COURSE OUTLINE

1. GENERAL INFORMATION

FACULTY/SCHOOL	SCHOOL OF PLANT SCIENCES		
DEPARTMENT	DEPARTMENT OF CROP SCIENCE (DFC)		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	975	**Semester:**	8th DFC
COURSE TITLE	VEGETABLE CROPS UNDER COVER		
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	5
	Practical Exercises	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 Area		
PREREQUISITE COURSES:	General Vegetable Production, Plant physiology		
LANGUAGE OF INSTRUCTION:	Greek		
LANGUAGE OF EXAMINATION/ASSESSMENT:			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	http://www.ekk.aua.gr/index.php?sec=lessons&item=16		

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*

The subject of the "Vegetable Crops Under Cover" course is to provide knowledge to the students of the 8th semester of the Department of Crop Science, about the production of the main vegetable crops grown in greenhouses and

under low cover. The economic importance of growing vegetables under cover for both domestic demand and exports is described. At the same time, information is provided on the physiology of vegetable crops under cover, and more specifically, on the effect of the environment and cultivation techniques on the growth, production and quality of greenhouse vegetables, especially during the off-season production period.
In the laboratory part of the course, which is carried out in the form of lectures and laboratory exercises in the greenhouses of the Laboratory of Vegetable Production, a basis is given in propagation (seeding, transplanting, etc.), growth in seedlings/nurseries, support and pruning of vegetables grown in greenhouses, especially those whose cultivation period is long. Moreover, different cultivation systems are showcased to the student and information is provided on the vegetable grafting, biostimulant application and inorganic and organic fertigation. The students have the opportunity to apply these techniques in practice with the laboratory exercises carried out in the greenhouse, while they also familiarize themselves with the use of mechanisms and instruments for controlling the climate, irrigation and fertilization with which modern greenhouses are equipped.

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

- Search, analyze and synthesize data and information using the necessary technologies
- Decision making
- Autonomous work
- Respect for the natural environment
- Promotion of free, creative and inductive thinking

3. COURSE CONTENT

Theory:

- Introduction to the cultivation of horticulture in the greenhouse, economic importance, current situation and prospects
- Greenhouse tomato cultivation technique
- Greenhouse pepper cultivation technique
- Greenhouse eggplant cultivation technique
- Greenhouse cucumber cultivation technique
- Greenhouse watermelon cultivation technique
- Greenhouse melon cultivation technique
- Greenhouse bean cultivation technique
- Lettuce cultivation technique in the greenhouse

Laboratory:

- Introduction to the laboratory's greenhouses facilities
- Greenhouse equipment (climatic control and fertigation heads)
- Greenhouse production systems (soil, open and closed hydroponics, NFT, Floating)
- Greenhouse tomato propagation, pruning and support
- Greenhouse pepper propagation, pruning and support
- Greenhouse eggplant propagation, pruning and support
- Greenhouse melon propagation, pruning and support
- Greenhouse cucumber propagation, pruning and support
- Greenhouse watermelon propagation, pruning and support
- Greenhouse zucchini propagation, pruning and support
- Greenhouse bean propagation, pruning and support
- Greenhouse lettuce propagation and pruning
- Vegetable grafting technique for greenhouse vegetable crops
- Vegetable transplanting technique in the different greenhouse cultivation systems
- Nutrient analyses for soil, nutrient solution and tissue samples
- Organic vegetable production in greenhouses
- Biostimulants (Rhizobia, AMF, protein hydrolaces, seaweed extracts, Se, nanoparticles) application in greenhouse vegetable crops

4. TEACHING METHODS--ASSESSMENT

<table>
<tr><td>MODES OF DELIVERY
Face-to-face, in-class lecturing, distance teaching and distance learning etc.</td><td>Lectures in the auditorium and laboratory exercises in the laboratory areas and the educational greenhouses.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY
Use of ICT in teaching, Laboratory Education, Communication with students</td><td>• Use of Powerpoint slides and use of multimedia to demonstrate greenhouse cultivation methods
• Demonstration of the use of an irrigation/fertigation head and electronic control systems of the greenhouse (in the laboratory)
• Communication with students via e-mail.
• Learning process support through access to the e-class, online databases, etc.</td></tr>
<tr><td>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.</td><td>
<table>
<tr><th>Activity/ Method</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Laboratory exercises</td><td>26</td></tr>
<tr><td>Individual laboratory work (results of laboratory exercises)</td><td>12</td></tr>
<tr><td>Personal study</td><td>48</td></tr>
<tr><td>Total Course
(25 workload hours per credit unit)</td><td>125</td></tr>
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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 which includes:** 1. Final exam (written) The exams are done with short answer questions **II. The examination in the laboratory part of the course consists of:** a) Short answer questions b) Multiple choice test (the most correct answer, all correct answers of a question, matching words of two series, short answers to questions, etc. (100%)

5. SUGGESTED BIBLIOGRAPHY:

Suggested bibliography:

1. Hanan, J.J. (1998). Greenhouses. Advanced technology for protected horticulture. CRC Press, 684p.
2. von Zabelitz, C (2011). Integrated greenhouse systems for mild climates. Springer-Verlag, 363p.

Related scientific journals:

1. Scientia Horticulturae
2. Journal of Horticultural Science and Biotechnology
3. European Journal of Horticultural Science
4. Journal of the American Society for Horticultural Science
5. HortScience

6. TEACHERS:

Theory:

1) Ntatsi Georgia, Assistant Professor,
2) Dimitrios Savvas, Professor,
3) Andreas Ropokis, Teaching and Research Associate

Laboratory:

1) Ntatsi Georgia, Assistant Professor,
2) Andreas Ropokis, Teaching and Research Associate