COURSE OUTLINE

1. GENERAL INFORMATION

SCHOOL	APPLIED ECONOMIC AND SOCIAL SCIENCES		
ACADEMIC UNIT	AGRIBUSINESS AND SUPPLY CHAIN MANAGEMENT		
LEVEL OF STUDY	*Undergraduate*		
COURSE CODE	**5304**	**SEMESTER**	2nd
COURSE TITLE	VEGETABLE PRODUCTION		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	5	5

COURSE TYPE	Special Background
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES (in English)
COURSE WEBSITE (URL)	The course web page is available at https://oeclass.aua.gr/eclass/

2. LEARNING OUTCOMES

Learning Outcomes

The course aims to familiarize students with the current situation and prospects of outdoor and indoor vegetable production, the nutritional value of vegetables, the economics of cultivation, the techniques of cultivation using modern technologies, as well as postharvest handling of vegetables.

Upon successful completion of the course the student will be able to:

- Recognize different vegetable crops
- Become familiar with farming practices applied in outdoor and greenhouse vegetables
- Know the cultivation particularities of the main fruit, leafy and root vegetables
- Become familiar with postharvest handling of vegetables

General Competences

- Adapting to new situations
- Decision-making
- Individual/Independent work
- Group/Team work
- Development of free, creative and inductive thinking

3. SYLLABUS

1. Introduction to vegetable production
    - Introductory concepts - Object of vegetable production
    - Global production of vegetables
    - Production of vegetables in Greece
    - The climate of Greece in relation to the development of vegetable crops
    - The economic importance of vegetable crops for Greece
    - Problems of Greek vegetable production
    - Quality and nutritional value of vegetables
    - Integrated and Organic vegetable production and their application in practice
    - Classification and summary presentation of vegetables based on common characteristics (phylogenetic relations, edible part, temperature requirements, needs for flower induction, method of pollination of flowers, method of propagation, duration of biological

cycle)

2. The effect of aerial and soil environment on vegetable production
    - Impact of aerial and root environment on vegetable crops
    - Effect of air components, solar radiation, temperature, humidity and wind on vegetable crops
    - Influence of soil characteristics (depth, particle size distribution, humidity, temperature, acidity, organic matter, relief) on the growth of vegetables
    - Substrates used in soilless culture of vegetable crops (peat, compost, coconut, perlite, rockwool, pumice)
3. Cultural practices in field vegetables
    - Outdoor vegetable growing techniques - General information
    - Conventional outdoor cultivation (characteristics, growing seasons, early)
    - Cultivation with soil cover, low tunnel, shading
    - Organic outdoor cultivation
4. Cultural practices in greenhouse vegetables
    - General information
    - Feasibility of growing vegetables in the greenhouse.
    - Construction characteristics of greenhouses (shape, dimensions, frame, cover materials)
    - Greenhouse equipment (ventilation, heating and energy saving systems, shading, cooling, CO_2 enrichment, artificial lighting)
    - Shade netting greenhouses
    - Hydroponic vegetable cultivarion - Feasibility, nutrient solution preparation facilities, hydroponic cultivation systems
5. Vegetable cultivation
    - Ways of propagating vegetables - Types of vegetable propagating material, intrinsic and rude propagation, legal framework for the production and marketing of vegetable propagating material
    - Seed germination temperature
    - Soil treatment
    - Soil disinfection
    - Plant establishment with direct sowing and transplanting
    - Vegetable nurseries - Ways and means of sowing in nurseries
    - Vegetable grafting
    - Densities and distances for sowing or planting vegetables
6. Fertilization of vegetables
    - Fertilization of vegetable crops
    - Availability of nutrients in vegetable crops
    - Calculation of vegetable needs in nutrients
    - Diagnosis of plant nutrition disorders through leaf diagnostics
    - Basic fertilization, hydro-fertilization and foliar fertilization of vegetables
    - Fertilization in organic and hydroponic vegetable crops
7. Irrigation of vegetables
    - Irrigation of vegetable crops
    - Vegetable irrigation needs
    - Ways and techniques of irrigation of vegetable crops
    - Characteristics of vegetable irrigation systems
    - Irrigation dose and irrigation frequency adjustment
    - Irrigation water quality
8. Crop protection
    - Weed control - plant protection of vegetable crops
    - Climate control in greenhouse vegetable crops
    - Application of plant regulators in vegetable crops
    - Pruning - support of vegetable crops

