Course OUTLINE

(1) GENERAL

SCHOOL	Agricultural Sciences		
ACADEMIC UNIT	AGRICULTURE		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	AGRI_EX25	**SEMESTER**	7th or 9th
COURSE TITLE	Apiculture		

INDEPENDENT TEACHING ACTIVITIES *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	2	
Tutorials	0	
Laboratory	2	
TOTAL	**4**	**5**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialised general knowledge, Skills Development
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)	https://eclass.upatras.gr/courses/

(2) LEARNING OUTCOMES

Learning outcomes

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.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course aims at acquiring knowledge about bee society. The structure, communication and management of a superorganism 20,000 individuals of society (workers, drones, queen), averaging a bee society, was also an element that impressed the people, from the philosopher Aristotle to modern man.

Participation in the lectures is expected to enhance students 'ability to recognize bees' diseases and enemies in order to achieve timely and effective treatment. At the same time, they will be able to combine knowledge about the right manipulations every month to achieve the survival of bees and their performance in products (honey, pollen, propolis, wax, Royal Jelly). The aim of the course is to appreciate the huge offer of bees in nature as plant pollinators.

By using modern pedagogical methods and practical participation of students in laboratory classes, they will be able to plan and perform apicultural work, recognize beekeeping plants and cultivate the ability of students to combine knowledge that will help improve the quality of bees and their products.

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	*Project planning and management*
	Respect for difference and multiculturalism
	Respect for the natural environment
	Showing social, professional and ethical responsibility and sensitivity to gender issues
Adapting to new situations	*Criticism and self-criticism*
Decision-making	*Production of free, creative and inductive thinking*
Working independently	*……*
Team work	*Others…*
Working in an international environment	*…….*
Working in an interdisciplinary environment	
Production of new research ideas	

- The course aims at completing the students' ability to relate the knowledge of specific beekeeping issues and their exploitation to the wider field of their studies in Department of Agriculture Technology. In addition, they demonstrate an understanding of the methodologies that are appropriate for the rational management of bees.

The course aims at acquiring the following skills:

- Respect for honey bees and their natural environment
- Monitoring of developments in international research
- Bee management decisions
- Time management and job division in the apiary
- Search, analyze and link data and information, using modern technologies
- Critical evaluation of information
- Production of new research ideas
- Promoting free, creative and constructive thinking
- Autonomous work or teamwork at the level of potential future employment.

(3) SYLLABUS

I. Apiculture: Generally about apiculture in Greece and in the world.
II. Morphology of the honey bees.
III. Anatomy of the honey bees.
IV. Honey bees communication and behavior - chemical stimuli.
V. The defensive system of the honey bee. Precautions during the inspection
VI. Transport of bees and installation of apiculture. Legislation.
VII. Beekeeper's equipment and the nutrition of the honey bees
VIII. Queen rearing methods.
IX. Diseases of brood and bees.
X. Enemies of bees. Bee poisoning from pesticides.
XI. Beekeeper treatment of Autumn and Winter
XII. Beekeeper treatment of Spring and Summer
XIII. Honey, Royal jelly and other products.
XIV. Wild Bees as pollinators of nature

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to face deliveries.

<table>
<tr><td>Face-to-face, Distance learning, etc.</td><td></td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Use of ICT (power point) in Teaching
• Use of ICT (power point) in Laboratory Training
• Video presentation
• Use of ICT in Communication with students (Learning process support through the electronic platform e-class).</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail. 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.
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</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures and laboratory</td><td>52</td></tr>
<tr><td>Homework and literature survey</td><td>48</td></tr>
<tr><td>Unguided study</td><td>25</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>125</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure
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
Specifically-defined evaluation criteria are
given, and if and where they are accessible to
students.
1</td><td>1. The main assessment criteria focus on understanding and correlating the knowledge that students gain from the course with knowledge from other courses.
The evaluation is continuous and dynamic. It mainly includes short project work, solving problems or answering open questions. Exams are conducted orally or in writing or a combination of the two, with or without pre-examination of the key topics of the course, with or without progressions and by other inventive methods, depending on the dynamics and the needs of the audience</td></tr>
</table>

(5) RECOMMENDED LITERATURE in Greek

- Recommended references:

1. Thrasyvoulou A. Th. (2012). Practical Beekeeping. Publisher: Eirini Pappas.
2. Ifantidis M. D. (2005). Modern Beekeeping as a Science and Act. Publishing: Apiarian inspection
3. Harizanis, P.C. (2017). THE HONEY BEE AND THE BEEKEEPING TECHNIQUES. Publisher: Eirini Pappas.
4. Queen Bee: Biology, Rearing and Breeding by David R. Woodward

-Related scientific journals:

1. Μελισσοκομική Επιθεώρηση
2. Μελισσοκομική Βήμα
3. Γεωτεχνικά Επιστημονικά Θέματα
4. Apidologie- https://www.apidologie.org/
5. Journal of Apicultural Research- https://www.tandfonline.com/toc/tjar20/current
6. Annual Review of Entomology- https://www.annualreviews.org/loi/ento
7. Plos- https://journals.plos.org/plosbiology/
8. Bee world- https://www.tandfonline.com/toc/tbee20/current
9. Journal of Apicultural Science- http://esjas.inhort.pl/jas/journal/about/**Scientific Journals**