BIOL 222-001, -002, -003
Microbiology for Health Professionals
Fall 2025

Territorial Acknowledgement: The University of Regina is situated on the territories of the nêhiyawak, Anihšināpēk, Dakota, Lakota, and Nakoda, and the homeland of the Métis/Michif Nation. The Regina campus is on Treaty 4 lands, and Saskatoon classes are on Treaty 6 lands.

Instructors:
Dr. Carly Graham and Dr. Andrew Cameron
Department of Biology, University of Regina
Email: biol222@uregina.ca (please **do not** use URCourses mail or messaging)

Office Hours:
Wednesday – 9:00-10:00AM
Thursday – 1:00-2:00PM
Thursday – 7:00-8:00PM

Office hours will take place on Zoom with the link on URCourses.

If these times do not fit your schedule, send an email (biol222@uregina.ca) to set up an alternate time to meet.

Lectures: The class will be delivered online (using Zoom) on Mondays from 8:30-11:15AM. Live lectures will be recorded and will be made available on URCourses. Weekly textbook reading assignments will be available on URCourses. These are meant to supplement your understanding of the material. Quizzes and exam content will focus primarily on the subject matter covered in the recordings and lectures, but textbook content may also be tested.

Course Description: This course introduces fundamental concepts of microbiology with specific emphasis on clinically relevant microbes and their impact on human health.

Course Objectives:
Upon successful completion of this course, students should be able to:

- Explain major concepts, methodologies and issues in microbiology
- Compare and contrast prokaryotic and eukaryotic cell structures and their implications for treatment
- Describe how microbes infect their host, cause disease and are transmitted
- Describe the mechanisms of action for major classes of antibiotics and antivirals
- Explain how antibiotic resistance develops and spreads and evaluate strategies for antimicrobial stewardship in healthcare

- Explain the role of the adaptive and innate immune system in protecting the body from pathogens
- Explain the principles of vaccination, including active vs. passive immunity and herd immunity, booster shots
- Explain and evaluate different modes of controlling microbial growth
- Identify the causes, prevention, and control measures for healthcare-associated infections (HAIs)
- Describe ecosystems, microbial niches, and interactions relevant to health
- Explain epidemiological principles, including disease surveillance, outbreak investigation, and the One Health approach
- Describe the composition and role of the human microbiome in health and disease
- Explain the impact of antibiotics on the microbiome
- Identify basic biology, mode of infection, symptoms, diagnosis, transmission, treatment strategies and prevention for key infectious diseases of the intestines, respiratory tract, blood, and other systems.
- Effectively communicate fundamental microbiological concepts to peers, patients and the general public
- Understand fundamentals of communicable and infectious diseases to understand mitigations and treatments now and into the future; anticipate the natures of emerging diseases
- Recognize the impacts of infectious diseases on public health locally in Saskatchewan, nationally, and internationally

Textbook: The course uses a free (no cost), open access textbook called "Microbiology" from OpenStax. Weekly readings from the textbook will be assigned on UR Courses. The textbook can be accessed at https://openstax.org/details/books/microbiology.

On the left hand side of the webpage is a "Get the book" menu. Here you can access the online version of the book as well as the PDF. Kindle and iBooks versions are also available. OpenStax books are also available in the OpenStax +SE app on iOS or Android devices. A print copy can be ordered Amazon.ca; clicking the "Order a print copy" on the textbook website takes you to the American Amazon site.

Grading:

Online Quizzes	20%
*Midterm #1 (Sept 29, 2025)	15%
*Midterm #2 (Nov 3, 2025)	20%
Short Answer Assignment	10%
*Final Exam (Dec 10, 2025)	35%
	100%

* denotes a required course component

Important Note – The SCBScN program requires a **minimum final grade of ≥ 60% in the course**.

Online Quizzes (20%)
Quizzes will be posted weekly on URCourses. You must complete these assignments before the deadline. There are a total of 10 quizzes and the top 9 marks will be used toward your final grade. You must complete these assignments before the deadline. These will be noted clearly in the title of the assignment and are included in the schedule below. No extensions or makeup assignments will be awarded under any circumstances.

Midterm Exams (35%)
The midterm exam will be in-person. **There are no make-up mid-term exams.**

Final Exam (35%)
The final exam for this course is scheduled as in-person. The final exam is cumulative and covers the entire course.

Any grades posted on URCourses are not final grades. These are unofficial grades and are subject to review and approval.

