practice. **Follow the links on Brightspace** for information on how to purchase an access code and register with the course code. The cost of the e-book with InQuizitive is **\$84.98 CDN**. If there are any concerns about accessing this tool for any reason, please reach out to me so we can make accommodations. You can also contact Norton directly at the following link (<https://support.wwnorton.com/request>). Note that since this is a digital resource, your data will be processed in accordance with the privacy notice found [here](#).

Lab Materials Required

Lab protocols will be provided to you on your lab Brightspace page. For the lab, students are expected to purchase and bring:

1. Lab notebook (bound) – *HLTH 2004 students only*
2. Pen/pencil & Black permanent (Sharpie) marker
3. Tiny Earth/Research project poster printing at end of term

Lab Safety measures:

Things to do before you are allowed in the lab:

If any of the below safety requirements are not met, you will **not be allowed to take the course**.

- **Finish [WHMIS training](#) - upload the screenshot on Brightspace (link will be provided)
- ** Finish Biosafety and Biological Safety Cabinet training – Go to the PHAC training page (<https://training-formation.phac-aspc.gc.ca/login/index.php>) and create an account. Complete the courses – Introduction to Biosafety, Biosafety 101, and Biological Safety Cabinets training. Once the training is done, download the certificates and submit a copy on Brightspace.
- Wear long pants and make sure the legs are completely covered
- Wear closed-toed shoes
- Make sure long hair is tied back or in hair nets to avoid fire accidents
- Wear Personal Protective Equipment (PPE - Lab coat, gloves, mask, and goggles). Masks and gloves will be provided. *Isolation gowns be provided for the mini lab in place of lab coats.*
- Do not forget to wash your hands before and after your lab session
- Make sure your workspace is disinfected before and after your lab session
- Do not bring any food items, and do not eat or drink in the lab
- Must report any accidental microbial culture spillovers to your instructor

Technology Checklist:

- ☐ An internet-enabled device for in-class activities (laptop/tablet, phone)
- ☐ Access to Carleton's internet
- ☐ Access to InQuizitive Norton quizzing software
- ☐ Access to Google shared docs for in-class work

There are options for students who do not have access to these resources. Options include [financial aid from Carleton](#), less expensive options for technology (Best Buy refurbished products, Kijiji), & single workspaces available for student use on campus. Don't be shy to reach out if you would like help accessing any course resource.

Do I have additional help to succeed in this course?

Academic Supports for you!

[Center for Academic Support](#)

[Peer Assisted Study Sessions \(PASS\)](#)

[Science Student Success Centre \(SSSC\)](#)

How will I be assessed in this Course?

Research on learning strongly suggests that the most important factor in learning is doing the work of reading, writing, recalling, practicing, synthesizing, and analyzing. Learning happens best when people actively engage with material on a consistent basis, and that is why we have high standards in this course with lots of built-in practice and activities. We are confident that, with appropriate effort and engagement in your learning, you all can meet those standards.

Course Assessments

	TASK	HLTH 2004	HLTH 2024
Theory	Pre-class Textbook Quizzes	12%	12%
	2 Tests	36%	36%
Lab/Research	Lab Activities	28%	11%
	Research Project Proposal	-	7%
	Poster Presentations	20%	20%
	Poster Peer Review	4%	4%
Bonus	Course Reflection Surveys	Up to 2%	Up to 2%

****BOTH the theory and the lab portion of this course must be passed to pass the course****

*** BOTH tests need to be passed to pass the theory part of the course***

**Additional descriptions, outlines, and rubrics can be found on the course and lab Brightspace.*

Pre-class textbook quizzes (InQuizitive) (12%)

****Follow link on our lecture BS page to register and purchase e-text and quizzing software****

There will be 9 quizzes to complete using Norton's online quizzing system, InQuizitive. This requires the purchase of the e-textbook with access to the quizzing platform. The quizzes will have to be completed **before** we discuss the content in class. Note that these quizzes are formative, meaning that you have multiple tries to answer the questions and can work through them until you get 100%. As we know sometimes life gets in the way of learning, your **lowest 1 score will be dropped**.

*Please email me or our Norton representative Lana Weber (<https://support.wwnorton.com/request>) if you are unable to purchase this software – we can help.

Tests (36%)

Two tests will be given during class time. They will be application style assessing the integration and application of what was learned in class and may will include multiple choice and short answer formats. While tests are not cumulative, the course builds on content learned in previous units. These tests will occur during our regular class period, in-person and will be on paper. Students with accessibility requirements are asked to make their requests through the Paul Menton Centre so that accommodations can be made.

