

Title of the module: Physiology and metabolism of fruits

Reference number of the module: 001.2.2065

BGU Credits: 4

ECTS credits:

Academic year yearly

Semester: second semester

Hours of instruction:

Location of instruction:

Language of instruction: English

Cycle: Graduates

Position: Basic

Field of Education: Plant Physiology and metabolism

Responsible department: FAAB

General prerequisites: Biology

Grading scale: percent

Module's Description:

The course covers the interaction between the environment, practices in the field and genetics on the metabolism of fruits. The student will be introduced to fruit development, its regulation, metabolic processes related to it, plant central and secondary metabolic pathways in relation to fruit quality. The course will cover aspects of stress response on fruit yield quality, with particular focus on aspects related to climate change. The students will also be introduced to strategies developed to counter environmental hazards.

Aims of the module: Introduce the students to crop fruit development, fruit physiology and metabolism and their response to environmental cues in the context of climate change.

Objectives of the module:

- Introduce the students to the complexity of plant -environment interaction
- Provide the students with the knowhow of the potential effects of environment and field management on fruit yield and quality.
- Prompting the student into critical thinking on experimental design and results presentation and interpretation

Learning outcomes of the module: On successful completion of the module, the student should be able to:

1. Understand developmental processes of fruits, and the relation to fruit quality and market value
2. Critical reading of scientific and technical articles on practices in the field of fruit crops
3. Comprehend ways of presenting data and interpreting large data set statistics
4. Be familiar with the biosynthesis of pronutritional and health promoter compounds

Attendance regulation: Regular attendance is demanded and can affect the grade; Course is not based on a textbook only.

Teaching arrangement and method of instruction:

Frontal lectures and discussion

Choosing a topic from the course, searching the scientific literature on recent studies (minimum 4 scientific papers among them one introductory -review- and three experimental) and preparing an essay. Summarizing the papers in an essay with a general introduction and the research question or problem, critical assessment of the experimental design, results and of the conclusion drawn by authors. Final presentation during the last meeting .

Lecturer: Aaron Fait

Contact details:

Office phone: 0502029629

Email: fait@bgu.ac.il

Office hours: working days (in coordination with the lecturer)

Module evaluation: at the end of the semester the students will evaluate the module according to the university's evaluation process, in order to draw conclusions, and for the university's internal needs.

Confirmation: the syllabus was confirmed by the faculty academic advisory committee to be valid on **XXX (academic year)**

Last update: Oct 2021

Assessment:

1. Participation	5%
2. Exercises	30%
3. Seminar	70%
	<hr/>
	100%

Work and assignments:

During the course students will have to solve 3 exercises (5 questions each) in class on the material discussed in class and found on the slides.

During the evolution of the course, the student will define a topic for the final assignment which will be presented in the form of an oral seminar. With the help of the teacher the student will define a list of four related scientific works to read and summarize. At the end of the course the student will present a short summary of the topic of choice. Coverage, critical thinking, and presentation quality will all be part of the grade on the final assignment.

Specific Topics of the course

(1) Basics of fruit development; (2) Hormonal regulation; (3) Secondary metabolism accumulation; (4) Volatiles; (5) Water deficit and fruit quality; (6) Radiation and fruit quality; (7) Temperature and fruit quality; (8) Minerals, crop yield and quality.

Required reading:

The slides presented and the scientific literature for the assessment (in coordination with the lecturer).

Additional reading will include chapters from the book "The Science of Grapevines, Anatomy and Physiology", by Markus Keller -Academic Press- as well as scientific papers suggested in class.