Grade Adjustments and Re-evaluations:
In fairness to everyone in the class, the values of the evaluation components will not be adjusted and there are no extra assignments or quizzes to make up grades for an individual student.

If you are not satisfied with grading, you may have it reevaluated. Requests for re-evaluation cannot be made until 24 hours after your graded work has been returned to you, or your grade has been posted. To be eligible for re-evaluation, written exams must be completed in pen. Note that this policy does not apply to simple addition errors, which should be brought to the attention of the course instructor as soon as possible after the assignment or midterm has been returned. The re-evaluation must be requested within 20 business days of the date on which the graded work was originally handed back or posted. Procedure for formal grade appeals can be found in the Undergraduate academic calendar.

Alternate Exam Locations:
If you reside in a location that precludes you from writing a final exam in-person at the scheduled exam location, you may complete and submit an Application for Alternate Exam Location Form. The form is to be emailed to invigilator.approval@uregina.ca no later than the 50% refund deadline for the course. Applications submitted after that date are not considered, and you will be required to write the original sitting of the exam at the published exam location or withdraw from the course.

For information about approved alternate exam locations, consult:
https://www.uregina.ca/student/registrar/resources-for-students/approved-invigilators.html.
Permission to write at an alternate location will neither be granted to students registered for any in-person class in the same term as an online or remote class section, nor when personal or leisure travel arrangements are made by you or others on your behalf.

The University retains the right to refuse a proposed an alternate final exam location request.

Final exam deferrals can only be granted by the Associate Dean of your Faculty.

Academic integrity: Academic integrity requires students be honest. Assignments and exams are to help students learn; grades show how fully this goal is attained. Thus, all work and grades should result from a student's own understanding and effort.

Acts of academic misconduct violate academic integrity and are considered serious offences by the University. Examples include, but are not limited to, cheating on tests or exams, plagiarizing, copying from others, falsifying lab results, etc. Instances of academic misconduct will be reported to the Associate Dean Academic for investigation. Full details are provided in the Undergraduate academic calendar. Students are encouraged to understand your obligations as a student, as well as your rights.

In this course, you are not permitted to use generative artificial intelligence (AI) programs in your assignments or exams. Any work suspected of using generative AI will be reported for investigation of academic misconduct.

Accommodations: The Centre for Student Accessibility upholds the University's commitment to a diverse and inclusive learning environment by providing services and supports for students based on disability, religion, family status, and gender identity. Students who require these services are encouraged to contact the Centre for Student Accessibility to discuss the possibility of academic accommodations and other supports as early as possible. For further information, please email accessibility@uregina.ca.

Communication: You are welcome to contact us via Zoom or the course email with questions about course administration or content. Please use your uregina email address, and keep your emails formal, short, and to the point.

Lecture Syllabus: All dates and topics are subject to change, as necessitated by illness, closures, or other unforeseen circumstances.

Week	Date of Lecture	Lecture Topic	Assessment
1	Sept 8	Introduction and Key Concepts SARs-CoV-2	Quiz 1 (due Sept 15)
2	Sept 15	Types of Pathogens Pathogen-Host Interactions	Quiz 2 (due Sept 22)
3	Sept 22	Antibiotics Antibiotic Resistance	Quiz 3 (due Sept 29)
4	Sept 29	Viruses and Antivirals Viral Infections of the Liver (recorded to accommodate midterm)	**Midterm #1 – 9-10AM (15%)** Quiz 4 (due Oct 6)
5	Oct 6	Innate and Adaptive Immunity Vaccines - part 1	Quiz 5 (due Oct 20)
6	Oct 13	**No class – Thanksgiving**	
7	Oct 20	Controlling Microbes Healthcare Associated Infections	Quiz 6 (due Oct 27)
8	Oct 27	Ecosystems, Niches and Interactions Epidemiology and OneHealth	Quiz 7 (due Nov 3)
9	Nov 3	Microbiome (recorded to accommodate midterm)	**Midterm #2 – 9-10AM (20%)** Quiz 8 (due Nov 17)
10	Nov 10	**No class – Fall Break**	
11	Nov 17	Vaccines - part 2 HIV Influenza	**Short Answer Assignment (due Nov 21)** Quiz 9 (due Nov 24)
12	Nov 24	Detection and Identification of Pathogens Infectious Diseases of the Intestines	Quiz 10 (due Dec 1)
13	Dec 1	Infectious Diseases of the Respiratory Tract Blood born infections Eukaryotic Pathogens	
	Dec 10		**Final Exam (35%) 9:00AM-12:00PM**