COURSE OF STUDY *Master degree: Food Science and Technology (LM70)*
ACADEMIC YEAR *2023-2024*
ACADEMIC SUBJECT *Postharvest pathology (3 ECTS) - I.C. Food entomology and postharvest pathology (9 ECTS)*

General information

Academic Year	*Second*
European Credit Transfer and Accumulation System (ECTS)	3 ECTS
Language	*Italian*
Academic calendar (starting and ending date)	*September 25th, 2023 – January 19th, 2024*
Attendance	*Not mandatory*

Professor/ Lecturer

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Virtual headquarters	*Microsoft Teams*
Tutoring (time and day)	Monday-Friday 9.00-16.00

Syllabus

Learning Objectives	*The student will acquire knowledge and skills on the abiotic and biotic stress of postharvest and those related to their integrated management.*
Course prerequisites	*Knowledge of plant biology*
Contents	**Frontal teaching and group activities** • Introduction to the discipline; importance and study of postharvest diseases; conservation, food safety and product losses in the postharvest phases. • Influence of environmental and nutritional factors on microorganisms causing postharvest alteration. • Genetic resistance, cultivation techniques and postharvest control means to reduce the contamination of fruits and vegetables. Chemical, physical, and biological means and their methods of application for integrated protection from postharvest diseases. • Innovative means for the protection against diseases occurring in the postharvest phase. • Main postharvest diseases of citrus fruits, grapes, stone fruits, pome fruits. **Exercises** • Observation of disease symptoms on harvested products. • Techniques for diagnosing postharvest disease agents. • Development of integrated strategies for the protection from postharvest diseases.
Books and bibliography	o De Cicco V., Bertolini P., Salerno M.G. (2009) PatologiaPostraccolta dei Prodotti Vegetali, Piccin Editore. o Notes from the lessons and didactic material distributed during the course. Bibliography o Vannacci et al., (2021). Patologia vegetale. Editore Edises. o Belli G. (2011). Elementi di patologia vegetale. Piccin-Nuova Libraria. Seconda Edizione. o Agrios G.N. (2005) Plant Pathology (fifth edition), Academic Press(USA). o Barkai-Golan R. (2001) Postharvest Diseases of Fruits and Vegetables: development and control, Elsevier, Londra. o Dov Prusky, Gullino M. L. (2014). Postharvest Pathology, Springer. o Snowdon A.L. (1990) A Color Atlas of Post-harvest diseases & disorder of fruit and vegetables, Volume 1 (General introduction and fruits) and Volume 2 (Vegetables). Wolfe Scientific ed., London.
Additional materials	*Notes, slides and other bibliographic materials will be furnished during the course*

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/Self-study hours
Hours			
75	*16*	*14*	*45*
ECTS			
3	*2*	*1*	
Teaching strategy		The course will be held with the aid of Power Point presentations, websites and multimedia material, documents prepared by the teacher, through case studies and classroom or laboratory exercises and educational visits.	
Expected learning outcomes		The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification)	
Knowledge and understanding on:		o Knowledge about the general aspects of post-harvest pathology o Knowledge about the postharvest disease management strategies	
Applying knowledge and understanding on:		o Ability to recognize the main post-harvest biotic and abiotic diseases. o Ability to define appropriate management strategies for post-harvest alterations	
Soft skills		• *Making informed judgments and choices* o Ability to provide reasonable suggestions for the prevention and control of major postharvest diseases. o Ability to adapt general concepts to specific product contexts presented as case studies. • *Communicating knowledge and understanding* o Ability to expose in an exhaustive way, with appropriateness of terms, richness of conceptual links and examples, the main problems associated with postharvest alterations, the factors that determine their harmfulness, and possible management methods. • *Ability to learn* o Ability to apply the acquired knowledge and skills in solving problems in different operational contexts.	

Assessment and feedback	
Methods of assessment	For students enrolled in the course year in which the teaching is carried out, an oral/written exemption test (esonero) will be assessed with a mark out of thirty on the topics developed during the theoretical and theoretical-practical lesson hours, up to the suspension of the teaching activity. The outcome of this test contributes to the evaluation of the final exam and is valid for one academic year. The profit exam consists of an oral test on the topics treated during the theoretical and theoretical-practical lessons in the classroom and in the laboratory, as reported in the Academic Regulations for the master's degree in food science and technology. For students who passed the exemption test, the evaluation of the profit exam will be expressed as the average between the mark obtained at the exemption test and that of the profit exam. The assessment of the student's preparation takes place based on pre-established criteria, as detailed in Annex A of the Degree Course Academic Regulations. For foreign students, the oral exam can be held in English.

Evaluation criteria	• *Knowledge and understanding*
	   o Ability to describe the general aspects of postharvest pathology and postharvest disease management strategies.
	• *Applied knowledge and understanding*
	   o Ability to recognize the main postharvest biotic and abiotic diseases.
	   o Ability to define appropriate management strategies for postharvest alterations
	• *Autonomy of judgment*
	   o Ability to describe reasonable strategies for the prevention and control of major postharvest diseases
	   o Ability to adapt general concepts to specific product contexts presented as case studies.
	• *Communication skills*
	   o Being able to expose in an exhaustive way, with appropriateness of terms, richness of conceptual links and examples, the main problems associated with postharvest alterations and the factors that condition their harmfulness and possible management methods.
	• *Ability to learn*
	   o Ability to apply the acquired knowledge and skills to solve problems in different contexts or operational.

Criteria for assessment and attribution of the final mark	The evaluation criteria that contribute to the attribution of the final mark will be: knowledge and understanding, the ability to apply knowledge, autonomy of judgment, i.e. the ability to criticize and formulate judgments, communication skills
Additional information	