



The Hebrew University of Jerusalem

Syllabus

PLANT PHYSIOLOGY - 71015

Last update 18-09-2023

HU Credits: 7

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Plant Science in Agriculture

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: Rehovot

Course/Module Coordinator: Prof. Menachem Moshelion

Coordinator Email: menachem.moshelion@mail.huji.ac.il

Coordinator Office Hours: by appointment

Teaching Staff:

Prof David Weiss,
Dr. Shilo Rosenwaser,
Prof Menachem Moshelion,
Mr. bnaya hami,
Mr. nir averbuch,
Mr. elad bendor,
Mr. Matanel Hipsch,
Ms. noa kirby,
Mr. bar benzeev,
Mr. amir cohen,
Mr. uria ramon

Course/Module description:

Physiology of the plant cell: permeability of plant cell membranes; water relations of plant cells; transport of solutes through membranes; photosynthesis; respiration; mineral assimilation. Physiology of the whole plant: water management; mineral management; transport of solutes; photoreceptors and photomorphogenesis; hormones and development.

Course/Module aims:

Learn about mechanisms that operate the plant cell and the whole plant in consideration of the interaction between the plant and its environment.

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

*Describe relations of plant cells transport of Describe photosynthesis
Recognize the physiology of the whole plant
Describe terms in signal transduction*

Attendance requirements(%):

100

Teaching arrangement and method of instruction: Lectures, recorded lecture videos, discussion meeting on recorded lectures, of laboratories, exercises

The course is based on 3 integrated learning approaches:

- 1. Asynchronous self-study (watching videos, answering short questions, reading material, submitting exercises) - will be done before the meeting with the teacher (2-3 hours every week)*
- 2. Frontal study (based on the background you acquired in self-study, 1-2 hours a week)*

3. Laboratories and exercises (conducting physiological experiments in small groups in the laboratory and writing a scientific report) will take place after the frontal class (3 hours per week).

Course/Module Content:

part A: plant water management and substance transmission through cell membrane: plant membrane and its permeability to water and ions, the stoma as an example of an osmotic machine and a signaling responding cell.

part B: Photosynthesis- light reactions and carbon fixation, respiration and mineral assimilation.

part C: photomorphogenesis, plant hormones (Auxins, Cytokinins, Gibberellins, Ethylene and -ABA Brassinosteroid)

Required Reading:

Plant Physiology. Taiz, L. and Zeiger, E. Sinauer Associates, Inc., Sunderland, Mass.

Taiz L. and Zeiger E., Plant Physiology, 5th Edition, 2010.

Taiz L. and Zeiger E., Plant Physiology, 4th Edition, 2006.

Additional Reading Material:

Physicochemical and environmental plant physiology /

by Nobel, Park S. Published 2004, Academic Press (540 pages) 3rd ed.

) Plant physiology, Botanical chemistry, Plant ecophysiology, Plant cells and tissues)

Grading Scheme:

Written / Oral / Practical Exam 70 %

Other 30 %

Additional information:

Mandatory participation in laboratories and exercises