

## COURSE OUTLINE

### 1. GENERAL INFORMATION

<b>FACULTY/SCHOOL</b>	SCHOOL OF PLANT SCIENCES		
<b>DEPARTMENT</b>	DEPARTMENT OF CROP SCIENCE (DFC)		
<b>LEVEL OF STUDY</b>	Undergraduate		
<b>COURSE UNIT CODE</b>	1325	<b>Semester:</b>	5 <sup>th</sup> DFC
<b>COURSE TITLE</b>	GENERAL VEGETABLE PRODUCTION		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>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</i>		<b>WEEKLY TEACHING HOURS</b>	<b>ECTS</b>
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			
<b>COURSE TYPE</b> Background knowledge, Scientific expertise, General Knowledge, Skills Development	Scientific Area		
<b>PREREQUISITE COURSES:</b>	<a href="https://www.aua.gr/ekk/homepage-gr-2/ekpaideusi-gr/proptytiakh-gr">https://www.aua.gr/ekk/homepage-gr-2/ekpaideusi-gr/proptytiakh-gr</a>		
<b>LANGUAGE OF INSTRUCTION:</b>	Greek for Greek students English for Erasmus students		
<b>LANGUAGE OF EXAMINATION/ASSESSMENT:</b>			
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	YES		
<b>COURSE WEBSITE (URL)</b>	<a href="http://www.ekk.aua.gr/index.php?sec=lessons&amp;item=16">http://www.ekk.aua.gr/index.php?sec=lessons&amp;item=16</a>		

### 2. LEARNING OUTCOMES

<p><b>Learning Outcomes</b></p> <p>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:</p> <p><b>APPENDIX A</b></p> <ul style="list-style-type: none"> <li>• Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.</li> <li>• Descriptive indicators for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and</li> </ul> <p><b>APPENDIX B</b></p> <ul style="list-style-type: none"> <li>• Guidelines for writing Learning Outcomes</li> </ul> <p>The subject of the 'General Vegetable Production' course is to acquaint students on a theoretical and practical level with the current situation and prospects of vegetable production in the open field and under cover, the techniques</p>
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of vegetable cultivation with the application of modern technologies, as well as the post-harvest handling of vegetable crops. Emphasis is placed on the principles of integrated production management, the application of good agricultural practices, the requirements for certification, as well as the requirements for sustainability and increasing the competitiveness of the Greek vegetable industry.

After successfully completing the course, attendees will be able to:

- poses a sound overview of the current status and perspectives of vegetable production in Greece and at global level, the nutritional value, and the economic aspects of producing vegetables both in open field and in greenhouse, as well as their marketing,
- select the most appropriate crops and cropping systems for a particular cultivation site,
- understand the major interactions between vegetable production, root and air environment, including climatic conditions,
- advise growers about the most appropriate cropping practices and new technological developments in the sector of vegetable production and marketing,
- understand the different links of the vegetable supply chain after harvesting, including harvesting technologies and their economics, packaging, transport, post-harvest storage and marketing.
- Apply good agricultural practices based on integrated crop management in the vegetable production sector.
- Support certification procedures in vegetable production enterprises as advisors or inspectors,
- Compile technical studies on vegetable production,
- Support research projects related to the vegetable supply chain,
- Establish and manage a vegetable production or marketing enterprise.

## 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.)  
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- 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

### 1. Introductory Concepts – Quality and nutritional value of vegetables

Terminology in vegetable production. Quality of vegetables, current marketing situation and prospects of vegetable cultivation. Application of good agricultural practices and certification of vegetables.

### 2. Classification and short presentation of vegetables

Classification based on: a) phylogenetic relationships, b) edible part, c) temperature requirements, d) needs for flowering induction, e) pollination needs, f) propagation method, g) the length of the growing cycle. Wild edible vegetables

### 3. Effect of the root environment on vegetable crops

Effect of soil characteristics (depth, soil texture, moisture, temperature, acidity, organic matter, relief) on the growth of vegetable crops. Horticultural substrates for sowing in nurseries and for greenhouse cultivation (peat, compost, coir, perlite, rockwool, pumice stone).

### 4. Effect of the aerial environment on vegetable crops

Effect of air pollutants on vegetable crops. Effect of solar radiation, temperature, air humidity and wind on vegetable crops.

### 5. Outdoor vegetable production

Conventional outdoor cultivation (characteristics, growing seasons, earliness). Mulching, low cover, shading. Organic cultivation of vegetable crops. Outdoor cultivation in amateur vegetable gardens.

### 6. Cultivation of vegetables in the greenhouse

Feasibility of growing vegetables in the greenhouse. Greenhouse vegetable crops in Greece. Requirements for the installation of a greenhouse. Construction features & greenhouse equipment. Screenhouses.

