

Course title	Tropical and Subtropical Plants and Trees				
Course code	GALA3505				
Course type	Lectures and Practical application				
Level	Higher Diploma				
Year / Semester	3 rd Year / 5 th Semester				
Teacher's name	Antonia Stelikou				
ECTS	6	Lectures / week	2	Laboratories / week	1
Course purpose and objectives	The aim of this course is to provide students with comprehensive knowledge and practical skills in the cultivation, management, and use of tropical and subtropical plants. Emphasis is placed on plant morphology, physiology, propagation, and maintenance practices, as well as their ecological, aesthetic, and economic value in agriculture, landscaping, and gardening. Through a combination of lectures, fieldwork, and practical sessions, students will develop the ability to identify, propagate, and care for tropical and subtropical trees, palms, shrubs, and ornamentals, while applying sustainable management strategies adapted to different climates.				
Learning outcomes	<p>By the end of this course, students will be able to:</p> <p>Theoretical Learning Outcomes</p> <ol style="list-style-type: none"> 1. Describe the main characteristics, ecological functions, and landscape value of tropical and subtropical plants. 2. Explain key propagation, cultivation, and management practices for fruit trees, palms, shrubs, and ornamentals. <p>Practical Learning Outcomes</p> <ol style="list-style-type: none"> 3. Identify and classify tropical and subtropical plants in nurseries and field settings. 4. Apply propagation, pruning, irrigation, and soil management techniques in practice. 5. Integrate plant protection and care methods into sustainable garden and landscape management. 				
Prerequisites		Required			
Course content	<p>Week 1: Introduction to Tropical and Subtropical Systems</p> <ul style="list-style-type: none"> • Lecture: • Definitions and characteristics of tropical and subtropical plants. 				

- Overview of climate zones and global plant distribution.
- Significance of tropical/subtropical systems in agriculture, landscaping, and ecology.
- Classification of tropical and subtropical trees.
- Ecological functions and distribution patterns.
- **Practical (Fieldwork):**
- Guided observation of tropical and subtropical plants in local nurseries.

Week 2: Morphology and Physiology

- **Lecture:**
 - Structures of leaf, stem, flower, fruit, and root.
 - Physiological adaptations to tropical and subtropical climates (light, water, nutrients).
- **Practical:**
 - Examination of plant structures.
 - Comparative analysis of adaptation traits.

Week 3: Propagation Techniques I (Seeds & Cuttings)

- **Lecture:**
 - Seed viability, dormancy, and germination conditions.
 - Types of cuttings, rooting hormones, planting medium.
- **Practical:**
 - Seed germination experiment.
 - Preparation and planting of stem/leaf cuttings.

Week 4: Propagation Techniques II (Grafting & Layering)

- **Lecture:**
 - Grafting types: whip, cleft, bud grafting.
 - Air layering and division methods.
 - Success rates and timing by species.
- **Practical:**
 - Hands-on demonstration of grafting and layering techniques.

Week 5: Categories of Tropical and Subtropical Plants

- **Lecture:**
 - Overview of categories: palms, broad-leaved trees, fruit trees, shrubs, and leafy ornamentals.
 - Botanical and ecological adaptations.
- **Practical:**
 - Morphological identification of live plant samples.

Week 6: Fruiting plants

- **Lecture:**
 - Characteristics, cultivation, landscape and gardening uses of fruit trees (e.g. bananas, mango, avocado, papaya, Lotus, litchi, cherimoya)
- **Practical:**
 - Field identification of fruit trees.
 - Preparation of propagation material (cuttings, seeds)

Week 7: Palm Trees

- Lecture:**
- General characteristics and ecological requirements.

- Cultivation practices and landscaping value.
- Examples: *Arecastrum romanzoffianum* (Queen Palm), *Archontophoenix alexandrae* (King Palm), *Phoenix dactylifera* (Date Palm).

Practical:

- Field identification of palm trees.

Week 8: Broad-Leaved Trees

Lecture:

- Characteristics of broad-leaved trees.
- Ecological requirements, landscape and gardening value, and cultivation practices.
- Examples: *Plumeria sp.* (Frangipani), *Bauhinia sp.* (Orchid Tree), *Ficus lyrata* (Fiddle-Leaf Fig), *Delonix regia* (Flame Tree).

Practical:

- Identification of broad-leaved trees in nurseries.
- Demonstration of planting techniques in garden plots.

Week 9: Shrubs and Leafy Plants

Lecture:

- Role of shrubs and leafy plants in garden design (aesthetic, ecological, functional).
- Characteristics of tropical and subtropical shrubs and leafy ornamentals.
- Adaptations to Mediterranean climates.
- Examples: *Strelitzia reginae* (Bird of Paradise), *Cestrum nocturnum* (Lady of the Night), Bougainvillea, Hibiscus, Dracaena.

Practical:

- Guided identification walks in gardens and nurseries.

Week 10: Soil, Water & Nutrition Management

Lecture:

- Soil management: mulching, composting, drainage.
- Irrigation systems and water requirements.
- Nutrient requirements of major fruit trees.
- Soil structure, pH, and nutrient uptake.

Practical:

- Soil sampling and pH testing.
- Demonstration of composting and mulching techniques.

Week 11: Garden Installation, Pruning & Pollination

Lecture:

- Garden installation: layout, irrigation systems.
- Principles of pruning for shape and fruit production.
- Pollination mechanisms: external (wind, insects) and internal factors.

• **Practical:**

- Hands-on pruning demonstration.
- Observation of pollinators in the field.

Week 12: Plant Protection & Course Wrap-Up

• **Lecture:**

- Common pests and diseases of tropical/subtropical plants.
- Spraying materials: safe handling and application.

	<ul style="list-style-type: none"> ○ Integrated care strategies (linking soil, water, nutrition, pruning, pest management). ○ Course summary and exam preparation. ● Practical: <ul style="list-style-type: none"> ○ Identification of pest/disease samples. ○ Demonstration of safe spraying practices.
<p>Teaching methodology</p>	<p>The course employs a blended approach combining theoretical instruction with applied practice. Lectures introduce students to the fundamental concepts of tropical and subtropical plant biology, ecology, and management. Practical sessions provide hands-on training in plant identification, and propagation techniques, while fieldwork enable students to apply important skills.</p>
<p>Bibliography</p>	<p>Greek Bibliography</p> <ul style="list-style-type: none"> ● Κοράκης, Γ. (2024). Ξενικά δένδρα και θάμνοι στην Ελλάδα. [Undergraduate textbook]. Kallipos, Open Academic Editions. https://dx.doi.org/10.57713/kallipos-894 ● Ποντίκη, Κωνσταντίνος Α. (2001). Ειδική δενδροκομία : Τροπικά φυτά. Volume 5. Εκδόσεις Σταμούλης. ISBN: 9603513792 ● Αγρονομικό Τμήμα, Πανεπιστήμιο Θεσσαλίας. (2023, November). <i>Σημειώσεις Ειδικής Δενδροκομίας</i> [PDF]. Τμήμα Αγροτικών Επιστημών, Πανεπιστήμιο Θεσσαλίας. https://agr.uth.gr/wp-content/uploads/sites/4/2023/11/simioseis_eidikis_4594233145.pdf <p>English Bibliography</p> <ul style="list-style-type: none"> ● Rajesh Kumar (2021). Rejuvenation in Fruit Trees: Tropical Subtropical. New Delhi : NIPA. 2021. EBSCOHost. ● M.R.Dinesh (2020). Fruit Breeding. New Delhi : NIPA. 2020. EBSCOHost. ● Bryan G. Bowes (2010). Trees & Forests, A Colour Guide : Biology, Pathology, Propagation, Silviculture, Surgery, Biomes, Ecology, and Conservation. London : CRC Press. 2010. EBSCOHost
<p>Assessment</p>	<ul style="list-style-type: none"> ● Attendance and course participation: 10% ● Individual reports related to the nature of the Practical training 40% ● Final written examination 50% <p>Student performance in this course will be evaluated through a combination of continuous and summative assessments. Attendance and active participation in class will contribute 10% to the final grade, reflecting the importance of consistent engagement. A portfolio of individual lab reports compiled from the various practical sessions will account for 40%, assessing students' ability to document their work systematically, demonstrate applied skills, and reflect on their learning throughout the semester. The final written examination, weighted at 50%, will include both closed-ended questions (e.g., multiple-choice, matching, true/false) and open-ended questions (e.g., short-answer, essay-type, case studies). The examination will have a duration of two academic periods and will evaluate students' overall understanding of the course content, their ability to synthesize theoretical and practical knowledge, and their critical thinking skills.</p> <p>Student performance is evaluated on a scale of 0 to 100, with a minimum overall passing grade of 60. The final grade is calculated as a weighted average of the assessment components described above.</p>



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Language	Greek or English
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