Materials allowed: You will be allowed to use a support sheet, **8.5x11 two-sided hand-written/drawn** (unless PMC accommodations required) sheet to refer to during the tests. NO cutting and pasting any text from any sources. You may create your sheet using a tablet if it's hand-written/drawn and is not shrunk in size when printed to fit in more text.

Bonus test marks: A bonus of 2% will be added to each test grade for effective cheat sheets – “effective” will be discussed in class.

***Note:** The software **Assign2** which will digitize your paper worksheets and exams – meaning you will be filling-in scantron-like forms for the multiple-choice questions and writing (by hand!) your written question answers. Any students with different accessibility requirements for these tests are asked to make their requests through the Paul Menton Centre so that accommodations can be made.

Also note that practice quizzes to help you prepare for the test will be posted on the Norton SmartWork platform. These practice quizzes will not be graded.

TEST	TOPIC	TEST DATE IN CLASS
1	Intro to micro, Concepts of infection, Bacteria	Oct 23
2	Eukaryotic microbes, Viruses, Microbiome, Immune System, Pathogenesis, Controlling growth	Dec 4

NOTE: You will need to pass both tests to pass the theory part of the course

Lab/Research Assessments (52%)

HLTH 2004 - In your microbiology lab this year, you will be conducting a real research project in antibiotic discovery. This international project, called [Tiny Earth](#), has students across the globe isolating potential antibiotic-producing microbes to address the antimicrobial resistance crisis we are facing. This project will culminate with a formal poster presentation at the end of the semester during exam period. Descriptions, materials and grade breakdown for lab activities can be found on your lab's Brightspace page.

HLTH 2024

1. **Mini lab:** This three-hour lab session is designed to provide experience using aseptic technique in a laboratory setting, as well as visualization of bacterial species. Pre- and post-lab assessments will be provided on Brightspace.

2. Research Project: Working in pairs, you will research a microbiology and/or virology topic and present your findings in a formal poster presentation at the end of the semester during exam period. Details will be provided on the class Brightspace page.

COURSE POLICIES

What if I want to use AI tools, like Chat-GPT, in this course?

In this course and for our assessments, it is essential that you learn to develop your own linking, critical thinking, problem solving and synthesis skills. You will need these key skills to succeed in life, no matter where you end up or what area of health you may pursue. **Don't let generative AI take this away from you!** It can also be, if used properly, a great tool to help you learn. Please use AI tools to clarify concepts, to practice for the exams, and to help you organize your thoughts with outlines. **Just be sure to check that the outputs are correct as it will often fabricate wrong or non-existent things!**

Acceptable uses in this course are those which assist and enhance in your learning, not replace learning. Some acceptable uses include:

- Grammar and spell checking (e.g., Grammarly, Microsoft Word Editor).
- Basic formatting and design suggestions (e.g., Microsoft Word's formatting tools, PowerPoint Design editor).
- Organizing outlines (e.g., using AI to structure a presentation flow, using Microsoft Word's Outline View with AI suggestions).
- Providing definitions or explanations of complex concepts (e.g., using AI to explain a difficult theory, e.g., using Microsoft Word's Researcher tool to find relevant information).
- Creating practice questions (e.g. asking Chat-GPT to create multiple-choice questions or give practice case studies).
- Interactive learning (e.g., AI driven assessment of student skill with follow up recommendation of customized learning plan in alignment with course level learning outcomes).
- Helping you create a study plan!

Documenting Use of AI: It is necessary to document your use of AI in this course if used for anything requiring handing in, using the following guidelines:

- Transparently document AI usage, including specific tools and contributions. Clearly identify and cite AI contributions (e.g., 'The following outline was generated by ChatGPT/Microsoft Word's Researcher tool').
- Maintain academic integrity and personal intellectual contributions.
- Review, edit, and ensure accuracy and originality of final submissions.

Why have we adopted this policy? This policy supports the use of AI as a supplementary tool, helping you better understand the course concepts and structure your work while emphasizing the importance of transparency and personal engagement with the content. AI can be used for foundational support and can encourage you to critically assess and refine any AI-generated material. This approach will help you become more familiar with using AI as a tool for enhancing your learning and productivity.

As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

What if my assignment is going to be late or missed?! (Accommodations for Missed Work)

If you miss a task without a valid reason, the task is considered incomplete and thus the learning outcomes will not be accomplished and the course not passed. If you feel you have a valid reason for incomplete or missed work, please reach out to your instructor to make arrangements – I am here to help!

