

COURSE DETAILS

Course, credit hours and term: MBIO 1220, Essentials of Microbiology; 3.0 credit hours; Winter 2022

Pre-requisites: None.

Meeting Time: 11:30 am – 12:20 pm MWF. Remote Learning access provided through Zoom videoconference platform. Zoom link details will be provided through class email. The University of Manitoba has tentatively scheduled a return to in-person teaching after February 26, 2022, and this course will follow U of M and public health guidance; date is subject to change. Location details for in-person lectures are to be determined and will be announced prior to the first in-person lecture.

INSTRUCTOR CONTACT INFORMATION

Instructor: Dr. Christopher Graham; email Christopher.Graham@umanitoba.ca

Office hours: To be held via Zoom; by appointment only. Please email for availability.

COURSE DESCRIPTION

Academic calendar: An introduction to the essential principles of microbiology including immunity, with emphasis on microbial disease. Not available to students who have previously obtained credit in or are currently enrolled in MBIO 1010 or MBIO 1011 (or the former MBIO 2100 or MBIO 2101). NOTE: MBIO 1220 is intended for students planning to enter the College of Nursing or other health care or related programs. Students that have completed MBIO 1010 but wish to take MBIO 1220 to satisfy Faculty of Nursing entrance requirements must obtain departmental permission prior to registering for MBIO 1220. MBIO 1220 cannot be used to satisfy the requirements of the Microbiology Honours or Major degree programs. MBIO 1220 can be used as an elective course in any Science program.

General: This course serves as an introduction to the essential principles of microbiology and immunity, with an emphasis on human microbial diseases. At the end of this course the student should be able to identify the main differences between prokaryotic and eukaryotic cells and the characteristics of each, identify clinically important bacteria, fungi and viruses and their effects on the various organ systems and know the immune responses that are triggered and how they unfold.

COURSE TECHNOLOGICAL REQUIREMENTS

Required textbook:

Nester's Microbiology: A Human Perspective 10th Edition. Anderson, Salm, Beins and Nester. McGraw-Hill. Please note that the 9th or 8th edition is also acceptable. (Microbiology: An Introduction 11th Edition. Tortora, Funke, and Case. Pearson. may also be used as a substitute).

Computer technology: Students enrolled in the course must ensure they satisfy the following minimum technological requirements:

1. A computing device where one can create and edit documents,
2. An internet connection capable of streaming videos and downloading software, and
3. Access to a webcam and microphone.

EXPECTATIONS AND POLICIES

Lecture format: In general, lectures via PowerPoint presentation will be delivered synchronously either virtually via Zoom (prior to resumption of in-person classes) or in-person as determined by public health and University guidance. Lectures delivered virtually will be recorded. **Due to technical limitations students should not expect in-person lectures to be made available as recordings.** The instructor may post asynchronous video recordings in the event of technical disruptions or other unusual circumstances. After each class, video recordings, when available, will be posted on UM Learn. PDF files of lecture PowerPoint slides will be posted on UM Learn in advance for each class to provide students with a template to fill in with their

own style of note-taking. As such, lecture slides are not complete, and therefore should not be used as a substitute for not attending a class. **Complete lecture notes will not be provided in the event of a missed class; it is your responsibility to catch up on the missed lecture material and notes.** Students are expected to attend all Zoom sessions or in person lectures and are encouraged to ask questions on the lecture material using the chat box function. To facilitate stable internet connection and ensure video quality, students are required to mute audio and video functions while a virtual lecture is being given unless permitted to do so by the instructor. Students are advised that their voices and/or images, when unmuting and/or turning on video during, will be recorded unless the instructor is requested to halt recording by the student.

Note: With the current pandemic situation, the University followed public health guidance and asked courses to be delivered remotely where possible. The University continues to monitor the developments of the latest pandemic situation and will provide an update as to whether in-person activities can be safely offered as per public health guidelines after February 26. Like all other University-wide announcements, we anticipate that the activity plans (be they remote or in-person) for after February 26 will be made by email as well as posted on the University website. Please keep an eye on these two sources for the announcement over the next few weeks as well as direction from your course instructor.

Professional Conduct: It is recognized that these are unusual circumstances, and some adjustments need to be made when working virtually. At the same time, we do want to remind you that University policies, such as the **Respectful Work and Learning Environment policy**, still apply, as do basic expectations around how students will engage with each other and all members of the University. This means that when participating in classes, online meetings, etc., students are expected to behave professionally, and follow the same basic norms as they would in person, such as being properly clothed, not being impaired, and participating respectfully. **Essentially, if you wouldn't do it in an in-person class, don't do it in a virtual setting.** Please familiarize yourself with the [UM Respectful Work and Learning Environment \(RWLE\)](#) Section 2.5(c) of the [Student Non-Academic Misconduct and Concerning Behaviour Procedure](#) describes types of inappropriate or disruptive behaviour.

