

Innovation Development of Agrifood Systems (CLM IDEAS)

2023/2024

Innovative and advanced control strategies of plant feeders (I.C. Innovative and smart technologies in crop protection, total CFU: 9)

General information	
Year of the course	2023/2024
Academic calendar (starting and ending date)	First semester (October 2022 - January 2023)
Credits (CFU/ETCS):	3
SSD	AGR/11, General and applied entomology
Language	English
Mode of attendance	optional attendance

Professor/ Lecturer	
Name and Surname	Giovanni Tamburini
E-mail	giovanni.tamburini@uniba.it
Telephone	0805442874
Department and address	Ex Facoltà di Agraria (Campus), 4° floor, room 13
Virtual room	Teams, Giovanni Tamburini
Office Hours (and modalities: e.g., by appointment, on line, etc.)	Wednesdays from 15.30 to 17.30, by appointment (e-mail), at the Entomology and zoology section (see above), or on Teams/Skype/Zoom

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
75	16	14	45
CFU/ETCS			
3	2	1	

Learning Objectives	The course aims to provide students with knowledge of cutting-edge strategies for the control of plant feeders in agriculture. The study of ecological relationships among phytophagous organisms, plants and natural enemies, the study of innovative crop management strategies to support natural biological control, the study of control methods alternative to the use of synthetic chemicals and technological innovations for monitoring and the control of pests, will allow the student to develop solid skills regarding control options for harmful organisms in agriculture while safeguarding the environment and beneficial fauna.
Course prerequisites	Knowledge of applied entomology and agricultural zoology

Teaching strategie	The subjects will be provided with several examples and illustrations by means of Power Point presentations, movies, practical drills in the classroom and laboratory. The course will be delivered in e-learning mode in case of need.
Expected learning outcomes in terms of	

Knowledge and understanding on:	<ul style="list-style-type: none"> ○ Knowledge and understanding of the interactions between plant feeders and abiotic and biotic factors of agroecosystems. ○ Knowledge and understanding of the main innovative and advanced monitoring and control strategies of plant feeders.
Applying knowledge and understanding on:	<ul style="list-style-type: none"> ○ Ability to select the best monitoring and management strategies to control plant feeders in different contexts.
Soft skills	<ul style="list-style-type: none"> ● <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ Ability to design plant protection strategies and to apply treatments able to limit the development of plant feeders in compliance with the European law and considering potential impacts on the environment. ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability of describing innovative and advanced monitoring and control strategies of plant feeders. ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability of updating the own knowledge on new monitoring and control strategies of plant feeders. ○ The results of the expected learning, in term of knowledge and ability, are listed in the Annex A of the Didactic Regulation of the Bachelor Degree Course (expressed by the European descriptors of the study title).
Syllabus	
Content knowledge	<p>Challenges for the control of plant feeders in modern food production systems: to limit agriculture impacts on the environment, to manage plant feeders' pesticide resistance, to limit and manage invasions of alien organisms and impacts of climate change.</p> <p>Interactions between plant feeders and abiotic and biotic factors of agroecosystems.</p> <p>Regulatory provisions on pesticides and biopesticides with a focus on the European Union.</p> <p>Innovative crop management strategies for sustainable pre-and post-harvest plant protection: integrated pest management, integrated crop management, diversified farming practices to sustain and enhance biodiversity, biological and microbiological pest control (technical and legislative evolution of classic biological control, augmentative and conservation pest control, application of entomopathogenic fungi, nematodes, bacteria and viruses), biopesticides.</p> <p>Innovative and advanced technologies for plant protection: Agriculture 4.0, Decision Support Systems (DSS), forecasting models for plant feeders, biotechnological techniques for the control of plant feeders (RNAi, use of semiochemicals, microbial symbionts, UV-radiations, genetically modified crops, sterile male technique and others)</p>
Texts and readings	<ul style="list-style-type: none"> ● Notes of the lectures ● Presentations and other didactic material provided during the lessons
Notes, additional materials	Students will be provided with a copy of all presentations utilized for lectures, including also those eventually needed for the practical activities.
Repository	<i>Teams</i>
Assessment	
Assessment methods	The students enrolled in the academic year during which this module is offered, can have an intermediary exam during the teaching period of module. The result of this intermediary exam remains valid for the whole academic year and concurs to the final evaluation of the student. The intermediary exam will be given on the subjects treated during the lessons and the practical activities as reported in the Didactic Regulation in Agricultural Science and Technology (art.

	<p>9) and syllabus (annex A) and which is correlated to the actual teaching period. The evaluation of the intermediary exam is expressed in thirtieths. At the end of the module teaching period, the students, who passed positively the intermediary exam, can give the final exam concerning on the subjects treated during the lessons and the practical activities since the intermediary exam, as reported in the Didactic Regulation in Agricultural Science and Technology (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period. Students who did not pass or give the intermediary exam will be examined on the whole subjects treated during the lessons and the practical activities as reported in the Didactic Regulation in Agricultural Science and Technology (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period. The intermediary and the final exams consist of an written examination (oral if necessary). The evaluation of the student is based on criteria previously fixed such as reported in the Annex A of the Didactic Regulation in Agricultural Science and Technology.</p>
Assessment criteria	<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ Description of the interactions between plant feeders and abiotic and biotic factors of agroecosystems and the main innovative and advanced monitoring and control strategies of plant feeders. • <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ Description of the best monitoring and management strategies to control plant feeders in different contexts. • <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ Formulation of potential plant protection strategies and treatments able to limit the development of plant feeders considering potential impacts on the environment and in compliance with the European law. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Exhaustive description and illustration, with appropriateness of term, richness of examples the innovative and advanced monitoring and control strategies of plant feeders. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Adaptation of the basic cognitive tools acquired during the module in order to explain and solve numerous applied problems and diversified case of study
Final exam and grading criteria	The final grade is awarded out of thirty. The exam is passed when the grade is greater than or equal to 18.
Further information	.