

## **MBIO1220 A01**

### **Essentials of Microbiology**

### **Fall 2022 (In-person mode)**

#### **Course details**

**Course, credit hours, term:** MBIO1220, Essentials of Microbiology; 3.0 credit hours; Fall 2022

**Prerequisites:** none

**Time and Locations:** Tuesday, Thursday 10:00 – 11:15; University College 240

#### **Instructor**

Dr. Miguel Uyaguari

**Email:** [Miguel.Uyaguari@umanitoba.ca](mailto:Miguel.Uyaguari@umanitoba.ca)

**Office:** 414D Buller Building

**Lab:** 118 Buller Building

**Office hours:** Monday/Wednesday 11:30 AM – 1:30 PM with previous appointment (via e-mail). I will also be available to talk briefly immediately after class or you may email me to make an appointment at a different time, I will be available for in-person and zoom meetings.

#### **Course Description**

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). 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.

*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.*

**Course Goals:** 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.

#### **Required Textbook**

Nester's Microbiology: A Human Perspective 10th Edition. By Anderson, Salm, Beins and Nester. McGraw Hill.

- Please note that the 9<sup>th</sup> or 8<sup>th</sup> edition is also acceptable.

- Microbiology: An Introduction 11th Edition. By Tortora, Funke, and Case. Pearson Education (may also be used as a substitute).

Students can purchase the textbook (print or digital) at the bookstore here:

<http://bookstore.umanitoba.ca/CourseMaterials>

or direct from McGraw Hill here:

<https://www.mheducation.ca/ise-nester-s-microbiology-a-human-perspective-9781265062316-can-group>

All lecture notes will be posted on **UMLearn**

**It is your responsibility to access the lectures and bring them to class. You will be responsible for what is written in the prepared notes, as well as what transpires during class.**

### **Course Evaluation**

#### **Midterm Exam #1 – 25%**

Thursday October 6 – 10:00 AM, in-class exam

- This exam will cover everything learned from the beginning of term until September 29

#### **Midterm Exam #2 – 25%**

Thursday November 3 – 10:00 AM, in-class exam

- This exam will cover everything learned from October 4 until October 27

#### **Final Exam – 50%**

2-hour exam

Date and location will be scheduled by the registrar's office during the final exam period

- This exam is cumulative, covering everything from the beginning of term until the end of term. More weight will be placed on materials learned after the second midterm.

There will be no deferred midterm exams. 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.

Missed final exams will be subject to the Faculty of Science regulations and deferral process.

### **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 the percentages below. Amendments to this scheme may be made depending on the final class average. Final grades will not be rounded up under any circumstances.

90.0 – 100% .....	A+
80.0 – 89.99% .....	A
75.0 – 79.99% .....	B+
70.0 – 74.99% .....	B
65.0 – 69.99% .....	C+
55.0 – 64.99% .....	C
50.0 – 54.99% .....	D
49.99% or lower .....	F

### **Important Dates**

September 7	Start of Classes
September 20/21	End of class revision period
September 30	National Day for Truth and Reconciliation – No classes
October 6	Midterm #1, 10:00 AM
October 5	Fee deadline
October 10	Thanksgiving – No classes
November 3	Midterm #2, 10:00 AM
November 7 - 10	Fall break
November 22	Voluntary withdrawal deadline
December 12	Last day of classes
December 13 - 23	Final exam period

## Course Topics

Textbook chapters

Nester 8<sup>th</sup>-10<sup>th</sup> ed.

Tortora 11<sup>th</sup> 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 constraints

## **Student Expectations and Policies**

**Lecture:** Punctual attendance to lectures is expected. I will cover material in more detail than it is found in the course PowerPoints. Therefore, missing class means that you will miss information. You are responsible for taking your own notes and reading the appropriate sections of the textbook. Lectures will not be recorded and cannot be made up, you will be responsible for learning the missed material on your own.

I expect that if you do not understand something or would like some clarification you will ask me questions by email, after the lecture, or in lectures. I welcome interruptions to my lectures to answer content-specific questions. Doing so only improves the learning experience for everyone. You will not improve your understanding of the material if you do not tell me that there is something you do not understand. I will respond to student emails as quickly as possible.

Students in the University community can freely express their thoughts, opinions, and beliefs however, they must observe the Respectful Work and Learning Environment Policy ([Respectful Work and Learning Environment \(RWLE\) policy | University of Manitoba \(umanitoba.ca\)](#)) and treat each other, staff, and faculty with respect. Students who are alleged to have breached the Respectful Work and Learning Environment Policy will be investigated and disciplined according to the Student Non-Academic Misconduct and Concerning Behaviour Procedure ([Student Non-Academic Misconduct and Concerning Behaviour Procedure - 2018 09 01.pdf \(umanitoba.ca\)](#)).

**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.

*Note: Behaviours in class or in 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.*

## **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.

Course materials are made available for private study and research and must not be shared, copied or distributed in any format without my permission. Violation of these and other Academic Integrity principles will lead to serious disciplinary action.

Students may not record lectures (video or audio) without my express permission.

## **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](mailto:Student_accessibility@umanitoba.ca)

## **Writing and Learning Support**

The Academic Learning Centre (ALC) offers writing and learning supports to help you throughout your academic program. These supports are offered online during the Covid-19 pandemic. Consult an ALC learning specialist or attend an academic skills workshop to improve your time management, learning strategies and test-taking strategies. Get support in select courses by making an appointment with an ALC content tutor. In addition to one-to-one and group sessions, you can also find writing and study tip sheets and videos on the ALC website.

Academic Learning Centre services are free for U of M students. For more information, please visit the Academic Learning Centre website at: <http://umanitoba.ca/student/academiclearning/>

Contact the Academic Learning Centre by calling 204-480-1481 or emailing [academic\\_learning@umanitoba.ca](mailto:academic_learning@umanitoba.ca).

## **Illness Policies**

### **Medical notes**

In the event that a 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 their 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.

### **Covid 19 specific requirements while on campus**

#### **Masking in Classes**

The wearing of masks is mandatory for all activities on all UM campuses and while participating in UM-sanctioned activities off-campus. Please visit Latest COVID-19 Recovery Updates ([UM Today | Latest COVID-19 Recovery updates \(umanitoba.ca\)](#)) for the most up-to-date policy on acceptable mask type. Therefore, masks must be worn while you are attending lectures. Please do not eat in class. Brief, infrequent sips of a beverage are acceptable. Your compliance is appreciated. Security Services may be involved if there are non-compliant students.

#### **Voluntary Withdrawal (VW)**

Students have the opportunity to voluntarily withdraw (VW) from this course by November 22, 2022. 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. 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](http://umanitoba.ca/u1/know_yourself/573.html)

#### **Authorized Withdrawal (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](http://www.umanitoba.ca/student/resource/student_advocacy/authorized-withdrawal/index.html)

#### **Limited Access Policy (LAP)**

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.