

COURSE OUTLINE

1. GENERAL

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| SCHOOL | AGRICULTURAL SCIENCES | | |
| ACADEMIC UNIT | AGRICULTURE | | |
| LEVEL OF STUDIES | UNDERGRADUATE | | |
| COURSE CODE | AGRI EX5 | SEMESTER OF STUDIES | 7 th or 9 th |
| COURSE TITLE | TROPICAL, SUBTROPICAL FRUIT TREES AND SMALL FRUITS | | |
| FACULTY MEMBER | | | |
| INDEPENDENT TEACHING ACTIVITIES <i>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</i> | | WEEKLY TEACHING HOURS | CREDITS |
| | Lectures | 2 | |
| | Lab exercises | 2 | |
| | Total | 4 | 5 |
| COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i> | <i>Specialized general knowledge,</i> | | |
| PREREQUISITE COURSES: | Typically, there are no prerequisite courses | | |
| LANGUAGE OF INSTRUCTION and EXAMINATIONS: | Greek | | |
| IS THE COURSE OFFERED TO ERASMUS STUDENTS | Yes (English) | | |
| COURSE WEBPAGE (URL) | | | |

2. LEARNING OUTCOMES

Learning outcomes

- *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 tropical, subtropical fruit trees and small fruit trees course aims to train students on fundamental approaches related to cultivation of tropical fruit trees, subtropical fruit trees (Citrus species, avocado, lotus, carob, prickly pear, banana) and small fruit trees (strawberry, chokeberry, blackberry etc). The course provides focus on morphology and biology of trees, their ecological requirements and their commercial establishment. Cultivational practices, holistic environmental management, fruit quality, harvest and postharvest schemes are extensively examined.

By the end of this course the student will have developed the following skills:

- Understand the cultivation techniques of tropical, subtropical and small fruit trees.
- Understand the ecological requirements, developmental and growth tree physiology for the production of tropical, subtropical and small fruits.

- Be able to establish commercial orchards for the above plant species, applying novel cultivation systems.
- Be able to manage production of fruits with high nutraceutical value.

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

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

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Others...

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- Autonomous (Independent) work
- Team work
- Project planning and management
- Respect for the environment
- Adaptation to environmental changes under optimum, suboptimum and extreme conditions.
- Production of new research ideas
- Promotion of free, creative and inductive thinking

3. SYLLABUS

Lectures

1. Economic approaches on citrus species cultivation. Botanic taxonomy, citrus species tree anatomy.
2. Orchard design and establishment, climate and soil requirements for Citrus species.
3. Citrus propagation, rootstock selection per edible citrus species.
4. Planting systems for Citrus species; pruning and training systems
5. Water and soil management for citrus orchards. Nutritional requirements, fertilization plans and their effect on fruit quality.
6. Fruit set, fruit growth, practices and treatments for superior quality of Citrus fruits (thinning, growth regulators).
7. Maturity scaling of Citrus fruits, harvest, postharvest treatments.
8. Special requirements for cultivation of orange, lemon, tangerine and other citrus fruit trees. Morphological characteristics and commercial varieties.
9. Identification and management of abiotic and biotic risks in citrus orchards.
10. Cultivation of small fruit trees (strawberry, blackberry). Morphological characteristics, ecological requirements, cultivational practices from establishment to harvest.
11. Cultivation of small fruit trees (chokeberry, Sea buckthorn, Goji Berries, European blueberry). Morphological characteristics, ecological requirements, cultivational practices from establishment to harvest.
12. Cultivation of banana trees and avocado. Morphological characteristics, ecological requirements, cultivational practices from establishment to harvest.
13. Cultivation of Carob tree, Prickly Pear and other tropical species. Morphological characteristics, ecological requirements, cultivational practices from establishment to harvest.

Laboratory exercises

1. Species identification. Citrus tree morphology.
2. Pruning and other cultivational practices on Citrus species.
3. Establishment plan for Citrus and other related subtropical fruit trees.
4. Establishment of strawberry and small fruits trees plantation.
5. Postharvest processes and treatments for citrus and subtropic fruits; qualitative characterization.
6. Physiological disorders of tropical, subtropical and small tree fruits.

7. TEACHING AND LEARNING METHODS - EVALUATION

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| DELIVERY <i>Face-to-face, Distance learning, etc.</i> | Face to face lectures in the classroom and laboratory. | |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES <i>Use of ICT in teaching, laboratory education, communication with students</i> | Use of Information and Communication Technologies (ICTs) in teaching. Scenarios <i>in silico</i> and evaluation of small fruit trees and subtropical trees culture data will be integrated in the course. Exemplary solutions will be provided. | |
| TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>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.</i> <i>The student's study hours for each learning activity are given as well as the hours of nondirected study according to the principles of the ECTS</i> | Activity | Semester workload |
| | Lectures (2 conduct hours per week x 13 weeks) | 26 |
| | Lab Practice (2 conduct hour per week x 6 weeks) | 12 |
| | Individual and group lab reports | 8 |
| | Hours for private study of the student, preparation and attendance mid-term or/and final examinations. | 79 |
| | Total number of hours for the Course (25 hours of work-load per ECTS credit) | 125 hours (total student work-load) |
| STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>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</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i> | <p>Student performance evaluation will be explained to the students at the beginning of the course/beginning of the semester.</p> <ol style="list-style-type: none"> 1. Mandatory final written examination for lectures / theoretical part of the course, comprises 60% of the final mark of the student. 2. Mandatory final written examination for the transferred laboratory skills of the course, comprises 40% of the final mark of the student. <p>Minimum pass mark: 5 (full scale: 0-10)</p> <ol style="list-style-type: none"> 1. The above mentioned process will be taking place in Greek and for foreign students (eg ERASMUS students) in English. Examination will be based on full length questions and / or multiple choice questions. | |

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| | 2. Oral examination could take place if permitted by the legal/regulatory framework under which the student is affiliated (or enrolled) to the department. If permitted, oral examination will take place simultaneously with written exams. |
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8. ATTACHED BIBLIOGRAPHY

Proposed literature (indicative and not restrictive):

1. Hancock JF (2020). Strawberries. 2nd Edition. CABI Editions, 288p.
2. Robinson J.C., Saúco V.G.(2010) Bananas and Plantains. 2nd Edition CABI Editions, 320p.
3. Litz R.E. (2009). The Mango: Botany, Production and Uses. 2nd Edition CABI Editions, 696p
4. Retamales J.B., Hancock J.F. (2018). Blueberries CABI Editions. 2nd Edition CABI Editions, 411p
5. Ebru Kafkas N (ed.) (2023) Recent Studies on Strawberries. IntechOpen. DOI: 10.5772/intechopen.98136
6. Talon M., Caruso M., Gmitter F. G., 2020. The Genus Citrus, Woodhead Publishing.
7. Βασιλακάκης Μιλτιάδης, 2006. Μικρά Οπωροφόρα, Εκδόσεις Δεδούση.
8. Δεκάζος Ηλίας Δ., 1991. Μικροί καρποί, Τόμος Β, Εκδόσεις Σταμούλη.
9. Ποντίκης Κωνσταντίνος, 2001, Ειδική Δενδροκομία, Τροπικά Φυτά, τόμος πέμπτος, Εκδόσεις Σταμούλη.
10. Θεριός Ι, Δημάση-Θεριού Κ., 2012. Ειδική Δενδροκομία, Εκδότης Γαρταγάνη, Θεσσαλονίκη.
11. Βασιλακάκης Μ., 2016. Γενική και Ειδική δενδροκομία, Εκδόσεις Γαρταγάνη, Θεσσαλονίκη.

Proposed research journals for further reading (indicative and not restrictive):

1. Scientia Horticulturae
2. Acta Horticulturae
3. Tree physiology
4. Plant Physiology and Biochemistry
5. HortScience