



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali
ACADEMIC YEAR	2016/2017
BACHELOR'S DEGREE (BSC)	FORESTRY AND ENVIRONMENTAL SCIENCES
SUBJECT	FOREST ENTOMOLOGY
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50121-Discipline della difesa
CODE	18805
SCIENTIFIC SECTOR(S)	AGR/11
HEAD PROFESSOR(S)	LO VERDE GABRIELLA Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	8
INDIVIDUAL STUDY (Hrs)	136
COURSE ACTIVITY (Hrs)	64
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	LO VERDE GABRIELLA Monday 09:30 13:00 Studio del docente (n. 105), viale delle Scienze, Ed. 5, ingresso B (ex Entomologia agraria), primo piano.

DOCENTE: Prof.ssa GABRIELLA LO VERDE

PREREQUISITES	Fundamentals of animal biology and ecology.
LEARNING OUTCOMES	Knowledge of biology and identification of the main arthropod pests of forest ecosystems, of the infestation symptoms, of the control methods. Ability to use technical and scientific language. Comprehension of the relationships among abiotic factors, plants, arthropod pests and their natural enemies in forest ecosystems. Ability to correlate the knowledge on biology and ecology of the each arthropod pest with the respective symptoms on plants, to plan suitable control strategies. Ability to detect useful data to assess the presence/absence of insect pests and to evaluate the damage level, with the aim of implementing adequate control strategies. Ability to disseminate the acquired knowledge using both scientific and popular languages and methods. Ability to update the acquired knowledge by consulting the literature, participation in seminars, courses, conferences.
ASSESSMENT METHODS	Learning evaluation will be carried out through an intermediate test and a final oral exam. The intermediate test (facultative, time 2h) consists of 4 open ended questions, aimed to assess learning and statement of the general issues of the course. On the whole, the test result will be considered sufficient if answers to each of the 4 subjects will be sufficient. For students who received a sufficient evaluation in the intermediate test, the final exam will consist in 2-3 questions about the remaining issues of the course program, to evaluate the ability to correlate the theoretical knowledge with the corresponding applications and to use technical and scientific language. For students who did not carry out or did not get the intermediate test, the oral exam will be extended to the entire course program. In both tests (intermediate and final) the evaluation will be expressed in thirtieths.
EDUCATIONAL OBJECTIVES	The student will improve the knowledge of the forest ecosystem and its arthropod community through the study of the major pests and their control methods, in order to consider pest management as a relevant part of the sustainable management of forest ecosystems.
TEACHING METHODS	Lectures, laboratory, field practice.
SUGGESTED BIBLIOGRAPHY	Servadei, Zangheri e Masutti – Entomologia Generale e Applicata. CEDAM, Bologna Tremblay – Entomologia applicata: generalita' e mezzi di controllo. Liquori Editore, Napoli

SYLLABUS

Hrs	Frontal teaching
2	Introduction to insect study. Differences from other Arthropods. The importance and diversity of insects. Factors for insect success.
6	External anatomy: exoskeleton and cuticle. Head: mouthparts, cephalic sensory structures. Thorax: legs and wings. Abdomen: terminal structures.
8	Internal anatomy and physiology: muscles and locomotion; circulatory system, haemolymph and circulation; tracheal system and gas exchange; gut, digestion and nutrition; excretory system. Nervous system and sensory structures.
2	Reproductive organs, reproduction and insect development. Postembryonic development, the process and control of moulting.
6	Insect – plant relationships. Factors influencing insect populations. Population dynamics and fluctuations. Sampling and monitoring of insect populations.
10	Orders: Collembola, Isoptera, Orthoptera, Thysanoptera, Rhyncota, Lepidoptera, Diptera, Coleoptera, Hymenoptera. Damages caused by insects: symptoms and assessment Sap-sucking insects: general characteristics and damages. Main orders of sap-sucking insects. Biological cycle of viviparous and oviparous aphids (adelgids). Leaf-eating insects: general characteristics and damages. Main orders of leaf-eating insects. Xilophagous insects: general characteristics and damages. Main orders of xilophagous insects.
4	Mechanical, silvicultural, biotechnical and biological control methods. Chemical control: effects on target species and forest community.
8	Identification, biology and ecology of main phytophagous insects
Hrs	Practice
6	Laboratory: head, thorax, abdomen and their appendices
Hrs	Others
12	Field exercitation