

<b>COURSE: Entomology and Zoology</b>			
ACADEMIC YEAR: <b>2019-2020</b>			
TYPE OF EDUCATIONAL ACTIVITY: (Basic, Characterizing, Affine, Free choice, Other): <b>Characterizing</b>			
TEACHER: <b>Donatella Battaglia</b>			
e-mail: donatella.battaglia@unibas.it		website:	
phone: 0971 205508		mobile (optional):	
Language: italian			
ECTS: (lessons e tutorials/practice) 9	n. of hours: (lessons e tutorials/practice) 80 h	Campus: Potenza/Matera Dept./School: Potenza Program:	Semester: first

**EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES**

Sintetizzare in lingua inglese i contenuti riportati nella scheda in lingua in italiana.

The course of Entomology and Zoology addresses issues related to the biology and the systematics of invertebrates. The main objective of this course is to provide the foundation for the study of integrated pest management, which will be addressed by the students as part of the Master in Agricultural Science and Technology. In addition, the student acquires a minimum skill on crop protection (recognition of the major insect pests, knowledge of insecticide characteristics) that can be immediately used after the three-year degree.

**Knowledge and understanding skills**

The student must therefore acquire an overview of the structure and functions of animal organisms in general and in particular on insects. The student will also acquire the concept of evolution and understand the basis of animal adaptations to the environment. The student will also have to know the basics of ecology and deepen in particular the parts related to trophic relationships. Finally, it is expected that the student will acquire a minimum knowledge for pest identification and control. More detailed information will be reserved for those taxonomic groups not included in the program of the course of Integrated pest management, for example insects important for human health, such as mosquitoes, and insects used as indicators for the quality of water and soil.

**Ability to apply knowledge and comprehension:**

The student will be able to identify the main insect taxa. It must be able to analyze the main characteristics of insecticides (phyto-tropicity, systemicity, persistence, etc.) in relation to the biology and the feeding mode of insect pests. The student must be able to understand the safety sheet for an insecticide.

**Autonomy of judgment:**

The student will be able to connect and rework the information obtained during the course of Entomology and Zoology and other courses. He will be able to overcome the purely notional aspect, developing autonomous answers to general biological questions based on the learned lessons. He will learn how to critically use the information available on the web.

**Communicative**

**Skills:**

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The student will develop his / her communicative skills both in written and oral form, through lecture sessions (the student is asked to answer the questions of the teacher), written tests and the preparation of a written work on specific topics.

**Learning ability:**

Students should be able to deepen specific topics by using textbooks, articles and information available on the web.

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**PRE-REQUIREMENTS**

The student must have basic knowledge of mathematics and chemistry; he must know the cell structure; he must have basic knowledge of genetic.

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**SYLLABUS**

- Animal taxonomy, phylogeny and evolution; organization of animal body (symmetry, tissues, coelomic cavity); structural plan of the various animal phyla (with particular regard to nematodes, molluscs and arthropods), the insect morphology, animal tissues (8 hours).
- The animal organisms functions (feeding and digestion, respiration, circulation, excretion, movement, nervous and hormonal coordination) with special reference to insects (8 hours).
- The reproduction, embryonic and post-embryonic development in animals, particularly with regard to insects; preimaginal characteristics of insect instars and types of metabolia (9 hours).
- Intraspecific communication (pheromones, kairomones, sounds, etc.) and animal societies. Basic information on ecology and biological control of harmful species (7 hours).
- Pest species not belonging to the phylum of arthropods. Basic information on pest management (8 hours).  
Main characteristics of insect orders: Protura, Diplura, Thysanura, Collembola, Ephemeroptera, Odonata, Blattoidea, Mantodea, Isoptera, Dermaptera, Orthoptera, Hemiptera, Thysanoptera, Neuroptera, Lepidoptera, Coleoptera, Diptera; Hymenoptera (24 hours).
- Observation of zoological material in the laboratory (16 hours).

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**TEACHING METHODS**

This course includes 80 hours of teaching. In particular, it provides 64 hours of theoretical lectures and 16 hours of laboratory tutorials. The projection of short films is also included.

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**EVALUATION METHODS**

Riportare una (o più) delle seguenti voci: Intermediate verifications, Written examination, Discussion of a project work, Practical test, Oral examination, Other methods (specificare).

Sintetizzare in lingua inglese i contenuti di dettaglio riportati nella scheda in lingua italiana.

The exam is divided 4 parts: a written test on the general part of the program (excluding insect taxonomy); the preparation of a term paper on a specific topic agreed with the teacher; a practical test for recognition of specimens of various insect orders, families and species; an oral examination. The final

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grade is derived from the average of grades obtained in all examination sections.

The written exam consists of 20-30 questions, some multiple choice, other open-ended questions. The written exam will assess the content knowledge and reasoning skills of the student (the test has a duration of 2 hours); The term paper aims to assess the ability of self-study and the ability to connect the different knowledge; The practical test is intended to evaluate the ability to recognize different insect taxa;

The oral examination aims to evaluate the knowledge of insect taxonomy and the ability to connect knowledge concerning the systematic with those acquired in the general part of this course. The written test for the part about the open-ended questions, the term paper and the oral exam are also used to assess communication skills.

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#### TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Riportare in lingua inglese i contenuti riportati nella scheda in lingua italiana.

Books:

L. Masutti, S. Zangheri - Entomologia generale e applicata. CEDAM Editor

E. Tremblay – Entomologia applicata. Volume primo: generalità e mezzi di controllo. Liguori Editor

Handouts and other material provided by the teacher during the course.

Slides.

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#### INTERACTION WITH STUDENTS

Riportare in lingua inglese i contenuti riportati nella scheda in lingua italiana.

At the beginning of the course, after describing the course objectives, program and methods of verification, the teacher collects the list of students who intend to attend the course, together with name and email address. The teacher gives information on the study material. The additional material, in electronic format, or indications of websites where you can find useful material, will be sent to each student, during the course, via e-mail.

Consulting hours: Tuesdays, Wednesdays and Thursdays from 15.30 to 17.00 pm in the teacher's studio.

In addition to weekly reception, the teacher is available at all times for a contact with students through e-mail and by appointment.

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#### EXAMINATION SESSIONS (FORECAST)<sup>1</sup>

Riportare le date inserite nella scheda in lingua italiana

An exam date is scheduled every month except in August. Exam dates are listed on the ESSE3 platform.

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SEMINARS BY EXTERNAL EXPERTS    YES     NO

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FURTHER INFORMATION

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<sup>1</sup> Subject to possible changes: check the web site of the Teacher or the Department/School for updates.