Emails: The University requires all students to activate an official U of M email account, which should be used for all communications between yourself and the university, including all your instructors. Emails sent to instructors from an email account other than the University of Manitoba account will automatically be deleted. Students are expected to practice professional email etiquette. All email communications should comply with the University's policy on electronic communication with students, which can be found at: http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html. Responses to emails should be expected within 24 h on weekdays, or if on a weekend or holiday, by the next business day.

Note: in-class/remote behaviour and/or emails that are perceived to be harassing or threatening in nature may be reported to the departmental Associate Head (Undergraduate Affairs) for assessment, and possibly to the Faculty of Science for potential disciplinary action.

Privacy Concerns: This course is delivered, in part, remotely using a video conferencing software platform, and you may be required to install University approved software on your device and you may be required to have and use a webcam. During videoconferencing, your personal information, in the form of your name, image, and any questions or answers you pose during classes, may be collected under the authority of The University of Manitoba Act. The information you provide will be used by the University for the purpose of supporting student learning.

Exams for Winter term courses are expected to be in person, but if required may be conducted and invigilated online. If your exam is invigilated online, you may be required to install University approved software on your computer and you may be required to have and use a webcam while taking the exam. During proctoring, your personal information, in the form of your name and image may be collected under the authority of The University of Manitoba Act. Your personal information will not be used or disclosed for other purposes, unless permitted by The Freedom of Information and Protection of Privacy Act (FIPPA). If you have any questions about the collection of your personal information, contact the Access & Privacy Office (tel. 204-474-9462), 233 Elizabeth Dafoe Library, University of Manitoba, Winnipeg, MB, R3T 2N2. If you have any questions regarding your lectures or exams, please contact me.

Image Recordings: Screen shot capture and/or video recording of material presented by the instructor and/or classmate is strictly for **personal use only** due to copyright and/or privacy concerns. **Posting of images that include lecture material and/or instructor and/or classmates on the internet is strictly prohibited. Recording and/or distribution of exam material in any format is strictly prohibited.**

Academic Integrity: Guidelines are stated in your calendar regarding University policy with respect to academic dishonesty (particularly plagiarism and cheating) and behavior and absence from final exams. All work is to be completed independently unless otherwise specified. Please remember that group projects are subject to the rules of academic dishonesty, and every group member must ensure that a group project adheres to the principles of academic integrity. The Faculty of Science web page has detailed information regarding discipline (<https://catalog.umanitoba.ca/undergraduate-studies/policies-procedures/student-discipline-bylaw/>) along with a video message (<https://youtu.be/Ok-lilm4SeE>). Please read/watch and follow these guidelines, and ask if you have any questions.

Student Accessibility Services: The University of Manitoba is committed to providing an accessible academic community. [Students Accessibility Services \(SAS\)](#) offers academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services

520 University Centre

Phone: (204) 474-7423

Email: Student_accessibility@umanitoba.ca

Medical notes: In the event that the student is unable to complete the work of any or all course components due to unforeseen circumstances (illness, family emergency, etc.), then the student must contact the instructor who, in consultation with the Department Head and Faculty of Science, will decide on alternative arrangements. Students who are unable to meet a course requirement due to medical circumstances are currently not required to submit medical notes. However, please note that circumstances that result in missing multiple course components (e.g. assignments/exams/classes) may require medical documentation (e.g., Authorized Withdrawal, Tuition Fee Appeal, Leave of Absence, or [accessibility-related accommodations](#)). Students are advised to speak with an [advisor in their faculty/college/school of registration](#) in this case.

Voluntary Withdrawal (VW)/Authorized Withdrawal (AW)/Limited Access Policy (LAP):

VW: Students have the opportunity to voluntarily withdraw (VW) from this course; please refer to the University website for the deadline date. By then, you will have received feedback to allow you to assess your progress and determine if you are achieving the grade you are aiming for in this course. If you are unlikely to be successful in the course, or you are not achieving the grade that you are aiming for, you should consider a VW

from the course. You may contact me to review your progress in more detail, or you may discuss the VW option with a Faculty academic advisor. Students enrolled in the course after the VW deadline will be assigned a final grade. http://umanitoba.ca/u1/know_yourself/573.html

AW: At times medical or compassionate circumstances arise in a student's life that prevent them from performing as they would in normal circumstances. If you are in this position, please contact a Faculty academic advisor to discuss your options. Be prepared to provide documentation, which supports your situation. http://www.umanitoba.ca/student/resource/student_advocacy/authorized-withdrawal/index.html

Limited Access Policy: The Senate Executive Committee approved, on behalf of Senate that section 2.5(a) of the Repeated Course Policy to be suspended indefinitely. Sec 2.5 refers to Limited Access. Suspension of LAP means that you can retake the course you have decided to VW in the next semester.

