

The Hebrew University of Jerusalem

Syllabus

DAMAGE CAUSED BY MOULDS IN FOODS - 73507

Last update 19-02-2023

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Biochemistry, Food Science and Nutrition

Academic year: 2023

Semester: 2nd Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Dr. Edward Sionov

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

Coordinator Office Hours:

Teaching Staff:

Dr. Edward Sionov

Course/Module description:

Basic Mycology, Fundamentals of food mycology. Biology and ecology of molds in food. Studying basic and innovative methods for detection and identification of filamentous fungi. Mold damage: warming; decreased nutritional values. Mycotoxins in food: conditions for their production by fungi, damage to animals and humans, detection and identification methods, approaches to prevent mycotoxin accumulation, methods for prevention and control fungal infection in food; antifungal drug resistance.

Course/Module aims:

Providing basic knowledge of food mycology, fungal spoilage of food and prevention methods

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

To identify filamentous fungi using basic and molecular biology techniques; to detect, identify and quantify mycotoxins using analytical chemistry methods

Attendance requirements(%):

Compulsory attendance

Teaching arrangement and method of instruction: Frontal lectures, lab

Course/Module Content:

Lecture 1 - Introduction to Mycology (taxonomy, structure, reproduction, basic concepts)

Lecture 2 - Biology and ecology of molds in food (fungal contamination of agricultural products and food, sources of contamination, conditions for the development of food fungi)

Lecture 3 - Damages caused by fungi in raw and processed food (warming, damage to nutritional values, damage to technological properties)

Lecture 4 - Mycotoxins in food (description and definition, classification of toxins, factors and conditions for the formation of toxins)

*Lecture 5 - Mycotoxins (continued) (aflatoxins and toxins produced by the genus *Fusarium* and their effect on animal and human health)*

Lecture 6 - Identification of filamentous fungi in agricultural and food products (methods of isolation, identification and quantification)

Lecture 7 - Identification of mycotoxins in agricultural and food products (biological,

immunological, analytical chemistry methods)

Lecture 8 – Methods and approaches for the control and prevention of molds and mycotoxins in agricultural and food products (natural, physical, chemical, biological control, food processing, etc.)

Lecture 9 - Antifungal compounds (conventional and natural substances) and antifungal drug resistance (guest lecturer)

Lecture 10 – Laboratory at the Volcani Center (providing basic tools for students in a mycological lab, demonstration of advanced methods for identifying filamentous fungi and mycotoxins)

Lectures 11 and 12 – Presentation of seminar works by students (the topics will be given by the lecturer at the beginning of the course, and each student will give a 20 minutes oral presentation of his/her research work)

Required Reading:

Pitt J.I., Hocking A.D. Fungi and Food Spoilage. 3RD edition, 2009 (Springer)

Wilson C.L., Droby S. (editors) Microbial Food Contamination, 2001 (CRC Press)

Jackson L.S., DeVries J.W., Bullerman L.B. (editors) Fumonisin in Food, 1996 (Plenum Press)

Additional Reading Material:

Course/Module evaluation:

End of year written/oral examination 0 %

Presentation 60 %

Participation in Tutorials 10 %

Project work 30 %

Assignments 0 %

Reports 0 %

Research project 0 %

Quizzes 0 %

Other 0 %

Additional information: