General information		
Academic subject	Agricultural Entomology	
Degree course	Master degree Plant Medicine (LM69)	
Academic Year	*First*	
European Credit Transfer and Accumulation System (ECTS)		6
Language	*Italian*	
Academic calendar (starting and ending date)	*Second semester*	
Attendance	*No*	

Professor/ Lecturer	
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Tutoring (time and day)	Tutti i giorni feriali su appuntamento

Syllabus	
Learning Objectives	*The course is aimed at providing the elements for the characterization of the main orders of insects as well as knowledge on the main species of insect pests infestingf the most representative crops of the Mediterranean region, and on the related natural antagonists. In particular, knowledge on morphology, bio-ethology, monitoring and management of harmful insects will be deepened in order to allow the application of plant protection programs (on open field and protected crops) in the framework of IPM.*
Course prerequisites	Knowledge of zoology and general entomology is requested for admission to the Master course.
Contents	Introduction. Classification of Insects. Characteristics of the main Insect Orders. The main insect pests of Stone-fruits: *Monosteira unicostata, Halyomorpha halys, Myzus persicae,* Armored scales*,* Nectarine thrips, *Anarsia lineatella, Cydia molesta, Ceratitis capitata, Rhagoletis cerasi, Drosophila suzukii, Capnodis tenebrionis.* The main insect pests of Citrus: *Aleurothrixus floccosus,* Aphids, *Icerya purchasi*, *Planococcus citri*, *Aonidiella aurantii, Phyllocnistis citrella*. The main insect pests of Vegetables: *Trialeurodes vaporariorum*, *Tuta absoluta, Helicoverpa armigera, Liriomyza huidobrensis*, *Leptinotarsa decemlineata*. The main insect pests of Cereals: *Dociostaurus maroccanus, Agriotes lineatus.* The main insect pests of Olive: *Saissetia oleae*, *Zeuzera pyrina*, *Prays oleae*, *Bactrocera* (=*Dacus*) *oleae*. The main insect pests of Grape-vine: *Planococcus ficus*, *Frankliniella occidentalis, Lobesia botrana.*
Books and bibliography	- Radcliffe E.B., Hutchinson W.D., Cancelado R.E., 2008 - Integrated Pest Management. Cambridge University Press, Cambridge.
Additional materials	The teacher's Power Point presentations are available on the Microsoft Teams platform, "Agricultural Entomology Module" team, unique code 19ujklh For further information: - Strand L.L., 1999 - Integrated pest management for stone fruits. University of California, Division of Agriculture and Natural Resources. Publication 3389.

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
150	*32*	*28*	*90*
ECTS			
6	*4*	*2*	

Teaching strategy	
	Topics relating to frontal teaching will be carried out with the aid of Power Point presentations and with the projection of videos. The exercises will be carried out in the laboratory and / or in the field and will allow to acquire applied knowledge on the management of phytophagous insects. The teaching will be delivered in blended learning mode (mixed, frontal and distance teaching).
Expected learning outcomes	
Knowledge and understanding on:	○ Knowledge of bio-ethology and ecology of the main insect species included in the teaching program. ○ Knowledge of the interactions between phytophagous insects and the main components of agro-ecosystems. ○ Knowledge of methods and equipment for monitoring and sampling phytophagous insects. ○ Knowledge of some predictive models of phytophagous insects. ○ Knowledge of crop protection management with particular regard to the biological and integrated control of phytophagous insects.
Applying knowledge and understanding on:	○ Ability to identify phytophagous insects and the symptoms they induce on host plants, as well as the main natural enemies ○ Ability to properly monitor and sample harmful insects ○ Ability to use the means for controlling harmful insects
Soft skills	• *Making informed judgments and choices* ○ Ability to apply the acquired knowledge on the management of phytophagous insects to different field realities after careful evaluation of production and market variables and in full respect and protection of the environment and consumers • *Communicating knowledge and understanding* o Ability to clearly and correctly express the concepts and knowledge acquired. • *Capacities to continue learning* ○ Learning skills will be evaluated in the classroom by putting oral questions on the main subjects of the teaching program.

Assessment and feedback	
Methods of assessment	For students enrolled in the course year in which the lessons are held, an oral intermediate examination is envisaged, whose vote is expressed in thirtieths. The Profit Exam consists of an oral exam on the topics developed during the theoretical and practical lessons in the classroom and in the laboratory as reported in the Didactic Regulations of the Master of Science in Plants Medicine (Article 9) and in the Plan of study (Annex A). For foreign students the exam can be made as a written questionnaire in multiple closed answers.

Evaluation criteria	• *Knowledge and understanding*
	• *The student must demonstrate to know*
	  ○ the bio-ethology and ecology of insect species included in the teaching program,
	  ○ the interactions between phytophagous insects and the main factors of agro-ecosystems,
	  ○ the methods and tools for monitoring and sampling phytophagous insects,
	  ○ some predictive models of phytophagous insects,
	  ○ the criteria of crop protection management with particular regard to the biological and integrated control of phytophagous insects.
	• *Applying knowledge and understanding*
	• *The student must own the ability*
	  ○ to identify phytophagous insects and the symptoms they induce on host plants, as well as their main natural enemies
	  ○ to properly monitor and sample phytophagous insects
	  ○ to use proper methods and tools to control phytophagous insects.
	• *Autonomy of judgment*
	  ○ The student must demonstrate the ability to judge the correctness of IPM strategies applied on some colture.
	• *Communicating knowledge and understanding*
	  ○ The student must demonstrate to be able to organize discursively and in a linear way the knowledge learned
	• *Communication skills*
	  ○ Ability to organize the acquired knowledge in form of didactic presentation and to articulate it for didactic purposes
	• *Capacities to continue learning*
	  ○ Learning skills will be assessed in the classroom by asking oral questions on the main teaching topics.

Criteria for assessment and attribution of the final mark	The assessment of the student's preparation takes place on the basis of established criteria, as detailed in Annex A of the Teaching Regulations of the Master Degree. For students who have passed the intermediate examination, the final grade is obtained as the average between the grade on the intermediate examination and the final exam.
Additional information	