B.HSc 4KK3 – Pathophysiology of Infectious Diseases

Term II
2017 - 2018

Instructor: Dr. Padman Jayaratne (Clinical Microbiologist)
Guest Presenters: Dr. Fiona Smaill (Medical Microbiologist/Infectious Disease)
Dr. Marek Smieja (Medical Microbiologist/Infectious Disease)
Dr. Deborah Yamamura (Medical Microbiology/Infectious Disease)
Dr. Zain Chagla (Infectious Diseases)
Dr. Tim O’Shea (Infectious Diseases)

Course Objectives:

• The students will be able identify infectious disease syndromes by clinical presentation
• The students will be able to identify pathogens associated with major infectious diseases in different body systems
• The students will demonstrate knowledge of host characteristics that predispose to infection
• The students will learn the diagnostic evaluation procedure of major infectious syndromes.

Course Description:

This course is designed to provide in depth look at the clinical, medical and pathophysiological aspects of infectious diseases. These fundamentals include taxonomy, diagnostic methodology, epidemiology and virulence factors of pathogens, pathogenesis, and pathophysiological events and responses in different body systems human host as a result of infections. A variety of microbial pathogens including viruses, bacteria, fungi, protozoa responsible for human infections in different organ systems will be examined. The course will include regular lectures, case presentations, anatomy laboratory sessions (disease syndrome module), and student tutorial presentations.

Time and locations of Lectures:
Tuesday 9.30 – 10.20 MDCL/1115
Friday 9.30 – 10.20 MDCL/2218

Tutorial:
Thursday 11.30 – 12.20 MDCL/1115

Laboratory (Case Presentation)
Friday 10.30 – 11.20 MDCL/2218
Lectures:
There will be 2 lectures per week. The lectures will cover (1) the basic clinical and medical microbiological aspects related to etiologic agents of infectious diseases (2) pathophysiological aspects related to infections in different organ systems including diagnostic criteria and differential diagnosis (3) epidemiology, (4) virulence factors of pathogens and host responses leading to pathophysiological changes in infectious diseases.

Tutorial Presentation:
Each student will give a one oral presentations during the semester. Tutorial sessions will be organized and led by the teaching assistant. The presentation is 20 min long with 5 min of questions. The students will deal with a topic chosen by the student from a draw containing a list of relevant infectious disease topics. The students are expected to cover all pathophysiological aspects related to the topic during their presentation. Students are expected to create and present 2 – 3 multiple choice questions from the content at the end of the presentation for the peers. Each presentation will be evaluated by the peers and will be used for final evaluation.

Case Presentations:
During the alternate laboratory sessions students will be given a case to discuss and brainstorm to come up with explanations and differential diagnosis. For other laboratory sessions a faculty member or a resident will lead the case presentation engaging students participation. Learned knowledge from case presentations will be evaluated during mid-term and final written examination.

Infectious Disease Module:
Students will be given a task of developing an electronic module for selected infectious disease category assigned at the beginning of the course. For this students will be working in groups. They will develop a module to illustrate different aspects of the selected infectious disease and etiologic agent involved and the pathophysiology of it. The selected infectious disease should be different from the one that was chosen for the tutorial presentation. Students are expected to utilize Mac Anatomy website, any gross and fixed specimens in the Anatomy laboratory with infectious disease pathology, and any non-copywrite web-based material. Students can use any still photographs, video clips, other graphics or text for the development of the module.

Evaluation:
Evaluation will consist of four components.

1. Tutorial presentation is worth 20% of course mark. The peer evaluations will be taken into consideration for the final mark. Evaluation criteria will include content, organization, clarity, visuals, and response to questions.
2. Mid-term examination is worth 20% of course mark. The examination will contain questions from the lectures as well as tutorial and case presentations.
3. Development of Infectious Disease module is worth 15% of course mark. It will be evaluated on the content, clarity, and presentation.
4. Case presentation is worth 5% of course mark.
5. Final examination is worth 40%. A final 2 hour exam will be organized by the Registrar’s Office. This will be based on all lecture material and other learned knowledge throughout the course.

In accordance with Senate regulations final grades may be adjusted.

**Reference textbooks:**
Bauman, R. W., et. al. (2009) Microbiology with diseases by body system. 2nd ed.
Pearson, Benjamin Cummings.

**Schedule of Lectures:**

Week 1.
Lecture 1. Fri. Jan 5. Course introduction and introduction to infectious agents (PJ)

Week 2.
Lecture 2. Tue. Jan 9. Introduction to clinical microbiology (PJ)

Week 3.
Lecture 5. Fri. Jan 19. Diagnostic clinical microbiology II (PJ)

Week 4.

Week 5.
Lecture 8. Tue. Jan 30. Skin and Soft Tissue Infections

Week 6.
Lecture 10. Tue. Feb 6. Respiratory tract infections I (MS)
Lecture 11. Fri. Feb 9. Respiratory Infections II (MS)

Week 7.
Lecture 12 Tue. Feb 13. GI infections I
Lecture 13 Fri. Feb 16. GI infections II (PJ)
Week 8. (Feb. 19 – Feb. 25)  
-----------------------------  Mid Term Recess  -----------------------------

Week 9.  
Lecture 14. Tue. Feb 27. Infections in the circulatory system  
Lecture 15. Fri. Mar 2. Genital Infections  

Deborah Yamamura  
PJ

Week 10.  
Lecture 17. Fri. Mar 9. CNS Infections II  

Zain Chagla  
PJ

Week 11.  

(PJ)

Week 12.  

(PJ)

Week 13.  
Lecture 22. Tue. Mar 27. Host defenses and responses to infections II  
Lecture 23. Fri. April 3. Hospital and Community-acquired Infections  

(PJ)

Week 14.  

(PJ)

Availability of Instructors: Dr. P. Jayaratne is available via learnlink for specific questions arising from course materials. Dr. PJ will attend tutorials as a non-participant and can address questions about the course materials after lectures or tutorials. Some of the lectures and case presentations will be conducted by guest lecturers.

Your TA will be Bhanu Sharma (MedSci). E-mail: sharmb1@mcmaster.ca will be present at the tutorials. If Dr. PJ is not available you can direct your questions to Bhanu.