Carleton has also put into place a protocol for students to apply for [academic considerations](#) the event of missed work/exams due to unforeseen circumstances. Note that **filling out the form does not guarantee you will be accommodated – it is up to the instructor to decide**. Please consult the website for more details.

If unforeseen circumstances prohibit you from attending an in-class test, in addition to the academic consideration form (above) you will be required to **schedule a make-up test** through Scheduling and Examination Services (SES). **Make-up tests may occur outside of regularly schedule class times, on weekends and/or Friday evening.** This applies to students with or without PMC accommodations.

Am I allowed to post course materials on Sharing Websites?

Nope! ALL student or instructor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

Recording and sharing of the lecture in any format (e.g.: audio or video) and sharing course materials is not allowed.

UNIVERSITY POLICIES

In accordance with the Carleton University Undergraduate Calendar Regulations, the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A- = 80-84	B- = 70-72	C- = 60-62	D- = 50-52
F = <50			

WDN = Withdrawn from the course; DEF = Deferred

Academic Accommodations, Regulations, Plagiarism, Etc.

Carleton University is committed to providing access to the educational experience in order to promote academic accessibility for all individuals.

Academic accommodation refers to educational practices, systems and support mechanisms designed to accommodate diversity and difference. The purpose of accommodation is to enable students to perform the essential requirements of their academic programs. At no time does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the University. More information can be found on the [Course Outline Information](#) webpage.

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the [Academic Regulations](#) website.

Academic Accommodations for Students with Disabilities If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the Paul Menton Centre website.	Accommodation for Student Activities Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see the Senate Policy on Accommodation for Student Activities (PDF, 25KB).
Religious Obligations Please contact me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the Student Guide to Academic Accommodation (PDF, 2.1 MB).	Pregnancy Please contact me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the Student Guide to Academic Accommodation (PDF, 2.1 MB).
Survivors of Sexual Violence As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit the Sexual Violence Prevention and Survivor Support website.	Addressing Human Rights Concerns The University and all members of the University community share responsibility for ensuring that the University's educational, work and living environments are free from discrimination and harassment. Should you have concerns about harassment or discrimination relating to your age, ancestry, citizenship, colour, creed (religion), disability, ethnic origin, family status, gender expression, gender identity, marital status, place of origin, race, sex (including pregnancy), or sexual orientation, please contact the Department of Equity and Inclusive Communities at equity@carleton.ca.

Academic Integrity

Academic misconduct undermines the values of honesty, trust, respect, fairness, and responsibility that we expect in this class. Carleton University provides supports such as academic integrity workshops to ensure, as far as possible, that all students understand the norms and standards of academic integrity that we expect you to uphold. Your teaching team has a responsibility to ensure that their application

of the Academic Integrity Policy upholds the university's collective commitments to fairness, equity, and integrity. (Adapted from [Carleton University's Academic Integrity Policy](#), 2021).

Examples of actions that do not adhere to Carleton's Academic Integrity Policy include:

- Plagiarism
- Accessing unauthorized sites for assignments or tests
- Unauthorized collaboration on assignment and exams

Sanctions for not abiding by Carleton's Academic Integrity Policy

A student who has not upheld their responsibilities under Carleton's Academic Integrity Policy may be subject to one of several sanctions. Details about this process can be found on [the Faculty of Science Academic Integrity website](#). Students are expected to familiarize themselves with and follow the Carleton University [Student Academic Integrity Policy](#). The Policy is strictly enforced and is binding on all students.

Student Rights and Responsibilities

Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the [7 Rights and Responsibilities Policy](#) for details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Student Concerns

If a concern arises regarding this course, **your first point of contact is me**. Email or drop in during student hours, and I will do my best to address your concern.

If I am unable to address your concern, the next points of contact are (in this order):

- Dr. Joerg Overhage, Undergraduate Chair, Department of Health Sciences
- Dr. Martin Holcik, Chair of the Department of Health Sciences
- Office of the Dean of Science.

Note: You can also bring your concerns to [Ombuds services](#).

Assistance for Students

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| • Paul Menton Centre | • Math Tutorial Centre |
| • Academic Advising Centre (AAC) | • Science Student Success Centre |
| • Centre for Student Academic Support (CSAS) | • Mental Health and Wellbeing |
| • Academic Advising Centre (AAC) | • Health and Counselling Services |
| | • Equity and Inclusivity Communities |