

COURSE OUTLINE

1. GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
DEPARTMENT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF COURSE	UNDERGRADUATE		
COURSE CODE	FST_E05	SEMESTER OF STUDIES	SPRING
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	ECTS CREDITS	
Lectures	3		
Exercises	2		
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>	Elective Course Specialized general knowledge		
PREREQUISITE COURSES:	There are no prerequisite courses		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBPAGE (URL)	https://eclass.upatras.gr/		

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>The object of the course is to acquaint the students at a theoretical and practical level with the morphology, biology, ethology, and the treatment of insects that attack industrial plants, mites that attack tree crops and vines, phytoparasitic nematodes, as well as of 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. Symptomatology 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. Insect-enemies of Cotton and Tobacco
4. Insects-enemies of Beet-Potato
5. Harmful mites of Apples and Stone fruits.
6. Harmful mites of Citrus, Vine and Olive trees.
7. Harmful mites of Vine and Olive trees.
8. Harmful mites of Olive trees and Tree nuts
9. Nematodes of the aerial part of plants
10. Nematodes of the underground part of plants
11. Harmful Arvicolidae and Muridae of Greece. Rodent control.

The purpose of the lab courses is to acquaint the students and develop skills related to:

1. The morphology and identification of mites that attack tree crops and vines
2. The morphology and identification of insects that attack industrial plants
3. The morphology and identification of plant parasitic nematodes
4. The recognition of the symptoms/insults caused by 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 the infestations they cause, to create an entomological collection.
7. The collection, identification of perfect individuals and imperfect stages of primary and secondary insect enemies of stored agricultural products and food.
8. Identification of rodent species and infestations.
9. The use of traps to monitor and/or deal with animal enemies of stored agricultural products and food.

General Competences

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?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

- Search for, analysis and synthesis of data and information, using the necessary technologies
- Generation of new research ideas
- Respect for the natural environment
- Promotion of free, creative, and inductive thinking

3.SYLLABUS

Lectures

- Recognition – microscopic observation. Symptomatology of insect infestations and types of damage to cultivated plants. Relation of these to food requirements and behavior of insect enemies and mite pests.
- Morphology, biology, ecology, symptomatology, economic importance and methods and means of dealing with insect enemies and mites by crop.
- Insect-enemies of Meloids: aphids, fleas, coccoids, hemiptera, wood-eaters and other beetles.
- Insects-enemies of Apples (continued): lepidoptera (fruit borers, leaf and wood

- destroyers, leafhoppers, beetles, diptera, etc.
- Harmful mites of Apples.
- Insects-enemies of Stonefruits: aphids, coccoids, wood-eating and leaf-eating beetles, lepidoptera (fruit borers), diptera.
- Insect-enemies of Citrus: thrips, coccoid aphids, mealybugs, lepidoptera, (leaf binder, leaf weaver, anthotrites), Mediterranean fly. Harmful mite of stone fruits and citrus fruits.
- Insects-enemies of the Vine: Thrips, phylloxera, coccoids, crickets, earwigs and other leaf-eaters and wood-eating beetles, eudemis and other lepidoptera, diptera.
- Insects-enemies of the Olive: Thrips, coccoids, fleas, hemiptera, wood-eaters, leaf-eaters and fruit-eaters. Insect-enemies of the Olive (continued): lepidoptera (marigolds, fireflies, etc.) diptera (dakos, midges). Harmful mite of Vine and Olive.
- Insect-enemies of Akrodrya: aphids, coccoids, wood-eating and fruit-eating coleoptera, lepidoptera, hymenoptera. Harmful mite of Akrodrya. Insect enemies and harmful mites of other fruit trees: aphids, fleas, coccoids, diptera.
- Nematodes as pests of cultivated plants: Nematodes of the underground part of plants: facultative parasites, obligate ectoparasites, obligate ecto-endoparasites, obligate endoparasites. Nematodes of above-ground part of plants. Parasitism of aerial part of plants and insects.
- Mites as pests of cultivated plants:Vine, Apples, Nuts, Citrus, Plants under cover, Cereals and pastures, Olives,Akrodryoforos.
- Rodents as enemies of crops. Harmful Arvicolidae and Muridae of Greece. Rodent control.

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

1. The morphology and identification of insects and mites that attack tree crops and vine
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 infestation samples that cause, to create an entomological collection.

4. TEACHING AND LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY</p> <p><i>Face-to-face, Distance learning, etc.</i></p>	Face-to-face													
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</p> <p><i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<p>Use of Information and Communication Technologies (ICTs) (e.g. powerpoint) in teaching.</p> <p>Communication with students: through e-mail, department's website and platform e-class.</p> <p>The lectures content of the course for each chapter are uploaded on the internet, in the form of a series of .pdf files, where students can freely download them from the platform e-class.upatras.gr</p>													
<p style="text-align: center;">TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><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></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study</i></p>	<table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;"><i>Activities</i></th> <th style="text-align: center;"><i>Work Load per semester</i></th> </tr> </thead> <tbody> <tr> <td>Lectures (3 hours per week x 13 weeks)</td> <td style="text-align: center;">39</td> </tr> <tr> <td>Study and Literature Analysis</td> <td style="text-align: center;">42</td> </tr> <tr> <td>Non-directed study</td> <td style="text-align: center;">32</td> </tr> <tr> <td>Laboratory practice</td> <td style="text-align: center;">12</td> </tr> <tr> <td>Total number of hours for the Course (25 hours of work-load per ECTS credit)</td> <td style="text-align: center;">125</td> </tr> </tbody> </table>	<i>Activities</i>	<i>Work Load per semester</i>	Lectures (3 hours per week x 13 weeks)	39	Study and Literature Analysis	42	Non-directed study	32	Laboratory practice	12	Total number of hours for the Course (25 hours of work-load per ECTS credit)	125	
<i>Activities</i>	<i>Work Load per semester</i>													
Lectures (3 hours per week x 13 weeks)	39													
Study and Literature Analysis	42													
Non-directed study	32													
Laboratory practice	12													
Total number of hours for the Course (25 hours of work-load per ECTS credit)	125													

<i>according to the principles of the ECTS</i>	
<p>STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><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 presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Language of evaluation: GREEK</p> <p>Written examination after the end of the semester (100%) including:</p> <ul style="list-style-type: none"> • Multiple-choice questions • Short-answer questions • Open-ended questions <p>Grading scale: 1 to 10. Minimum passing grade: 5. Examination time: 3 hours.</p>

5. ATTACHED BIBLIOGRAPHY

<ol style="list-style-type: none"> 1. The insects: An Outline of Entomology P. J. Gullan 2. Principles of Insect Morphology – R.E. Snodgrass 3. Evolution of Insects – David Grimaldi
--