COURSE OUTLINE

1. GENERAL INFORMATION

FACULTY/SCHOOL	SCHOOL OF PLANT SCIENCES		
DEPARTMENT	CROP SCIENCE		
LEVEL OF STUDY	*Undergraduate*		
COURSE UNIT CODE	1500	**Semester:**	8th
COURSE TITLE	Apiculture - Sericulture		
INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHNG HOURS**	**ECTS**
	Lectures	3	3
	Laboratory Exersices	2	2
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4			
COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	*Scientific expertise*		
PREREQUISITE COURSES:	General and Systematic Agricultural Entomology		
LANGUAGE OF INSTRUCTION:	Greek		
LANGUAGE OF EXAMINATION/ASSESSMENT:			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes (in English)		
COURSE WEBSITE (URL)	http://efp.aua.gr/el/beelab		

2. LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

Upon the successful completion of the course (theory and laboratory), students should be able (descriptive indicator 6, 7 of the European Qualifications Framework) to:

- Familiarize themselves with the basic characteristics of the main bee species in Greece, the anatomy, physiology, and ethology of the honeybee and the silkworm, the social organization of the honeybee, and the structure of its hive. Moreover, they should be familiar with the nutritional requirements of the honeybee and the silkworm, the most important beekeeping plants, the necessary beekeeping equipment, the products of the honeybee and the silkworm, the pollination contribution of the honeybee, the potential risks of applying plant protection products, and the significance of all the above.
- Possess skills in designing basic beekeeping operations, queen rearing methods, production and harvesting of

beekeeping products (pollen, royal jelly, venom, propolis, wax), identification and control of major pests and diseases of the honeybee and the silkworm.

- Be capable of maintaining a beekeeping and silkworm rearing unit of basic scale, performing basic beekeeping operations, and harvesting products from the honeybee and the silkworm, as well as staying informed and evaluating cutting-edge issues related to beekeeping and sericulture

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,	*Project planning and management*
Adapting to new situations	*Respect for diversity and multiculturalism*
Decision-making	*Environmental awareness*
Individual/Independent work	*Social, professional and ethical responsibility and sensitivity to gender issues*
Group/Team work	*Critical thinking*
Working in an international environment	*Development of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Introduction of innovative research	*(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)*
	…….

• **Adaptation to new situations.** References to climate change are increasing, requiring the sciences primarily involved in primary production to adapt techniques, methods, and perceptions in order to remain productive and sustainable.
• **Autonomous work.** Several agricultural scientists may be interested in exclusively engaging in beekeeping as specialized producers with key knowledge.
• **Teamwork.** The strong economic pressures of the era often require the formation of a group of producers in order to be more competitive.
• **Respect for the natural environment.** Beekeeping is inherently connected to nature, as beekeepers utilize the nectar flows and honeydew without being able to influence their development. In this sense, beekeeping acts as a protector of nature while simultaneously contributing to pollination as much as anyone else. Any negative impacts on the natural environment will have a direct effect on bees.

3. COURSE CONTENT

Systematic classification, sociality of bees and other insects species. Morphology - Physiology of bees (anatomy, systems, senses), honeycomb - hive structure. Bee ethology (behavior, division of labor, communication, swarming), Pollination - Beekeeping plants, bee nutrition. Queen rearing - genetic improvement of bees, basic beekeeping practices, beekeeping products. Introduction to pests and diseases (parasitic and non-parasitic) of bees. Economic and social significance of Sericulture. Biology of the silkworm and its rearing stages. Cocoon stifling, processing of silk fiber. Introduction to pests and diseases of the silkworm. Cultivation of mulberry and its significance as animal feed.

4. TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	In-class lecturing
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	Use of slide presentation and blackboard. Communication with students. Learning process support by access to e-class asynchronous distance learning platform.

COURSE DESIGN	
Description of teaching techniques, practices and methods: *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.* *The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.*	

Activity/ Method	Semester workload
Lectures	39
Laboratory practice	26
Study and analysis of literature	10
Personal study	24
Field study	16
Sample demonstration	10
Total of Course (25 hours of workload per ECTS)	***125***

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS	
Detailed description of the evaluation procedures: *Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.* *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.*	**I. Final written exam in the theory of the course** including a combination of short-answer questions, open-ended questions and multiple choice questions. **II. The written examination in the laboratory part of the course** includes short answer, open-ended, problem solving and documentation questions, as well as sample recognition (the ability to apply the principles and mechanisms and the way of approaching and documenting the answer is evaluated).

5. SUGGESTED BIBLIOGRAPHY:

Books

1. Harizanis, P. 2017. Bee and Beekeeping Techniques. Melissokomiki Epitheorisi Publications.
2. Thrasyvoulou, A. 2015. Practical Beekeeping, Problems, Causes & Solutions. Melissokomiki Epitheorisi Publications.
3. Caron, D.M. and L. J. Connor. 2022. Honeybee biology and beekeeping (revised edition). Wicwas Press, USA.
4. Yfantidis, M. 2005. Modern Beekeeping as Science and Practice. Melissokomiki Epitheorisi Publications.
5. Harizanis, P. 2007. Sericulture Handbook. AUA Publications.

Scientific Journals

1. Journal of Apicultural Research
2. Apidologie.

6. TEACHERS

-Theory:

Assistant Professor G. Goras, Assistant Professor A. Tsagkarakis

- Laboratory:

Assistant Professor G. Goras, Assistant Professor A. Tsagkarakis, Reasearch & Teaching Associate D. Lazarakis