

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	AGRICULTURAL AND FORESTRY SCIENCES		
<b>DEPARTMENT</b>	AGRICULTURAL DEVELOPMENT		
<b>LEVEL OF STUDIES</b>	7		
<b>COURSE CODE</b>	<b>AGRON1018</b>	<b>SEMESTER</b>	6 <sup>th</sup> & 8 <sup>th</sup>
<b>COURSE TITLE</b>	BEEKEEPING		
<b>TEACHING ACTIVITIES</b>	<b>TEACHING HOURS PER WEEK</b>	<b>ECTS CREDITS</b>	
Lectures and Labs	5 (3+2)	5	
<b>COURSE TYPE</b>	Scientific Area		
<b>PREREQUISITES:</b>	No		
<b>TEACHING &amp; EXAMINATION LANGUAGE:</b>	Greek English (Erasmus students)		
<b>COURSE OFFERED TO ERASMUS STUDENTS:</b>	Yes		
<b>COURSE URL:</b>	<a href="https://eclass.duth.gr/courses/OPE01211/">https://eclass.duth.gr/courses/OPE01211/</a>		

### 2. LEARNING OUTCOMES

<b>Learning Outcomes</b>
After the completion of the course the students: <ul style="list-style-type: none"> <li>(a) Will have acquired the ability to understand basic topics in biology and behavior of bees;</li> <li>(b) Will have acquired the knowledge about basic beekeeping operations on the production of queens and hive products (honey, pollen, royal jelly).</li> </ul>
<b>General Skills</b>
Autonomous work Literature search, data analysis and synthesis Critical thinking

### 3. COURSE CONTENT

<ol style="list-style-type: none"> <li>1. Introduction (reference to contents, beekeeping in Greece and worldwide, perspectives, bee systematics, species and strains of bees)</li> <li>2. Anatomy - Morphology - Physiology of bees, bee defense system</li> <li>3. Biological cycle, bees society (queen, worker, drones), hive, honeycomb (construction, division of labor), nutrition and trophallaxis</li> <li>4. Bee communication (orientation, pheromones), behavior, breeding, beekeeping, genetic improvement of bees</li> <li>5. Pollination of crops, beekeeping plants, equipment, bee inspection</li> <li>6. Transportation of bees and establishment of an apiary, looting, deception, legislation on the transport of bees</li> <li>7. Supplementary food sources</li> <li>8. Queen Rearing Methods and Equipment</li> <li>9. Natural enemies and diseases of bees</li> <li>10. Beekeeping operations (autumn - winter)</li> <li>11. Beekeeping operations (spring - summer)</li> <li>12. Origin of honey - Harvest - Characteristics of honey, legislation</li> <li>13. Other products of the hive (pollen, propolis, royal jelly, venom, beeswax)</li> </ol>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

#### 4. LEARNING & TEACHING METHODS - EVALUATION

<b>TEACHING METHOD</b>	Face to face	
<b>USE OF INFORMATION &amp; COMMUNICATIONS TECHNOLOGY (ICT)</b>	Use of ICT in Teaching and in Communication with students	
<b>TEACHING ORGANIZATION</b>	<i>Activity</i>	<i>Workload/semester</i>
	Lectures	39
	Laboratory exercises	26
	Literature research & analysis	15
	Independent learning	45
		<b>125</b>
<b>STUDENT EVALUATION</b>	Concluding Written Assignment (10%) Multiple Choice Test & Short Answer Questions (90%)	

#### 5. SUGGESTED BIBLIOGRAPHY

1. WINSTON M. (1987).THE BIOLOGY OF THE HONEY BEE. HARVARD PRESS
2. SEELEY T.D. (2008). THE BUZZ ABOUT BEES: BIOLOGY OF A SUPERORGANISM. SPRINGER

## ANNEX OF THE COURSE OUTLINE

### Alternative ways of examining a course in emergency situations

<b>Teacher (full name):</b>	Georgios Broufas
<b>Contact details:</b>	<a href="mailto:gbroufas@agro.duth.gr">gbroufas@agro.duth.gr</a>
<b>Supervisors:</b>	NO
<b>Evaluation methods:</b>	Written examination
<b>Implementation Instructions:</b>	<p>Before the exam, a link to MS Teams which the students should follow on the day and time of the exam will be sent via e-class exclusively to the institutional accounts of the students who have registered for the course and declared to have accepted and understood the terms of distance learning and remote evaluation. MS Teams will be used for identification processes of the students via the demonstration of their academic identity. Students should also log in to the e-class page of the course using their institutional account. The exam will be available only to the registered users of the course who are eligible to participate in the exams. After logging in to e-class, students must select 'Exercises' from the options menu (left) and then the exercise entitled 'Exams'. The exam includes multiple choice questions, one of which is correct, while there is a negative score for wrong answers (not for the blank ones) equal to 1/2 of the correct answer. The total number of questions is 20 and the duration of the exam is 60 minutes. Each correct answer is scored with 0.5. From the beginning of the exam by the students, there will be a time limit of 20 minutes (at the top right of the screen, the students will be able to see the time left to complete the exam) per repetition. There is no limit in the number of repetitions allowed. However, the FIRST submitted exam will be the one to be considered. Participants must remain logged in to MS Teams during the exam. The procedure is governed by the rules described in the Code of Ethics and Good Practice of DUTH as well as the Policy for the Protection of Personal Data when using remote evaluation methods of DUTH.</p>