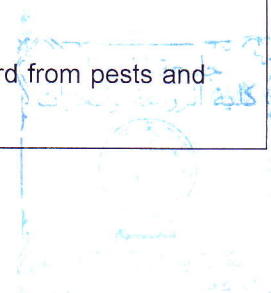


Course Description Form

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| 1. Course Name: |
| Orchard Machinery and Crop service |
| 2. Course Code: |
| OMCS 381 |
| 3. Semester / Year: |
| Second Semester (Spring) 2023-2024 |
| 4. Description Preparation Date: |
| 1-2-2024 |
| 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 |
| <ul style="list-style-type: none">- 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 |
| <ul style="list-style-type: none">- 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. |



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

9. Teaching and Learning Strategies

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|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strategy of theory part | <ul style="list-style-type: none"> - Effective lectures - Brainstorming - Dialogue and discussion - Assigning tasks and reporting - Displaying real models of orchard mechanization equipment and machines |
| Strategy of practical part | <ul style="list-style-type: none"> - 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 dialogue 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 core 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

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| Required textbooks (curricular books, if any) | Al-Sabbagh, Abdul Rahman Ayoub (1990). Tractors and Mechanization of Orchards, Mosul University edition, Iraq. |
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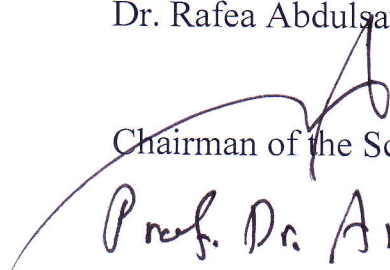
| | |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Main references (sources) | Stout, Bill A. (1990) CIGR Handbook of Agricultural Engineering, Volume III, ASAE, USA. |
| Recommended 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. Arkan M.A.



Head of Agricultural Machines and Equipment

الاستاذ المساعد
نوفل عيسى مخيميد