

COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Agricultural Sciences		
ACADEMIC UNIT	Biosystems & Agricultural Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	BAE_640	SEMESTER	6 th
COURSE TITLE	AGRICULTURAL ZOOLOGY - ENTOMOLOGY		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
Lectures	3		
Tutorials	2		
Laboratory	0		
TOTAL	5	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Scientific area background		
PREREQUISITE COURSES:	There are no prerequisite courses.		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek .-For Erasmus students in English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>1. The aim of the course is to acquaint students on a theoretical and practical level with morphology, biology, ethology, and the treatment of insects infesting industrial plants, mites infesting tree crops and vines, phytoparasitic nematodes, as well as insects - enemies of stored agricultural products and food.</p> <p>In detail, after the successful completion of the course students will acquire knowledge, skills and abilities in the following subjects:</p> <ol style="list-style-type: none"> 1. Symptoms of insect and mite infestations and types of damage to cultivated plants. 2. Economic importance, methods and means of dealing with insect-enemies and mites per crop. 3. Insects-enemies Cotton, Tobacco 4. Insects-enemies of Beet-Potato 5. Harmful mites of Apple Cider and Nuts. 6. Harmful mites of Citrus, Vine and Olive. 7. Harmful mites of the Vine and the Olive. 8. Harmful mites of Olive and Acroids. 9. Nematodes of the aboveground part of the plants 10. Nematodes of the underground part of the plants 11. Harmful Arvicolidae and Muridae of Greece. Dealing with rodents.

The purpose of the workshop is to familiarize students and develop skills related to:

1. The morphology and identification of mites infesting tree crops and vines
2. The morphology and identification of insects that infect industrial plants
3. The morphology and identification of phytoparasitic nematodes
4. The recognition of the symptoms / insults that cause the above
5. The methods and means of dealing with the above
6. The search, collection and classification of the above insects and mites and samples of infestations they cause, to create an entomological collection.
7. The collection, identification of perfect individuals and imperfect stages of the primary and secondary insect enemies of stored agricultural products and food.
8. The identification of species and rodent infestations.
9. The use of traps for monitoring and / or dealing with animal enemies of stored agricultural products and food.

General Competences	
<i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i>	
<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>
<i>Production of new research ideas</i>	<i>Others ...</i>

In general, upon completion of this course the student will have further developed the following general skills (from the list above):

Search, analysis and synthesis of data and information, using the necessary technologies

Adaptation to new situations

Decision making

Autonomous work

Teamwork

Respect for the natural environment

Exercise criticism and self-criticism

(3) SYLLABUS

Recognition - Microscopic observation. Symptoms of insect infestations and types of damage to cultivated plants. Relation to these's nutritional requirements and the behavior of pests and harmful mites.

Morphology, biology, ecology, symptomatology, economic significance and methods and Means of dealing with pests and mites per crop.

Insect-enemies of apple species: aphids, fleas, granules, hippopotamus, woodpeckers and others beetles.

Insect-enemies of the Maloids (continued): lepidoptera (fruit capsule, leaf and wood impotent, leaf-binders, gunpowder, diptera, etc.

Harmful apple mites. Enemies-enemies of Nuclei: aphids, granules, wood-eating and leaf-eating coleoptera, lepidoptera (anarsia, fruit capsules), diptera.

Insect-enemies of Citrus: thrips, aphids, cocci, mealybugs, lepidoptera (leafhopper, leafhopper, anthracite), Frost of the Mediterranean. Harmful mites of Nuts and Citrus.

Enemies-enemies of Aipelos: Thrips, phylloxera, granules, cicadas, earwigs and other leaf-eating and wood-eating beetles, eucalyptus and other lepidoptera, diptera. Insect-enemies of the Olive: Thrips, granules, fleas, hippopotamus, wood-eating, leaf-eating and carnivorous beetles. Entomia-enemies of the Olive (continued): lepidoptera (Dwarfs, nucleotide, etc.) diptera (dakos, kikiougies).

Harmful mites of Aipelos and Elia.

Insect-enemies of Acroids: aphids, granules, wood-eating and carnivorous coleoptera, lepidoptera, hyenoptera.

Harmful mites of Akrodrya. Insect-enemies and harmful mites of other fruit trees: aphids, fleas, granules, dipterans.

Nematode worms as parasites of cultivated plants: Nematodes underground part of plants: optional parasites, obligatory ectoparasites, obligatory ecto-endoparasites, obligatory endoparasites. Nematodes above ground part of the plants.
 Overground parasitism of plants and insects.
 Mites as pests of cultivated plants:
 Vine, Apples, Nuts, Citrus, Plants under cover, Cereals and meadows, Olives, Nuts.
 Rodents as crop enemies
 Harmful Arvicolidae and Muridae of Greece. Dealing with rodents.
 Nematode worms as parasites of cultivated plants: Nematodes underground part of plants: optional parasites, obligatory ectoparasites, obligatory ecto-endoparasites, obligatory endoparasites. Nematodes above ground part of the plants. Overground parasitism of plants and insects. Mites as pests of cultivated plants:
 Vine, Apples, Nuts, Citrus, Plants under cover, Cereals and meadows, Olives, Nuts.
 Rodents as crop enemies
 Harmful Arvicolidae and Muridae of Greece. Dealing with rodents.

The purpose of the workshop is to familiarize students and develop skills relevant :e:

1. The morphology and identification of insects and mites that infect tree crops and aphids
2. The recognition of the symptoms / insults they cause.
3. The methods and means of treatment
4. The search, collection and classification of the above insects and mites and specimens of infestations that cause, for the creation of an entological collection.

(4) TEACHING and LEARNING METHODS - EVALUATION

<p>DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	Face to face deliveries.	
<p>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<ul style="list-style-type: none"> • Use of ICT (power point) in Teaching • Use of ICT (power point) in Laboratory Training • Use of ICT in Communication with students (Learning process support through the electronic platform e-class). 	
<p>TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</i></p>	<p style="text-align: center;"><i>Activity</i></p>	<p style="text-align: center;"><i>Semester workload</i></p>
	Lectures	39
	Tutorials	26
	Final Exams	26
	Study hours and preparation for tutorials and the final examination	44
Course total	125	
<p>STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public</i></p>	<ol style="list-style-type: none"> 1. The main assessment criteria focus on understanding and correlating the knowledge that students gain from the course with other knowledge. Particular emphasis is placed on whether they have developed the ability to apply this knowledge their field of study. Emphasis is also placed on demonstrating critical ability and justifying the choices they make in each problem. 2. Evaluation is dynamic. It mainly involves problem solving. is done orally or in writing or with a combination of the two, with or without pre-examination on the basic principles of the course, with or without exculpatory advances and with other test or inventive methods, depending on the composition of the dynamics and the needs of the audience. 	

<p><i>presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p> <p>1</p>	<p>3. The above are done in the Greek language. For foreign language students (eg Erasmus students) conducted in English</p>
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(5) RECOMMENDED LITERATURE

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| <ul style="list-style-type: none"> ▪ <i>The insects: An Outline of Entomology P. J. Gullan</i> ▪ <i>Principles of Insect Morphology – R.E. Snodgrass</i> ▪ <i>Evolution of Insects – David Grimaldi</i> |
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