The Hebrew University of Jerusalem

Syllabus

MICROBIOLOGY - 71057

Last update 07-05-2024

HU Credits: *4*

Degree/Cycle: *1st degree (Bachelor)*

Responsible Department: *Agroecology & Plant Health*

Academic year: *0*

Semester: *2nd Semester*

Teaching Languages: *Hebrew*

Campus: *Rehovot*

Course/Module Coordinator: *Dr. Jonathan Friedman, Prof. Edouard Jurkevitch, Prof. Yael Helman*

Coordinator Email: *edouard.jurkevitch@mail.huj; Dr. Jonathan Friedman Senior Lecturer (Assistant Professor) Phone: +972-(0)8-9489161 yonatan.friedman@mail.huji.ac.il.ac*

Coordinator Office Hours: *Appointment via email*

Teaching Staff:
Prof Edouard Jurkevitch,
Dr. Yonatan Friedman,
Prof Yael Helman

Course/Module description:
Development and history of microbiology, types of microorganisms (Bacteria, Fungi, Viruses), bacterial and archaeal cell structure, cell, nutrition and metabolism. Environmental factors that affect bacterial growth, gene regulation and coping with extreme environments. Antibiosis. Phylogeny and taxonomy. Microbial ecology and evolution. Quorum sensing and cooperation in bacteria. Biofilms. The human and plant microbiomes.

Laboratory chapters: Sterilization growth media, cell morphology, staining methods, microscopy, Koch postulates, growth and death curves of bacteria. Methods for counting and identification of microorganisms in water, air and soil. Lactic and alcoholic fermentation.

Course/Module aims:
Acquaintance with the microbial world, Knowledge with basic concepts in Microbiology research.

Learning outcomes - On successful completion of this module, students should be able to:
Know the basics in microbiology; understand the peculiarities of life at the microscale; know about the huge microbial diversity as represented at the evolutionary, metabolic, and ecological levels.

Attendance requirements(%):
100% attendance in labs

Teaching arrangement and method of instruction: Lecture + experimental labs

Course/Module Content:
1. Introduction to the microbial world
2.Viruses
3. Fungi
4. bacterial and archaeal cell structure and bacterial growth

5. Metabolism
6. Antibiosis
7. Microbial habitats and coping with extreme environments
8. Phylogenetics and taxonomy
9. Microbial evolution
10. Gene regulation, quorum sensing and cooperation between cells
11. Biofilms
12. The Human microbiome
13. The Plant microbiome

Required Reading:
Brock Microbiology,
Manuscripts
Lab notebook and related materials

Additional Reading Material:
Links to relevant websites

Grading Scheme:
Written / Oral / Practical Exam 70 %
Clinical Work / Lab Work / Practical Work / Workshops 30 %

Additional information:
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