Course title	**Garden Machinery**				
Course code	**GALA2301**				
Course type	Lectures and field work				
Level	Higher Diploma				
Year / Semester	2nd Year/ 3rd Semester				
Teacher's name	Antonia Stelikou				
ECTS	6	**Lectures / week**	2	**Laboratories / week**	1
Course purpose and objectives	The aim of the course is for the students to get acquainted with the agricultural tools and machines used in gardening work. The course also aims at enabling the students to choose the appropriate machinery and tools for the timely and rapid execution of gardening and landscaping work.				
Learning outcomes	Upon the completion of the course, students are expected to: **Theoretical Learning Outcomes:** 1. **Identify and classify** a wide range of garden tools and machinery used in gardening and landscaping. 2. **Describe** the basic functions of the agricultural tractor and agricultural machinery. **Practical Learning Outcomes:** 3. **Demonstrate safe operation** and handling of garden equipment, following relevant health and safety protocols. 4. **Operate basic garden machinery**, including mowers, trimmers, irrigation systems, and small tractors. 5. **Select and apply appropriate equipment** for tasks such as planting, transplanting, spraying, fertilizing, and harvesting. 6. **Perform routine maintenance**, cleaning, and storage of garden tools and machinery. 7. **Develop hands-on competence** in managing garden operations using both manual and motorized equipment.				
Prerequisites		**Required**			
Course content	**Weeks 1–2: Introduction to Garden Machinery and Safety** • Evolution, classification, and role of garden machinery in modern gardening and landscaping. Emphasis is placed on health and safety procedures, correct handling techniques, and the use of personal protective equipment (PPE). *Practical Component:* Safety drills, demonstration of hand tools and small powered equipment, PPE training.				

Week 3: Garden Tractors and Mowing Equipment

- Small-scale garden tractors and various types of lawn mowers.

Practical Component: Operation and maintenance of walk-behind and ride-on mowers.

Weeks 4–5: Vegetation Management and Soil Cultivatio

- Focus is on hedge trimmers, brush cutters, chainsaws, and soil rototillers. Students learn about vegetation control and preparing garden beds.

Practical Component: Use of cutting tools and tillage equipment for managing vegetation and cultivating soil.

Week 6: Planting Equipment

- This session covers manual and mechanical seeding and bulb-planting tools used in garden layouts.

Practical Component: Use of handheld seeders, bulb planters, and planting grids.

Week 7-8: Garden Maintenance Tools

Includes instruction on the use of tools for thinning, pruning, and seasonal plant maintenance.

Practical Component: Operation of pruners, blowers, and thinning tools.

Week 9-10: Plant Protection Equipment

- Focus on equipment for pesticide application such as manual and electric sprayers, including calibration and cleaning procedures.

Practical Component: Safe application techniques using portable spraying equipment.

Week 11: Fertilizer Equipment and Lawn Care Tools

- Introduction to fertilizer spreaders (rotary/drop types) and routine care of lawn mowers and related machinery.

Practical Component: Hands-on fertilization, mower blade inspection and lubrication.

- **Week 12: Harvesting Tools and Equipment Maintenance**
  Harvesting tools for small-scale fruit and vegetable crops and maintenance routines for all types of garden equipment.

Practical Component: Harvesting, cleaning, sharpening, and storing tools.

Course breakdown

Week	Teaching Content	Teaching Process
Weeks 1–2	Introduction to garden machinery and safety practices. Classification of equipment and PPE usage. Practical: Safety demonstrations using basic hand tools and powered equipment; PPE usage and risk awareness.	Theory + Practical (T+P)
Week 3	Overview of garden tractors and mowing machinery (ride-on and walk-behind). Practical: Operation of mowers on grass plots; handling, start-up/shut-down procedures, and safety checks.	Theory + Practical (T+P)
Weeks 4–5	Equipment for vegetation management and soil cultivation: hedge trimmers, brush cutters, chainsaws, and rototillers. Practical: Use of trimmers and tillers; vegetation clearing and soil bed preparation.	Theory + Practical (T+P)
Week 6	Planting equipment and tools: manual seeders, bulb planters, and planting layout methods. Practical: Hands-on seed and bulb planting exercises in prepared soil plots.	Theory + Practical (T+P)
Weeks 7–8	Transplanting tools and irrigation systems: setup, types, and maintenance. Practical: Transplanting of seedlings; drip and sprinkler irrigation installation and operation.	Theory + Practical (T+P)
Week 9	Tools for general garden maintenance: pruning shears, blowers, and thinning tools. Practical: Seasonal pruning and thinning using manual and electric tools.	Theory + Practical (T+P)
Week 10	Plant protection equipment: types of sprayers, safety, calibration, and environmental considerations. Practical: Demonstration and student use of manual and electric sprayers.	Theory + Practical (T+P)

	Week 11	Fertilizer spreading equipment and lawn care machinery. Practical: Use of rotary/drop spreaders; lawn mower maintenance routines (cleaning, blade check).	Theory + Practical (T+P)
	Week 12	Harvesting tools for fruits and vegetables and basic maintenance of garden machinery. Practical: Hands-on use of harvesting tools; sharpening, cleaning, and proper storage of tools and machinery.	Theory + Practical (T+P)

Teaching methodology

Theoretical Instruction

The theoretical component of the course is delivered through weekly lectures that introduce students to the fundamental principles, classifications, and functions of garden machinery used. Topics include the historical development of tools, equipment types, health and safety protocols, operational principles, and technical considerations such as planting, irrigation, pruning, fertilization, and plant protection. The lectures aim to equip students with the knowledge required to select, evaluate, and understand the use of garden machinery in both private and public green spaces.

Practical Instruction

The practical instruction is conducted through hands-on fieldwork providing students with experiential training in operating and maintaining a wide range of garden machinery. Activities include safety drills, use of mowers, trimmers, seeders, irrigation systems, sprayers, and harvesting tools, as well as basic maintenance procedures such as cleaning and blade sharpening. Through these sessions, students develop the technical skills necessary to safely and effectively manage garden machinery tasks in real-world scenarios, reinforcing their theoretical understanding through direct application.

Bibliography

Greek Bibliography

- Αγροτική Ανάπτυξη-Τεχνολογίες & Μηχανήματα(2024). AGRO.TEC magazine. Ιανουάριος-Φαβρουάριος. 15(179)
- Αραπατσάκος, Χ. Ι. (2014). Γεωργική Μηχανολογία. [Agricultural Engineering]. Εκδόσεις Δίσιγμα. ISBN: 978-960-9495-49-3.
- Τσατσαρέλης, Κ. Α. (2011). Γεωργικοί ελκυστήρες. [Agricultural tractors]. Εκδόσεις Γιαχούδη. ISBN: 978-960-7425-13-3

English Bibliography

- Bello, S. R. (2012). Agricultural Machinery & Mechanization: Basic concepts, CreateSpace US. ISBN: 9781456328764.
- Basavaraj, D. S., and Jayan P.R (2020). A Textbook of Farm Machinery and Power Engineering. New india publishing agency. ISBN: 9789387973640. EBSCOHost.

Assessment

- Attendance and course participation: 10%
- Written assignments/reports related to the nature of the Practical/Lab : 40%
- Final Written Examination: 50%

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. 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.
Language	Greek or English