- Assisting fruit set in greenhouse crops

9. Harvesting and postharvest technology of vegetables
   - Vegetable harvesting techniques
   - Cleaning, sorting and packaging of vegetables
   - Transportation of vegetables
   - Post-harvest maintenance and storage of vegetables
10. Cultivation of fruit vegetables with emphasis on tomato, cucumber and watermelon
   - Current status and importance of crops
   - Imports, exports and prospects
   - Installation and cultivation techniques in the countryside and the greenhouse
   - Harvesting, sorting, packaging, transport and post-harvest maintenance
11. Cultivation of root vegetables with emphasis on potato, carrot and onion
   - Current status and importance of crops
   - Imports, exports and prospects
   - Installation and cultivation techniques
   - Harvesting, sorting, packaging, transport and post-harvest maintenance
12. Cultivation of leafy vegetables with emphasis on lettuce, cabbage and spinach
   - Current status and importance of crops
   - Imports, exports and prospects
   - Installation and cultivation techniques
   - Harvesting, sorting, packaging, transport and post-harvest maintenance
13. Cultivation of perennial vegetables with emphasis on asparagus and artichoke
   - Current status and importance of crops
   - Imports, exports and prospects
   - Installation and cultivation techniques
   - Harvesting, sorting, packaging, transport and post-harvest maintenance

A combination of teaching and learning methods will be used, aiming at the active participation of the students; there will be lectures using audiovisual media, discussions, group activities, as well as projections of relevant videos. The students will also undertake an individual or group project. Furthermore, articles, audiovisual lecture materials, web links/addresses, useful information, are posted in digital form on the AUA Open e-Class platform.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to face, Distance learning
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Support of the learning process through the AUA Open eClass platform of the University (Integrated Electronic Course Management System) • Support of the lectures using presentation software • Use of audiovisual material • Use of Internet applications **Communication with students**: face to face at office hours, email, eclass platform
TEACHING METHODS	

Activity	*Workload*
Lectures (direct)	65
Writing paper/ papers	28
Independent Study	30
Advisory support	0.5
Exams	2
Course Total (Approximately 25 hours of workload per credit unit 125.5)	125.5 h

STUDENT PERFORMANCE EVALUATION	The evaluation process is in the language that the course is taught (Greek or English) and consists of: i. Compulsory written final examination at the end of the semester (weighting factor **70**% at least) which may includes: • Multiple choice questionnaires • Open-ended questions • Problem solving • Oral examination **Evaluation criteria:** correctness, completeness, clarity ii. Optional written exam or essay during the semester (weighting factor 30%) which may includes: • Multiple choice questionnaires • Open-ended questions • Problem solving • Essay/report • Oral examination **Evaluation criteria:** correctness, completeness, clarity **Special learning difficulties:** Students with **special learning difficulties** in writing and reading (as they are certified and characterized by a competent body) are examined based on the procedure provided by the Department. **Specifically-Defined Criteria:** The evaluation criteria are made known during the first lesson and are clearly stated on the course website and the AUA Open e-class platform. The answers to the exam questions are posted on the AUA Open e-Class platform after the exam. The students are allowed to see their exam paper after its grading (during the announced office hours) and receive explanations about the grade they received.

5. ATTACHED BIBLIOGRAPHY

Suggested Bibliography in Greek Language:

- Σάββας, Δ. (2016). *Γενική Λαχανοκομία*. Εκδόσεις Πεδίο
- Ολύμπιος, Χ. (2015). *Η Τεχνική της Καλλιέργειας των Υπαίθριων Κηπευτικών*. Εκδόσεις Αθ. Σταμούλη, Αθήνα.
- Χα, Ι.Α. & Πετρόπουλος Σ. (2014). *Γενική Λαχανοκομία και Υπαίθρια Καλλιέργεια Κηπευτικών*. Πανεπιστημιακές Εκδόσεις Θεσσαλίας, Βόλος

Suggested Bibliography in English Language:

- Pearson, C. J. (1992). *Field crop ecosystems*. Elsevier, UK.
- Peirce, L. C. (1987). *Vegetables*. John Wiley and Sons, UK.
- Resh, H. M. (1998). *Hydroponic Food Production*. Woodbridge Press, California, USA.
- Wien, H. C. (1999). *The physiology of vegetable crops*. CABI Publishing, UK.

Related academic Journals:

- *European Journal of Horticultural Science*
- *Scientia Horticulturae*
- *Journal of Horticultural Science and Biotechnology*

- *Journal of the American Society for Horticultural Science*
- *HortScience*
- *Folia Horticulturae*
- *Horticulturae*
- *Notulae Botanicae Horti Agrobotanici Cluj-Napoca*
- *Acta Horticulturae*
- *HortScience*
- *Agriculture*
- *Plants*
- *HortTechnology*