### 7. Soilless - hydroponic cultivation of vegetables

Advantages and disadvantages of soilless vegetable production. Fertigation systems. Soilless culture systems (closed - open systems, culture in recirculating nutrient solution, floating system, aeroponics, cultivation on substrates).

### 8. Propagation of vegetable crops

Types of vegetable propagation material. Seed propagation (characteristics of vegetable seeds, production, packaging, storage and distribution of vegetable seeds). Vegetable asexual propagation organs. Legislative framework for the production and marketing of vegetable propagating material.

### 9. Installation of vegetable crops

Seed germination temperature. Tillage. Soil disinfection. Direct seeding of vegetable crops. Establishment of vegetable crops by transplanting seedlings. Vegetable nurseries. Ways and means of sowing vegetable crops in nurseries. Grafting of vegetable crops. Plant density.

### 10. Irrigation of vegetable crops

Irrigation needs of vegetables. Methods and techniques of irrigating vegetable crops. Characteristics of vegetable irrigation systems. Adjustment of irrigation dose and irrigation frequency. Irrigation water quality.

### 11. Fertilization of vegetable crops

Availability of nutrients in vegetable crops. Calculation of vegetable nutrient requirements. Diagnosing nutritional

disorders through leaf analysis. The problem of nitrates in vegetable crops and its impact on the environment. Basic dressing. Fertigation and foliar fertilization of vegetable crops. Nutrition - fertilization of organic and hydroponic vegetable crops.

#### **12. Other cultural practices in vegetable crops**

Weed control - plant protection in vegetable crops. Frost protection. Climate control in greenhouse horticultural crops. Application of plant growth regulators in vegetables. Pruning – support of vegetable plants. Fruit setting in greenhouse crops.

#### **13. Harvest – Post-harvest handling of vegetable crops**

Vegetable harvesting techniques. Cleaning, sorting and packaging of vegetables. Transport of vegetables. Post-harvest maintenance and storage of vegetable crops. Lightly processed vegetables. Storage of vegetables in a modified atmosphere.

## **4. TEACHING METHODS--ASSESSMENT**

<b>MODES OF DELIVERY</b> <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i>	Lectures in the auditorium and laboratory exercises in the laboratory areas, the educational field and the educational greenhouses.		
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</b> <i>Use of ICT in teaching, Laboratory Education, Communication with students</i>	Use of Powerpoint slides. Communication with students via e-mail. Learning process support through access to e-class, online databases, etc.		
<b>COURSE DESIGN</b> <i>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.</i>  <i>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</i>	<b>Activity/ Method</b>	<b>Semester workload</b>	
	Lectures	39	
	Laboratory exercises	13	
	Individual laboratory work (results of laboratory exercises)	3	
	Personal study	45	
	<b>Total Course (25 workload hours per credit unit)</b>	<b>100</b>	

<p align="center"><b>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</b></p> <p><i>Detailed description of the evaluation procedures:</i></p> <p><i>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.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	<p><b>I. Final written exam in the theory of the course which includes:</b></p> <p>1. Final exam (written) The exams are done with short answer questions</p> <p><b>II. The examination in the laboratory part of the course consists of:</b></p> <p>1. Identification of vegetable species and/or their elements 2. Creation of vegetable sporology 3. Final written exam Includes: 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%))</p>
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## 5. SUGGESTED BIBLIOGRAPHY:

<p><b>I. In Greek:</b></p> <p>1. Σάββας, Δ., 2016. Γενική Λαχανοκομία. Εκδόσεις Πεδίο.</p> <p>2. Ολύμπιος, Χ., 2015. Η Τεχνική της Καλλιέργειας των Υπαίθριων Κηπευτικών. Εκδόσεις Αθ. Σταμούλη, Αθήνα.</p> <p>3. Χα, Ι.Α., Πετρόπουλος, Σ., 2014. Γενική Λαχανοκομία και Υπαίθρια Καλλιέργεια Κηπευτικών. Πανεπιστημιακές Εκδόσεις Θεσσαλίας, Βόλος.</p> <p><b>II. In English</b></p> <p>Hochmuth, G. (Ed.), 2019. Achieving sustainable cultivation of vegetables. Burleigh Dodds Science Publishing, Cambridge, UK.</p> <p><b>Related scientific journals:</b></p> <p>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</p>
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## 6. TEACHERS:

<p><b>Theory:</b></p> <p>1) Dimitrios Savvas, Professor, 2) Ntatsi Georgia, Assistant Professor, 3) Andreas Ropokis, Teaching and Research Associate 4) Ioannis Karapanos, Associate Professor</p> <p><b>Laboratory:</b></p> <p>1) Andreas Ropokis, Teaching and Research Associate 2) Ntatsi Georgia, Assistant Professor 3) Dimitrios Savvas, Professor</p>
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