

MBIO 3010 Mechanisms of Microbial Disease (W2020)

CRN: 57048

Time: 08h30 – 09h20 (M-W-F)

Duration: Jan 18, 2021 – April 16, 2020

Location: Remote Learning

Instructor:

Dr. Miguel Uyaguari

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Office hours: Email or via Zoom (to determine a mutually agreeable time to meet)

Course Description:

This course will be delivered via video lectures. Course material (slides) and video lectures will be posted on UMLearn in the form of PDF, PPT and MP4.

This course provides theory and methodologies involved in understanding the mechanisms of virulence and pathogenicity of viral and bacterial pathogens. Topics include etiology, pathogenesis, epidemiology, treatment, diagnostics, and control of important infectious diseases in humans. Host-pathogen interactions are also discussed including some basic components of immunology.

Pre-requisite: MBIO2020

Recommended Textbook:

Mim's Medical Microbiology, 6th Edition.

<https://www-clinicalkey-com.uml.idm.oclc.org/#!/browse/book/3-s2.0-C2015006511X>

All lecture notes and video lectures will be posted on **UMLearn**

It is your responsibility to access the lectures and watch class (video lectures). You will be responsible for what is written in the prepared notes, as well as what transpires during videolectures.

Depending solely on the material posted on UMLearn will not be sufficient.

Tentative Course Outline

Section – Topic	Chapter
1. Innate immunity	10
2. Adaptive or acquired immune response	11, 12
3. Vaccines and passive immunization	35, 36
4. Microbiota and Health	Various readings
5. Background to infectious diseases	13
6. Entry, exit and transmission	14
7. Spread and replication	16
8. Parasite survival strategies and persistent infections	17
9. Pathological consequences of infection	18
10. Prions	8
11. Epidemiological considerations	33
12. Diagnosis of infection	32
13. Upper respiratory tract infections	19
14. Lower respiratory tract infections	20
15. Urinary tract infections	21
16. Sexually transmitted diseases	22
17. Gastrointestinal tract infections	23
18. Central nervous system infections	25
19. Antimicrobial resistance	34, Various readings

Learning Outcomes

Students who successfully complete the course have demonstrated the ability to:

- Distinguish between normal flora and pathogens.
- Describe the interactions between the immune system and pathogens.
- Describe relationship between genetics and physiology of microorganisms and their pathogenicity.
- Describe the pathogenicity of microbes with respect to different body sites.
- Describe the diagnostics principles for the isolation and identification of microorganisms using molecular, culture-based, biochemical, and serological methods.
- Describe the mechanisms of different classes of antibiotics.
- Describe the principles of susceptibility testing.
- Describe the mechanisms of resistance to antibiotics.

Evaluation: OPEN BOOK EXAMS (Academic integrity*)

Component	Date and Time	Contribution to Final Grade	Feedback
Midterm I (Online using UM learn)	Friday, February 12 th 08h30-09h20	15%	Marked exam will be available; short essay Q/A will also be available

Midterm II (Online using UM learn)	Friday, March 12 th 08h30-09h20	20%	Marked exam will be available; short essay Q/A will also be available
Online Final Exam using UM learn (includes all course material).	TBA (3 hours long)	65%	Final grade. Exam will be 85% multiple choice question and 15% short essay question.

Letter grades are assigned taking into consideration the University of Manitoba's descriptors A+ (Outstanding), A (Excellent), B+ (Very Good), B (Good), C+ (Satisfactory), C (Adequate), D (Marginal), F (Failure); see <http://umanitoba.ca/student/records/grades/686.html>

For this course, a student must receive a passing grade (50%) for the course to be passed. The grading scheme generally but not exactly follows that used by the Rady College of Medicine https://umanitoba.ca/faculties/health_sciences/medicine/admissions/8847.html.

A+ (>90%), A (80-89.9%), B+ (75-79.9%), B (70-74.9%), C+ (65-69.9%), C (60.0-64.9%), D (50-59.9%), F (<50%, or <45% in final exam).

Students with accessibility issues are directed to Student Accessibility Services to facilitate the implementation of accommodations. Course instructors are willing to meet with Students to discuss the accommodations recommended by Student Accessibility Services.

There will be NO deferred term test. A medical certificate or other official documentation stating the reason for the missed test must be presented within one week of the missed test. Upon approval of the document the final exam will be pro-rated to 100%.

***Academic Dishonesty:**

The Faculty of Science regards acts of academic dishonesty in quizzes, tests, examinations, laboratory reports or assignments as serious offences and may assess a variety of penalties depending on the nature of the offence. Acts of academic dishonesty include, but are not limited to bringing unauthorized materials into an exam, copying from another individual, using answers provided by tutors, forging documents, plagiarism, and examination personation. Guidelines are stated in your calendar regarding University policy with respect to academic dishonesty (particularly plagiarism and cheating) and behaviour and absence from final exams.

Letter grades will be assigned by taking into consideration the grade distribution in the class and the University of Manitoba's descriptors A+ (Outstanding), A (Excellent), B+ (Very Good), B (Good), C+ (Satisfactory), C (Adequate), D (Marginal), F (Failure); see <http://umanitoba.ca/student/records/grades/686.html>. The goal is to provide grades that represent performance in the context of the class; the grades will not be curved to meet an expected distribution, but conversion of percentages to letter grades will be at the discretion of the instructor.

For this course, **a grade of 45% on the final exam is required to pass the class.** The grading scheme generally, but not always, will be close to the following: A⁺ (>90%), A (80-89.9%), B⁺ (75-79.9%), B (70-74.9%), C⁺ (65-69.9%), C (60.0-64.9%), D (50-59.9%), F (<50% total, or <45% in final exam). Note that in some courses, an A⁺ is received only for numerical grades of >93% (Nursing, Asper) so there is precedent for shifting grade boundaries higher than those listed above.

Academic integrity and dishonesty: guidelines are stated in your calendar regarding University policy with respect to academic dishonesty (particularly plagiarism, impersonation and cheating), as well as behaviour and absence from final exams. All exams are to be written individually, without any discussion in person or electronically. Acceptable resources (notes, research papers) will be noted in class prior to the exam. If it isn't on the list, you cannot use it! In cases of cheating or collaboration during in-class examinations, the test(s) in question will be given a grade of 0% and the student will be reported to the appropriate authorities for disciplinary action. Dishonesty during final exams will be reported directly to the Faculty of Science.

The Faculty of Science web page has **detailed information**, with which you must become familiar. (<https://sci.umanitoba.ca/students/undergraduate-students/academic-resources/academic-integrity-2>) Please read and follow these guidelines and ask if you have any questions.

Watch the Faculty of Science video outlining issues regarding academic integrity in the context of on-line examinations, and the consequences of cheating: (7 min) <https://youtu.be/Ok-lilm4SeE>