



The Hebrew University of Jerusalem

Syllabus

POST-HARVEST PHYSIOLOGY - 71937

Last update 20-02-2023

HU Credits: 2.5

Degree/Cycle: 2nd degree (Master)

Responsible Department: Horticulture

Academic year: 0

Semester: 2nd Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Amnon Lichter

Coordinator Email: vtlicht@agri.gov.il

Coordinator Office Hours: By appointment

Teaching Staff:

Dr. Amnon Lichter

Course/Module description:

The aim of this course is to introduce the students to the various biological processes which take place during postharvest storage of fresh agricultural produce which can affect postharvest quality. The relevance of these processes to the applied postharvest technologies and methods will be discussed. Focus is given to processes which are relevant to changes in the different major quality attributes of the fresh produce such as texture, taste and aroma, and nutritional and health qualities. Comprehensive review of specific basic physiological, biochemical and molecular plant-related process will be carried out such as: action and perception of plant hormones; senescence, abscission and ripening; cell wall degradation and softening; water loss; and the response of the plant tissue to cold temperature storage and different gas atmosphere combinations. At the same time the students will be introduced to different applications, methods and technologies designed to maintain the postharvest quality of fresh produce.

Course/Module aims:

1. Providing for students knowledge and knowledge resources on the relevant biological processes influencing the physiology/quality of fresh produce after harvest, storage and shelf life
2. Acquainting the students with state-of-the art methods and technologies practiced by the industry and used to maintain quality and prevent losses of fresh produce
3. Providing the students with tools for critical thinking in development or implementation of tools processes or understandings that will facilitate optimal and efficient storage of fresh produce.

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

The students will be familiar with the basic and most relevant/important biological processes which determine postharvest quality and shelf life. In the need to develop a postharvest storage applied approach for a given fruit or vegetable the students should be able, based on the acquired knowledge, to know and identify the main physiological problems for a given fruit during its storage and develop the appropriate approach.

Attendance requirements(%):

85% attendance required. Attendance in all lectures in class is required.

Teaching arrangement and method of instruction: Most lectures in class

Course/Module Content:

Postharvest in Perspective of Food Losses
Preharvest factors affecting postharvest quality
An overview on Postharvest technologies
Fruit development, maturation and ripening
Softening processes in fruit
Mitigation strategies
Role of Ethylene in postharvest
Senescence, abscission and their control
Complementation to ethylene and abscission
Chilling injuries
Water status and its control
Modified and controlled atmosphere storage
No class - Evening of independence day
Complementation to Rodov lecture
Excercise
Physiological disorders: mechanisms and management
Postharvest quality indices and tools
Complementation to Lurie and Texture analysis
Excercise
No class - Conference
Postharvest pathogens, toxins and bacterial contamination
Fruit defence responses
Alterantive methods to control postharvest pathogens I
Alterantive methods to control postharvest pathogens II
Integrated postharest system - grapes
Summary and test prep

Required Reading:

Detailed lecture files will be uploaded in the course site as well as few recent scientific papers from the relevant topics, also available in the course module site

Additional Reading Material:

Directions and citations of updated and recent review scientific papers which are presented in the beginning slides of the presentations for each topic discussed as well as internet sites which include information of can direct to more relevant information sites.

Course/Module evaluation:

End of year written/oral examination 90 %

Presentation 0 %

Participation in Tutorials 5 %

Project work 0 %

Assignments 5 %

Reports 0 %

Research project 0 %

Quizzes 0 %

Other 0 %

Additional information:

Exercise will be given and will be presented by students in 5 minute presentation