האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

VIRUSES AS PLANT PATHOGENS - 71117

Last update 08-09-2024

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Agroecology & Plant Health

Academic year: 0

Semester: 2nd Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Prof Moshe Lapidot

Coordinator Email: lapidotm@volcani.agri.gov.il

Coordinator Office Hours: By appointment

Teaching Staff:

Dr. Moshe Lapidot

Course/Module description:

The course is aimed at understanding the interactions between a plant pathogen – a virus – and its plant host. How viruses are able to infect plants, despite their very small genomes and the few proteins the viruses code for. We will discuss the different strategies viruses use in order to over come the plants defenses, and how to deal with viral diseases.

Course/Module aims:

The aim of the course is to understand the intricate interactions between a virus and its host, and how to cope with plant viruses.

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

Identify different plant viruses, define viral families,
distinguish between different modes of transmission,
manage viral diseases.

Attendance requirements(%):

90%

Teaching arrangement and method of instruction: Frontal teaching.

Course/Module Content:

1. Introduction to plant virology, history at a glance, taxonomy, Koch's postulates.

2. Viral "life" cycle, basic viral components, entry to the cell and disassembly.

3. Viral replication and expression strategies-how viruses transcribe and translate a number of proteins from a small genome without introns and exons.
A. Plus RNA viruses
B. Minus RNA viruses
C. DNA viruses

4. Viral movement: Cell-to-cell and long distance movement.
5. Assembly of virions.

6. Viral transmission from plant to plant.

7. Viral-insect interactions – potyviruses and aphids, begomoviruses and whiteflies, tospoviruses and thrips.

8. Other “creatures”- viroids and satellites.

9. Viral diagnostics.

10. Management of viral diseases.

11. Genetic resistance to viruses – definition of resistance, tolerance, breeding for resistance. TYLCV as a model for “complex” resistance.

12. Cross protection

13. Transgenic resistance

14. Viral synergism.

Required Reading:
None

Additional Reading Material:
Matthew’s Plant Virology
by Roger Hull

Grading Scheme:
Written / Oral / Practical Exam 100 %

Additional information:
At the end of this course there wiil be a final exam. If, due to COVID-19, exams on campus will be impossible, a written assay will replace the final exam.