10ο ΕΞΑΜΗΝΟ

APICULTURE – SERICULTURE

1. GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
ACADEMIC UNIT	AGRICULTURE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	AGR_1002	**SEMESTER OF STUDIES**	10th
COURSE TITLE	Apiculture – Sericulture		

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	3	5
Laboratory course	2	
Total	5	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (4).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	general background, specialised general knowledge, skills development
PREREQUISITE COURSES:	There are no prerequisite courses.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBPAGE (URL)	

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 aim of the course is to acquire a preliminary, yet comprehensive knowledge of the whole range of apiculture and sericulture as a science, with a relative emphasis on practical apiculture - sericulture issues. Upon completion of the course students will:

- Be competent in apiculture and sericulture at both theoretical and practical level.
- They will be able to set up and manage a beekeeping or sericulture farm, scientifically approach the problems encountered during the production process and rationalize their exploitation in order to produce competitive products of high quality.

- These are two important agricultural productive sectors that require a relatively small capital to operate. In addition to the basic knowledge offered to the student of agricultural science, practical knowledge is also acquired so that students can later help Greek farmers or organize their own farms.

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

At the end of this course the student will have developed the following skills (general skills):
1. Knowledge of critical principles, factors and skills that ensure the ability to practice modern apiculture or sericulture. 2. Basic knowledge and skills on the biology, species, breeding, pest and disease diagnosis and feeding behavior.
3. Knowledge and skills that ensure the rational use of bee flora and mulberry.

In general, upon completion of this course the student will have further developed the following general competencies:
- Search, analyze and synthesize data and information using the necessary technologies
- Adaptation to new situations.
- Decision making.
- Independent work.
- Teamwork
- Project planning and management

3. SYLLABUS

Theoretical part:
1. Introduction to apiculture. Beekeeping in Greece, problems of the industry. The importance of bees in agriculture.
2. Systematic classification and species of bees. Bee biology. Greek bee breeds (advantages, disadvantages).
3. The development and society of bees (queen, worker, drone). Anatomy, physiology, nutrition, activities and behavior of bees.
4. Crop pollination with bees, beekeeping fauna, beekeeping equipment and manipulations, production of bees. Beehive products and their economic importance.
5. Introduction to bee diseases, pests and poisoning. Impact of modern beekeeping on bee diseases. Transport of bees
6. Bee Genetics and Improvement. Anomalies, malfunctions and accidents in bees and larvae
7. Apiculture Legislation. European Union Apiculture Policy. Prospects, instruments, incentives for the development of the Beekeeping industry.
8. Historical background of Sericulture. Silk producing insects. Economic and social importance of sericulture.
9. Biology of the silkworm and rearing stages.
10. Breeding of silkworm. Treatment of the silky fiber.
11. Introduction to the pests and diseases of silkworm. Cultivation of mulberry and its importance as a silkworm feed.
12. Health and safety at work in apiculture and sericulture units
13. Technical-economic analysis of the beekeeping and sericulture sectors. Plan of annual beekeeping and sericulture operations.

Laboratory part
1. Demonstration of specimens including: bees, silkworms, apiculture and sericulture equipment, bee-keeping

plants and products.
2. Laboratory analysis of bee products (honey, pollen, wax, royal jelly, propolis and apitoxin (honey bee venom)
3. Laboratory analysis of the products of silkworm (silk, leaves and mulberry fruits).
4. Beekeeping operations in the apiary
5. Operations in the sericulture farm.
6. Cultivation in the mulberry tree plantation.
7. Educational excursion.

4. TEACHING AND LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face lectures.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT (powerpoint) and panel in teaching. Apiculture and Sericulture operations
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*	

Activity	***Semester workload***
Lectures (3 contact hours per week x 13 weeks)	39
Laboratory course (2 contact hours per week × 7 weeks) with personal reports	14
Final examination (3 contact hours)	3
Study hours, preparation for the lab and preparation for the final exams	69
Course total	***125 hours total workload***

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.Course attendance - Participation in the classroom 2. Final written examination of all the material with multiple choice, right-wrong, and short development questions to be used for overall student assessment in conjunction with the laboratory results. Minimum passing grade: 5. 3. All the above are taking place in Greek.

5. ATTACHED BIBLIOGRAPHY

1. Π. Χαριζάνης, Μέλισσα και Μελισσοκομική Τεχνική, ΜΕΛΙΣΣΟΚΟΜΙΚΗ ΕΠΙΘΕΩΡΗΣΗ, 2017.
2. ISBN:13978960857794
3. Clement HENRI (επιμέλεια Ψύχαλου Μαριάννα) «Σύγχρονη Μελισσοκομία». Εκδόσεις Ψύχαλος, 2017. ISBN:9786185049516
4. Π. Χαριζάνης, Εγχειρίδιο Σηροτροφίας, 2007