



The Hebrew University of Jerusalem

Syllabus

Medical Microbiology - 96213

Last update 12-04-2024

HU Credits: 4

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Medicine

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: Ein Karem

Course/Module Coordinator: Dr. Hila Elinav

Coordinator Email: hilaelinav@gmail.com

Coordinator Office Hours: . No fixed hours, available by email

Teaching Staff:

Dr. Hila Elinav,
Prof Colin Block,
Dr. Oshrat Ayalon,
Prof Amos Panet,
Dr. Karen Olshtain-Pops,
Prof Ron Dzikowski,
Prof Alon Warburg,
Dr. Sahar Melamed,
Dr. Yonatan Oster,
Prof Jacob Moran Gilad,
Dr. Ayelet Gayego,
Prof Ran Nir-Paz,
Prof Jacob Strahilevitz

Course/Module description:

Medical microbiology is learned in a graded fashion and includes introductory descriptions of bacteriology, virology, mycology and parasitology as a foundation for learning infectious diseases.

Major pathogens including bacterial, viral, fungal and parasites will be introduced, as well as diagnostic methods and the principles of antibacterial, antiviral and anti-fungal treatment.

Major pathogenesis mechanisms as well as defence mechanisms of the host will be learned.

The students will experience online bacterial laboratory, molecular diagnostics, and sterilization methods.

Course/Module aims:

To learn basic topics in bacteriology, virology, mycology and parasitology, the pathogenic mechanisms leading to infectious diseases, basic laboratory diagnostic methods and the principles of antibiotic treatment as a preparation for clinical studies of infectious diseases.

To develop students' self-learning skills in the field for their obligations as life-long learners.

Learning outcomes - On successful completion of this module, students should be able to:

-To describe microbial agents in terms of their classification, basic microbial characteristics, pathogenic mechanisms and host responses; to introduce the students with laboratory diagnostic methods of infectious diseases; to describe the different groups of anti-bacterial and anti-fungal agents, their structure, mode of action and resistance mechanisms.

-To apply the knowledge and skills gained in the course for independent, self-

directed learning in the identification and assessment of gaps or inadequacies in the knowledge gained from the course syllabus itself.

Attendance requirements(%):

In general, the Hebrew university rules require attendance at all teaching activities. In this course, for purposes of grading, completing the virtual laboratory activity is compulsory.

other activities will be held in the moodle- some of them will be graded.

-A quiz on basic bacteriology and major bacterial pathogen antimicrobials will be held in moodle.

- A quiz on antimicrobials will be held in moodle to conclude the chapter on antimicrobial agents

Appointed dates will be given in advance.

Teaching arrangement and method of instruction: -Lectures: large group or online according to the university instructions.

-Virtual laboratory: An activity for practicing laboratory diagnostic methods. The virtual laboratory is in moodle and requires the submission of reports.

One quizz in moodle will conclude the antibiotics lessons -will be held in the class-compulsory.

flipped classroom

Online exercises on the topic of pathogenesis, taxonomy, molecular diagnosis, sterilization.

Course/Module Content:

Bacteria; taxonomy and classification, structure, growth and genetics, the natural microbiota and acquaintance with parasite-host interactions, the human microbiome, innate and adaptive immunity and the interaction between the man and its dwellers.

Introduction for bacterial pathogenesis: bacterial virulence mechanisms and the interaction with the host, bacterial weapons, secretion pathways and toxins, bacterial communication, evasion of host immunity and biofilms

Major bacterial pathogens.

Antibiotics- structure, mechanism of action, resistance mechanisms

Diagnostic methods of infectious diseases (virtual laboratory practice)

Principles of molecular biology and advanced methods in diagnosis of infectious diseases

The man and the viruses- introduction to clinical virology: viruses and the human host, virus-host interaction, virus shedding and transmission, laboratory methods for diagnosis of viral infections

Mycology- introduction: classification and taxonomy, cell structure, reproduction, infections caused by yeasts and moulds - stages of disease, virulence factors, laboratory diagnosis and anti- fungals

Parasitology- introduction: parasitism, classification and morphology, life cycle, selected helminths with medical importance, malaria and leishmaniasis

Required Reading:

Murray Pr et al. Medical Microbiology 9th edition, available on line through the library (ClinicalKey)

Goering R et al, Mims Medical Microbiology and Immunology 7th edition, available on line through the library (ClinicalKey)

Additional Reading Material:

Other resources are prescribed for the various activitie. These are changed or updated quite frequently. Most are available online.

Grading Scheme:

Written / Oral / Practical Exam 50 %

Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 40 %

Mid-terms exams 10 %

Additional information:

Final grade components are subjected to changes.

The students will be updated during the course.

Participation in the virtual lab and submission of reports is mandatory and comprises 25% of the course grade.

*All online exercises are mandatory -some will be graded
quiz on antimicrobials will consist 10% of the course grade*