. - Defence of Foodstuffs

Prof. Marco Camardo Leggieri, Prof. Emanuele Mazzoni

***Text under revision. Not yet approved by academic staff.***

Plant Parasites Module

Prof. Marco Camardo Leggieri

COURSE AIMS AND INTENDED LEARNING OUTCOMES

The course aims to provide students with the appropriate knowledge for recognising the parasitic diseases and abiotic adversities that affect plant foodstuffs (whether intended for fresh consumption, preservation or transformation) and their post-harvest management, for the quantitative and qualitative protection of foodstuffs.

At the end of the course, students will be able to:

1. analyse the factors involved in quantitative and qualitative product reduction caused by biotic/abiotic alterations;
2. know the strategies for defending foodstuffs and identify the possible approaches for implementation using traditional or innovative means;
3. communicate, in specific terminology, the problems of foodstuff pathologies to supply chain operators, sector technicians and the non-expert public;
4. read up and update their knowledge on study topics by consulting scientific and educational publications.

COURSE CONTENT

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|  | ECTS |
| Introduction to plant pathology. Respiration, maturation and life of vegetable products post-harvesting. | 1.0 |
| Host-pathogen interaction. Infection cycle and epidemiology of fungi. | 1.0 |
| Combative means and methods in post-harvesting. | 1.0 |
| Special part: main diseases of pome fruits, stone fruits, table grapes, strawberries and a few fruit and vegetable products. Notes on mycotoxigenic fungi. | 1.0 |

READING LIST

V. De Cicco-P. Bertolini-MG Salerno, *Patologia post-raccolta dei prodotti vegetali*, Piccin, 2009.

G. Colelli – P. Inglese, *Gestione della qualità e conservazione dei prodotti ortofrutticoli*, Edagricole, 2020.

A. Matta-R. Buonaurio-F. Favaron-A. Scala-F. Scala, *Fondamenti di Patologia Vegetale*, Patron, 2017.

G. Agrios, *Plant Pathology*, 5th edition, Academic Press, 2005.

TEACHING METHOD

The course includes a total of 32 hours of frontal lectures in the classroom. The frontal lecture topics will be addressed with the aid of PowerPoint presentations, and with case studies for the special part of the course.

ASSESSMENT METHOD AND CRITERIA

The exam consists of a written test carried out on the Blackboard platform with the aim of assessing students' level of knowledge of the notions and verifying their understanding of the concepts learned.

The written exam covers the entire programme and consists of 27 questions, of which 25 are multiple-choice and 2 are open-ended.

Multiple-choice questions with correct answers will be awarded a mark of 1, those with wrong answers a penalty mark of -0.25.

Open-ended questions will be awarded a maximum mark of 3 for correct answers, while incorrect ones will be assigned a penalty mark of -0.75.

All questions left unanswered will be assigned a mark of 0. The maximum mark is 31/30, the minimum for passing the exam is 18/30.

The duration of the written exam is 30 minutes.

NOTES AND PREREQUISITES

Students signing up for the course are advised to have good basic knowledge of the fundamentals of general and organic chemistry, and of products of vegetable origin, subjects that are covered in the first-year courses.

Information on office hours available on the teacher's personal page at http://docenti.unicatt.it/.

Animal Parasites Module

Prof. Emanuele Mazzoni

COURSE AIMS AND INTENDED LEARNING OUTCOMES

The aim of the course is to provide an overview of the problem of food pests and their processing environments, highlighting the importance of animal pest control for food quality and safety. The course intends to cover: a) the basics of pest categories, their harmfulness and the risks to food health and human health; b) in-depth studies of the biology and damage caused by the principal species of animal food pests; c) learning the means and methods of prevention, monitoring and control of different categories of pests in the field of integrated food protection in the food industries.

At the end of the course, students will: a) be aware of the possible negative implications of infestations for foodstuffs and their environments, both in terms of product loss, other damages and health and hygiene risks; b) be able to correctly identify the main pests when faced with their specimens, traces and damages; c) possess up-to-date knowledge of the protection methods of foodstuffs to counteract the various types of infestation with the aim of favouring alternative health-promoting methods over the use of plant protection products and biocides; d) be able to independently draw from sources (professional courses, conferences, appropriate bibliographic material) to update and deepen their knowledge on individual topics; and e) know how to communicate appropriately with sector operators, technicians and consumers on the problems in question.

COURSE CONTENT

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|  | ECTS |
| Importance of pest-related problems in foodstuffs: quantitative and qualitative damage, and health and hygiene risks. Systematic groups of pests. General characteristics of Arthropods. Insects: systematics, external and internal anatomy and basic physiology. Reproduction and post-term development. Ecological preferences, trophic niches and the relationships between pests. Communication and pheromones. | 1.0 |
| Morphology, biology and harmfulness of pests: Tisanuri, Blattodei, Psocotteri, Lepidoptera. Coleoptera, Diptera, Hymenoptera. Mites: systematics (basics), morphology, biology and damage. | 1.5 |
| Vertebrate pests: Birds and Murid Rodents, morphology, bio-ecology, ethology, harmfulness. Other pests of occasional interest (field pest species). | 0.5 |
| Food protection and integrated pest management in relation to the main types of foodstuffs and food industries. Prevention, inspection, monitoring of environments and foodstuffs. Types of traps. Entomological analysis of foods. Means and methods of control: mechanical, physical, biotechnical and biological means; chemical means (insecticides, rodenticides) and risks to the environment and health. | 1.0 |

READING LIST

Reading material will be indicated during the course.

TEACHING METHOD

Theoretical frontal and dialogue-based lectures in which the topics and key concepts of the discipline will be presented and discussed; PowerPoint presentations will be used as a lecture aid and, together with other teaching material, will be made available to students enrolled in the course through the Blackboard platform at the end of the corresponding lectures.

Seminars with experts for in-depth analyses of particularly topical issues.

ASSESSMENT METHOD AND CRITERIA

The exam consists of a written test carried out on the Blackboard platform with the aim of assessing students' level of knowledge of the notions and verifying their understanding of the concepts learned.

The written exam covers the entire programme and consists of 27 questions, of which 25 are multiple-choice and 2 are open-ended.

Multiple-choice questions with correct answers will be awarded a mark of 1, those with wrong answers a penalty mark of -0.25.

Open-ended questions will be awarded a maximum mark of 3 for correct answers, while incorrect ones will be assigned a penalty mark of -0.75.

All questions left unanswered will be assigned a mark of 0. The maximum mark is 31/30, the minimum for passing the exam is 18/30.

The duration of the written exam is 30 minutes.

NOTES AND PREREQUISITES

Students should possess a knowledge of physics, general chemistry and organic chemistry acquired in the first-year courses. Knowledge in biology and zoology is also required (concepts of species, systematics of the animal kingdom, organisation and function of animal cells).

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