Course Description Form

1. Course Name:
Orchard Machinery and Crop service
2. Course Code:
OMCS 381
3. Semester / Year:
Second Semester (Spring) 2024-2025
4. Description Preparation Date:
1-2-2025
5. Available Attendance Forms:
Physical
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours of theory and 3 hours of practical, for 15 weeks, making a total of 75 hours / 3.5 units.
7. Course administrator's name (mention all, if more than one name)
Name of Lecturer for Theory part: Dr. Rafea Abdulsattar Mohammed Email: rafea-machine@uomosul.edu.iq Name of Lecturer for practical part: Mr. Ammar Wael Saleh
8. Course Objectives
Course Objectives for theory part
– The student understands the importance of green cover and the role of forests in protecting the climate. – The student must be familiar with the concept of the work of all equipment and machines used in reclamation and establishment of an orchard. – The student should understand how to plant forest trees and sustain them through orchard service cultivation equipment. – The student should be able to invest in the orchard's products, including fruits and vegetables, as well as harvest tree trunks and process their wood in the orchard before transporting them to the factory. – The student must be able to manage and supervise an orchard
Course Objectives for practical part
– The student must be familiar with the methods of operating and maintaining orchard reclamation and construction equipment. – The student should be aware of the risks to which he is exposed when using machines in the orchard. – The student must be able to carry out all the experiments and work related to planting and serving the orchard. – The student must be fully aware of the responsibility of preserving the orchard from pests and fires and apply the necessary processes for this.

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- The student must have practical experience in orchard management and investment in farm products.

9. Teaching and Learning Strategies

Strategy of theory part	- Effective lectures - Brainstorming - Dialogue and discussion - Assigning tasks and reporting - Displaying real models of orchard mechanization equipment and machines
Strategy of practical part	- Assigning group work to reveal leadership skills - Assigning individual tasks to reveal personal skills - Assigning reports on practical experiments and field tasks

10. Course Structure

Theoretical part

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	a1, a2: The student identifies and learns about the requirements for choosing a land site to establish an orchard e1: Encourages spreading awareness about the importance of plant cover and the sustainability of orchards	Principles of choosing a land location and establishing the orchard	Dialogue and writing style on the smart board	Discussions and short quiz
2	2	a3: The student learns about the types of tractors for orchards c1: The student determines the specifications of orchard tractors	Orchard tractors and their specifications	Dialogue and writing style on the smart board	Discussions and short quiz
3	2	a4: The student learns what reclamation equipment is? c2: Choosing the most appropriate method for each	Equipment for land reclamation in small and large orchards	Dialogue and writing style on the smart board	Discussions and short quiz

		land preparation process			
4	2	a5: The student learns what soil preparation equipment is? c4: Choose the most suitable soil preparation	Soil preparation equipment for orchards	Dialogue and writing style on the smart board	Discussions and short quiz
5	2	a6: The student learns about the principle of making plants and seedlings c5: Which one is most appropriate according to the purpose of agriculture	Planters and seedlings of vegetable crops and fruit trees	Dialogue and writing style on the smart board	Discussions and short quiz
6	2	a7: The student learns the principle of working of excavators for planting seedlings c6: Which of them is most suitable for planting cuttings and shrubs?	Drilling equipment for tree cuttings	Dialogue and writing style on the smart board	Discussions and short quiz
7	2	a8: The student learns about fertilization processes and the concept of sprinkler or drip irrigation c7: The water discharge for the irrigation system is calculated	Technological processes, irrigation and fertilization systems	Dialogue and writing style on the smart board	Discussions and short quiz
8	2	a9: The student learns about the working principle of pest control machines c8: Explain how it can be used to extinguish fires	Pest control and fire prevention equipment	Dialogue and writing style on the smart board	Discussions and short quiz
9	2	a10: The student learns about the principle of	Branch pruning and trimming equipment	Dialogue and writing style on the smart board	Discussions and short quiz

		operation of pruning and trimming machines c9: Explain how to choose the most appropriate machine			
10	2	a11: The student learns about the concept of cutting c10: Determine tree fall calculations	Equipment for cutting logs	Dialogue and writing style on the smart board	Discussions and short quiz
11	2	a12: The student learns the concept of transportation c11: Explain how to determine the types of log transport equipment	Equipment for transporting logs	Dialogue and writing style on the smart board	Discussions and short quiz
12	2	a13: The student learns the principle of operation of tree uprooting and stump processing machines c12: Explains which method is most suitable for removing tree remains	Equipment, extraction and processing of tree bark	Dialogue and writing style on the smart board	Discussions and short quiz
13	2	a14, c13: The student recognizes and shares the ethical responsibility to preserve and maintain forest trees and orchards and personal safety when handling machinery.	A field visit to the forests of Mosul	Style of dialogu and discussion	Discussion report and short test
14	2	a15: The student learns about the concept of the work of vegetable harvesters	The student understands the concept of the work of vegetable harvesters	Dialogue and writing style on the smart board	Discussions and short quiz