COURSE EVALUATION

Grading: 2 Mid-term exams (25% each of course grade 50% total) and 1 Final Exam (50% of total grade)

Mid-term exams: All exams will be held in accordance to stated Academic Integrity policies (<https://umanitoba.ca/student-supports/academic-supports/academic-integrity>). In completing the exams, copying from anywhere, including other individuals, or resources including the internet constitutes a case of academic dishonesty and could have serious consequences. The goal in this course (as in all academic pursuits) is to learn. If you are unclear on what is acceptable or what constitutes plagiarism, please ask for clarification. Any documentation efforts to retain and/or distribute the questions via screen captures, saving to files, taking photos, keeping notes of the exam contents, or any other manner of recording/distribution, strictly prohibited and subject to disciplinary action. **Deferred mid-term exams will not be offered.** Failure to write a mid-term exam will result in the weight of the mid-term being transferred to the final exam. If one mid-term exam is missed the final exam will be prorated to 75%. Should both mid-terms be missed the maximum value of the final exam will be 75%. The weight of the missed mid-term exam will only be transferred to the weight of the final exam in the presence of a valid excuse. The Faculty of Science regulations apply to all missed final exams.

Determination of final course grade: Letter grades are assigned taking into consideration the grade distribution in the class and the University of Manitoba's descriptors(<http://umanitoba.ca/student/records/grades/686.html>); A+ (Outstanding), A (Excellent), B+ (very good), B (Good), C+ (Satisfactory), C (Adequate), D (Marginal), F (Failure).) This grading scheme corresponds approximately to percentages below.

Letter Grade	Percentage out of 100	Final Grade Point
A+	90-100	4.5
A	80-89	4.0
B+	75-79	3.5
B	70-74	3.0
C+	65-69	2.5
C	55-64	2.0
D	50-54	1.0
F	Less than 50	0

Amendments to this scheme may be made depending on the final class average. These values will never be adjusted to the detriment of the student. They may only change to benefit the student. This scheme should be used only as a guide.

IMPORTANT DATES:

Mid-term I: Friday, March 4, 2022; (25%, materials covered Jan 24 – Feb 18, 2022)

Mid-term II: Friday April 1, 2022 (25% of grade; materials covered Feb. 28 – March 25, 2022)

Final exam: Date TBD (50% of grade; 2/3 of exam pertains to materials covered Mach 28-April 25, 2022; 1/3 on materials covered Jan 24 – March 25, 2022)

First day of classes: Monday, Jan 24, 2022.

Reading week: No classes, Feb 21 (Louis Riel Day) – Feb 25, 2022.

Good Friday University closed, no classes, April 15, 2022.

Last day of classes: Monday, April 25, 2022

Final exam period: April 26 – May 3, 2022.

MBIO 1220 COURSE TOPICS

Textbook chapters

Nester 8th-10th ed.

Tortora 11th ed.

Part 1: The Life and Death of Microorganisms

• Humans and the Microbial World	1	1
• The Molecules of Life	2	2
• Microscopy and Cell Structure	3	3, 4
• Dynamics of Microbial Growth	4	6
• Control of Microbial Growth	5	7
• Microbial Metabolism: Fueling Cell Growth	6	5
• The Blueprint of Life and Bacterial Genetics	7, 8	8

Part 2: Microorganisms and Humans

• Viruses, Viroids and Prions	13	13
• The Innate Immune Response	14	16
• The Adaptive Immune Response	15	17
• Host-Microbe Interactions	16	15
• Immunologic Disorders	17	19
• Applications of Immune Responses	18	18
• Epidemiology	19	14
• Antimicrobial Medications	20	20

Part 3: Infectious Diseases

• Respiratory System Infections	21	24
• Skin Infections	22, 23	21
• Digestive System Infections	24	25
• Blood and Lymphatic Infections	23, 25	23
• Nervous System Infections	26	22
• Genitourinary Tract Infections	27	26

Some topics may not be covered due to time constraint