



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2016/2017		
BACHELOR'S DEGREE (BSC)	AGRICULTURAL SCIENCES AND TECHNOLOGIES		
SUBJECT	APIDOLOGY		
TYPE OF EDUCATIONAL ACTIVITY	D		
AMBIT	10517-A scelta dello studente		
CODE	18706		
SCIENTIFIC SECTOR(S)	AGR/11		
HEAD PROFESSOR(S)	RAGUSA ERNESTO	Ricercatore	Univ. di PALERMO
OTHER PROFESSOR(S)			
CREDITS	3		
INDIVIDUAL STUDY (Hrs)	45		
COURSE ACTIVITY (Hrs)	30		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	RAGUSA ERNESTO Monday 08:30 15:30 N.B. Per la sede di Caltanissetta, giorno e orario di ricevimento verranno concordati con i diretti interessati		

DOCENTE: Prof. ERNESTO RAGUSA

PREREQUISITES	To understand some topics of the course of Apidology some basic notions of entomology and zoology are necessary. However, to help students to overcome possible difficulties, some introductory lessons will recall the fundamental concepts.
LEARNING OUTCOMES	In this course, students will have to acquire specific scientific competences and knowledge of the apoidea with a particular focus on <i>Apis mellifera</i> , as well as the techniques to manage an apiary correctly and to recognize and control the main problems and their natural enemies. To reach this goal, students will have to acquire an adequate knowledge of the biology and ethology of the main pollinators, of their role as bio-indicators and of their relationship with the environment; students will also have to understand how to manage an apiary, and how to recognize its main problems and natural enemies.
ASSESSMENT METHODS	Final oral examination: the organic unity of the contents will be evaluated as well as the students' ability to connect topics and issues and to explain them clearly. The evaluation is expressed with grades from 18 to 30. The final evaluation will be based on the following criteria: a) Basic minimal knowledge of the main apoidea, of the fundamental notions of their biology and of their role in the environment; basic knowledge of the correct management of an apiary; ability to use the specific language of the subject (grade: 18-21); b) A fair knowledge of the main apoidea, of their biology and their role in the environment; sufficient knowledge of the correct management of an apiary and of its main problems (grade: 22-25); c) A good knowledge of the main apoidea and of their biology; ability to identify them; analysis of the topics and issues through a proper and precise language; ability to manage an apiary, to recognize and control its main problems (grade: 26-28); d) Optimal knowledge and analysis of the topics and issues of the program, dealt with in a coherent, precise, and scientific manner; ability to recognize the main apoidea and analyse their role as bio-indicators; optimal knowledge of the norms for a correct management of an apiary; optimal ability to recognize and control its main problems (grade 29-30L).
EDUCATIONAL OBJECTIVES	The formative objective of the course is to supply students with the basic knowledge useful to recognize and use the principal matchmakers as both pollinators and bio-indicators; moreover, the basic knowledge of beekeeping material, of the principal diseases, of misfortunes and natural enemies, will lead the student to be able to create, manage and defend a middle-sized apiary.
TEACHING METHODS	lessons, laboratories and field training
SUGGESTED BIBLIOGRAPHY	A. Contessi - Le api, Edagricole, Bologna, 2004. E. Tremblay - Entomologia applicata, vol.1 - Ed. Liguori, Napoli (Per le parti relative a morfologia, anatomia e fisiologia)

SYLLABUS

Hrs	Frontal teaching
2	Systematic frame and principal Apoidea.
3	The four species of <i>Apis</i> genus: <i>dorsata</i> , <i>florea</i> , <i>indica</i> (= <i>cerana</i>) e <i>mellifera</i> the subspecies of <i>apis mellifera</i>
4	Morphology, anatomy and physiology of bees. Mating, reproduction, amphigony, parthenogenesis. Post-embryonic development. Determinism of sex and castes.
3	Organization of bee societies; the gestural symbolic language of bees; work of worker-bees; thermoregulation.
4	The origin of rational apiculture: Langstroth and the bee space; rational beehives with movable Honeycombs; the Top Bar beehive.
2	Bee farming equipment; the main products of a beehive: honey, pollen, propolis, royal jelly, beeswax.
3	Main misfortunes of bees and how to control and hold them back: bio-ethology of <i>Varroa destructor</i> , <i>Vespa orientalis</i> , <i>Vespa velutina</i> , <i>Aethina tumida</i> ;
2	Main diseases: nosemiasis, American plague and European plague.
Hrs	Practice
5	Field training
Hrs	Others
2	Filed visits to farmers