		c14: Shows how to calculate productivity			
15	2	a16: The student learns about the concept of the work of fruit harvesters c15: Shows how to calculate productivity	Fruit harvesting equipment	Dialogue and writing style on the smart board	Discussions and short quiz
Practical part					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning meth**	**Evaluation meth**
1	3	b1: Gains experience in driving and maintaining a tractor d1:Takes advantage of the capabilities of the tractor on the farm	Operating and maintaining the agricultural tractor	Assigning practical tasks	Discussions and short quiz
2	3	b2: The student applies the processes of leveling and amending orchard land with appropriate equipment	Calibration and maintenance of Orchard land Reclamation equipment	Assigning practical tasks	Discussions and short quiz
3	3	b3: Gains experience in attaching, operating and organizing plows	Calibration and maintenance Primary tillage equipment	Assigning practical tasks	Discussions and short quiz
4	3	b4: Gain experience in connecting, operating and organizing smoothing equipment	Calibration and maintenance Secondary tillage equipment	Assigning practical tasks	Discussions and short quiz
5	3	b5: The student applies the process of operating and organizing seeds and seedlings	Calibration and maintenance of Seeds and seedlings	Assigning practical tasks	Discussions and short quiz

6	3	b6: Gain experience in connecting and operating gore excavators	Organizing and maintaining Drilling equipment	Assigning practical tasks	Discussions and short quiz
7	3	b7: Gains experience in operating and organizing fertilization and irrigation equipment	Organizing and maintaining Fertilization and Irrigation equipment	Assigning practical tasks	Discussions and short quiz
8	3	b8: Gains experience in connecting, operating and organizing control machines c1: Calculates the spray rate of the sprinkler	Calibration and maintenance of Pest and fire control equipment	Assigning practical tasks	Discussions and short quiz
9	3	b9: Gains experience in attaching, operating and organizing pruning and trimming equipment	Organize pruning and trimming equipment	Assigning practical tasks	Discussions and short quiz
10	3	b10: Gain experience in connecting, operating and organizing equipment for cutting and dropping tree trunks	Organizing and maintaining cutting equipment	Assigning practical tasks	Discussions and short quiz
11	3	b11: Gains experience in attaching, operating and organizing log processing and transport equipment	Organizing and maintaining transport equipment	Assigning practical tasks	Discussions and short quiz
12	3	b12: Acquires experience in connecting, operating, and organizing	Organizing and maintaining equipment for extracting and processing tree	Assigning practical tasks	Discussions and short quiz

		equipment for uprooting and removing stumps and tree remains	stumps and remains		
13	3	b13: Gains experience in safety and applying the stages of servicing the orchard or forest land	A field visit to the forests of Mosul	Style of dialogu and discussion	Discussion of the report and a short test
14	3	b14: Gains experience in connecting, operating and organizing vegetable harvesters	Organizing and maintaining vegetable harvesting equipment	Assigning practical tasks	Discussions and short quiz
15	3	b15: Gains experience in attaching, operating and organizing fruit harvesters	Organizing and maintaining fruit harvesting equipment	Assigning practical tasks	Discussions and short quiz

11.Course Evaluation

Theoretical evaluation method		evaluation date	evaluation degree
1-	Monthly test	Week 9	10 %
2-	Quiz	Weeks 1-15	10 %
3-	Report	Week 13	5 %
total			25 %
Practical evaluation method		evaluation date	evaluation degree
1-	Monthly test	Week 9	5 %
2-	Quiz and assignment	Weeks 1-15	2 + 3 = 5 %
3-	Report	Week 13	5 %
total			15 %
1-	Theoretical + practical semester endeavor (25+15)	After 15 week	40 %
2-	Final practical exam		20 %
3-	Final Theoretical exam		40 %
4-	Final degree		100 %

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Al-Sabbagh, Abdul Rahman Ayoub (1990). Tractors and Mechanization of Orchards, Mosul University edition, Iraq.

Main references (sources)	Stout, Bill A. (1990) CIGR Handbook of Agricultural Engineering, Volume III, ASAE, USA.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Food and Agriculture Organization (FAO)

Teacher of Theoretical Part
Dr. Rafea Abdulsattar Mohammed-nori

Teacher of Practical Part
Mr. Ammar Wael Saleh

Chairman of the Scientific Committee
Prof. Dr. Adel Ahmed

Head of Agricultural Machines and Equipment

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