COURSE OF STUDY Agricultural Science and Technology D.M.270/04) (L)

ACADEMIC YEAR 2023/2024

ACADEMIC SUBJECT Applied Entomology 6 ECTS, IC Applied Entomology & Agricultural Zoology 9 ECTS

General information	
Year of course	II Year
Academic calendar	I semester 25 September 2023 - 19 January 2024.
Credit (CFU/ECTS)	6
Language	Italian
Attendance	Class attendance is optional but recommended

Professor/ Lecturer	
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Virtual headquarters	*Teams: Entomologia Applicata, Teams Code **l4x56jp***
Tutoring (time and day)	*By appointment via WA*

Syllabus	
Learning Objectives	The Agricultural Science and Technology course provides the knowledge and skills for the junior agronomist, agronomist, and production technician, ensuring the safety, quality and wholesomeness of food and non-food production, waste reduction, resources and environmental impact using innovative and sustainable methodologies. In particular, the graduate will apply the knowledge and fundamentals of pest management, respecting natural balances and human health, and protecting crops.
Course prerequisites	Basic knowledge of Zoology
Contents	The course is tailored and focused on the insect's gross morphology, functions, diversity, and roles in natural or applied contexts. The main teaching topics are the recognition of insects and identification to order level with a knowledge of their ecological role. The course target is to qualify the student as a basic technical consultant because of possible employment as an insect management operator. General entomology topics are discussed as needed for a basic knowledge of Mediterranean entomology. Main insect orders are presented and examined for artificial environment damage and management needs.
Books and bibliography	Minelli A. & Bologna M.A. Ed(s) (2023). Sistematica ed evoluzione degli esapodi, Liguori Editore, ISBN978-88-207-6988-8, 648 pp. Beutel R.G., Friedrich F., Ge S.-Q., Yang X.-K. (2014). Insect Morphology and Phylogeny - A textbook for students of entomology. Walter de Gruyter GmbH, Berlin/Boston, ISBN 978-3-11-026263-6 e-ISBN 978-3-11- 026404-3 Gibbs T.J. (2014). Contemporary Insect Diagnostics: The Art and Science of Practical Entomology. Academic Press, ISBN: 978-0-12-404623-8
Additional materials	Course handouts, available before the course kick-off

Work schedule	

Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
150	40	20	90
ECTS			
6	4	2	

Teaching strategy	The course will be presented with slideshows, guided direct experiences, and case studies in the laboratory. The course includes the knowledge of insect morphology, bionomics, damage, and the general approach to pest control, including the approach to IPM strategies by scenarios critical analysis. Course participants will also develop skills through practical experiences using IoT or smart technologies. The lecturer will offer the course material in English or Italian and deliver the course in Italian with an approach to English to share the technical glossaries y, as the class will suggest. The course and teaching materials will be appropriately shaped for recipients with disabilities and SLD for specific learning needs. With the same inclusive intent, the lecturer will adapt the course to the needs of students who cannot attend full-time.
Expected learning outcomes	
Knowledge and understanding on:	○ The Insect machine parts and functions. ○ Gross insect morphology and biology
Applying knowledge and understanding on:	○ Key factors for insect evolutionary and biological success ○ Understanding and counteracting insect invasivity.
Soft skills	○ Making informed judgments and choices ○ Skill in insect damages management approach under sustainable control actions, timing, and placement ○ Communicating knowledge and understanding ○ Communication skills in English ○ Capacities to continue learning. ○ Ability to access digital sources for insect morphology and bionomics.

Assessment and feedback	
Methods of assessment	The intermediate consists of an online written test about 60 questions long with mixed open/closed answers, to complete in 60'. The final exam consists in discussing the arguments given in lectures. The candidate will discuss three topics chosen by the lecturer, picked from about the sixty highlighted in the course handouts. The intermediate and final scores will be weighted in the unit's final assessment and with the other unit's vote in the Integrated Course.
Evaluation criteria	• Knowledge and understanding ○ Recognize insects among arthropods. ○ Recognize insect orders arguing their bionomics. • Applying knowledge and understanding Ability to link insect damage to the order of the suspected culprit. • Autonomy of judgment Ability to link insect morphology, bionomics, and insect impact on the environment. • Communicating knowledge and understanding ○ Ability to connect the rationale of insect knowledge with cultural insect storytelling. • Communication skills ○ Ability to offer insect-related information at the level of the listener. • Capacities to continue learning.

	○ Skill to access and manage information from the main insect-related databases.
Criteria for assessment and attribution of the final mark	Learning will be measured as the critical ability to discuss insect morphology, bionomics, and impact. The candidate should be able to recognise the orders and their bionomics by morphology, inferring the insect lifestyle or behaviours. The pass mark (18/30) is achieved by discussing extensively and in-depth for at least 10' one of the three topics proposed by the lecturer. The candidate who discusses the three topics with quality of presentation, argumentative ability, autonomy of judgement and integration between the issues will bring the maximum mark (30/30). The case of the highest marks and original discussion merits a 'Cum Laude' grade. The overall learning objective is to find in the candidate the intent to continuously improve their knowledge to suggest proper insect management of human-insect interaction. The examination for international students can be taken in English.
Additional information	