



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	
ACADEMIC YEAR	
ANNO ACCADEMICO EROGAZIONE	
SUBJECT	
CODE	
SCIENTIFIC SECTOR(S)	
HEAD PROFESSOR(S)	COLAZZA STEFANO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	
TERM (SEMESTER)	
ATTENDANCE	
EVALUATION	
TEACHER OFFICE HOURS	COLAZZA STEFANO Tuesday 09:00 12:00 stanza del docente Wednesday 15:00 18:00 stanza del docente Thursday 09:00 12:00 stanza del docente

DOCENTE: Prof. STEFANO COLAZZA

PREREQUISITES	Basics of biology
LEARNING OUTCOMES	<p>Knowledge and understanding Students are expected to acquire advanced methods for the implementation of integrated pest management programs in vineyard. Ability to use the specific language of these disciplines.</p> <p>Applying knowledge and understanding Students are expected to gain the ability to recognize the main insect pests and assess the positive and negative effects of insects in the environment, to know the relationship between insects and plants, damage caused by the insects, and the influence of biotic and abiotic factors. They should also acquire the ability to organize the learned concepts in a coherent and effective way, choosing, basing on the concepts learned and on one's own opinion, the most appropriate techniques according to the different scenarios in the field.</p> <p>Making judgements Students are expected to be able to evaluate the biological nature of the problems and the results obtained using low environmental impact and traditional methods, to assess the impact of the pest infestation, the susceptibility of plants and their resistance to attack of insect pests. Students should also gain the ability to develop pest management programs according to the environmental conditions.</p> <p>Communication skills Students are expected to achieve the ability to communicate to stakeholders the knowledge and techniques acquired in order to make them applicable in integrated pest management programs. They should be able to advocate the importance of strategies to control insect pest and to highlight their environmental impacts.</p> <p>Lifelong learning skills Students are expected to gain the ability to update their knowledge by reading scientific publications about the agrarian entomology field and, in particular, about low environmental impact strategies. They should also gain the knowledge and skills required to attend both second level master and in-depth courses as well as seminars in the entomological field.</p>
ASSESSMENT METHODS	Knowledge, understanding and interpretative skills achieved by the students will be evaluated.
EDUCATIONAL OBJECTIVES	The goal of the course is to delve into some topics concerning the morphology, anatomy and physiology of insects, and to introduce the students to the knowledge of the methodologies and innovative tools to develop efficient and sustainable strategies to control the main insect pests. Principles of applied ecology and insect pest management are emphasized. Detailed discussions will focus on management of the abiotic and biotic factors affecting the crop stability, the influence of non-agricultural components, and the strategies to control insect pests. To make students develop their learning skills, critical analysis and communication ability, case studies will be assigned that will be carried out individually or in groups and then presented in the classroom.
TEACHING METHODS	Frontal lessons, laboratory practical lessons and field excursions
SUGGESTED BIBLIOGRAPHY	Tremblay E. Entomologia applicata: generalita' e mezzi di controllo. Liguori Editore, Napoli. Volume 1 Pennacchio F., 2014. Gli Insetti e il loro controllo. Liguori ed., Napoli. 738 pp.

SYLLABUS

Hrs	Frontal teaching
2	Introduction: overview and goals
3	Systematics of insects
9	External morphology: Integument, exoskeleton and endoskeleton. Head and the mouthparts, thorax and appendages, legs and wings; abdomen and appendages.
9	External morphology: Integument, exoskeleton and endoskeleton. Head and the mouthparts, thorax and appendages, legs and wings; abdomen and appendages.
11	Anatomy and physiology of insects: muscular system, respiratory system, circulatory system, digestive system, nervous system, sensory organs, excretory system and reproductive system
6	Post-embryonic development of insects: moults; metamorphosis; stages
3	Post-embryonic development of insects: moults; metamorphosis; stages.
3	Management of biotic and abiotic factors affecting crops stability
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10	Types of damage caused by insect pests. Control methodologies of insect pests. Chemical, integrated and biological control. Mechanical, microbiologic and biotechnical tools

SYLLABUS

Hrs	Frontal teaching
12	Agro-ecosystem concept and management; ecological function; biodiversity conservation and improvement in agriculture and landscape management
5	The concept of pest prevention and management in organic agriculture

Hrs	Practice
3	Morphology and anatomy of insects
3	Identification of main orders of insects
6	Traps to monitor or directly control populations of grapevine main phytophagous pests. Monitoring on field: preparation, positioning and examinations of traps and other sampling technics.
3	Chemical and microbiological insecticides: Formulation and labels.
3	Identification of main phytophagous pests and their natural enemies. Damage evaluation
8	Case studies presented by the students, individual and/or group work