Instructors:
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MS673 Microbiology
Health Science Centre
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Course Description:
This course will be delivered in a hybrid mode. Portions of the course material will be posted on UMLearn in the form of online lectures. For your convenience, slides whose content is covered by online lecture are marked with the symbol below:

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, 5th Edition.
All lecture notes, online lectures, sample exam questions, etc. 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.

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

Tentative Course Outline

<table>
<thead>
<tr>
<th>Section - Topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Innate immunity</td>
<td>9</td>
</tr>
<tr>
<td>2. Adaptive or acquired immune response</td>
<td>10, 11</td>
</tr>
<tr>
<td>3. Vaccines and passive immunization</td>
<td>34, 35</td>
</tr>
<tr>
<td>4. Microbiota and Health</td>
<td>Various readings</td>
</tr>
</tbody>
</table>
5. Background to infectious diseases 12
6. Entry, exit and transmission 13
7. Spread and replication 15
8. Parasite survival strategies and persistent infections 16
9. Pathological consequences of infection 17
10. Prions 7
11. Epidemiological considerations 32
12. Diagnosis of infection 31
13. Upper respiratory tract infections 18
14. Lower respiratory tract infections 19
15. Urinary tract infections 20
16. Sexually transmitted diseases 21
17. Gastrointestinal tract infections 22
18. Central nervous system infections 24

Dr. George Zhanel’s Lectures: (Nov. 20, 22, 24, 27)
1. Introduction to Antibiotics
2. Cell Wall Active Antibiotics
3. Protein Synthesis Inhibitors
4. Other Antibiotics and Resistance

Guest Lecturer:
Dr. John Embil (Oct. 23)
Director – Infection Prevention and Control Unit, HSC; Associate Professor, Departments of Internal Medicine and Medical Microbiology and Infectious Diseases, University of Manitoba

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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Date and Time</th>
<th>Contribution to Final Grade</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm I</td>
<td>Wed, Oct 11th 1330-1420 hrs Location: Edu290</td>
<td>15%</td>
<td>Marked exam returned; answer key available; to be discussed in class.</td>
</tr>
<tr>
<td>Midterm II</td>
<td>Wed, Nov 8th 1330-1420 hrs Location: Edu290</td>
<td>20%</td>
<td>Marked exam returned; answer key available; to be discussed in class.</td>
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<tr>
<td>Final exam (includes all course material)</td>
<td>TBA</td>
<td>65%</td>
<td>Final Grade</td>
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</tbody>
</table>
Course material presented by Dr. Zhanel will be worth 10% of the final grade. Dr. Zhanel’s questions will appear on the final exam. The Final Exam will include all course material.

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 disabilities 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.

The Faculty of Science web page has detailed information (http://umanitoba.ca/faculties/science/undergrad/resources/webdisciplinedocuments.html). Please read and follow these guidelines, and ask if you have any questions.