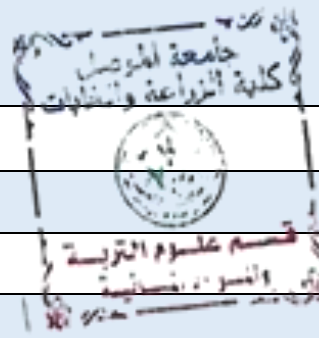


Course Description Agricultural machines and equipment

Course Name:	
1.	Agricultural machines and equipment
2. Course Code:	AGME207
3. Semester / Year:	The second spring semester/2 stage/2024-2025
4. Description Preparation Date:	1/2/2025
5. Available Attendance Forms:	in-person
6. Number of Credit Hours (Total) / Number of Units (Total)	5 hours (2 theoretical + 3 practical) / 3.5 units
7. Course administrator's name (mention all, if more than one name)	Name: Muosab abd alwihid mohammed Email: goldenagr@uomosul.edu.iq Name: Ammar Wael Saleh Email: ammarwael1800@uomosul.edu.iq
8. Course Objectives	
<ul style="list-style-type: none"> Identify the components and parts of agricultural tractors, starting with the engine and the main and auxiliary devices it contains. Clarifying the basics and principles of engineering sciences and their applications in various agricultural fields. Discussing every type of agricultural equipment and machinery for the production of agricultural crops (in terms of structure and function), starting from plowing the soil and preparing the seedbed, passing through the stages of serving the growing crop, ending with harvesting operations and the subsequent processes through which these agricultural products are prepared, whether for consumption or Storage. Making the necessary adjustments to agricultural machines in order to obtain the optimal use of those machines in order to reach the intended use of those machines. The ability to maintain, maintain and repair agricultural equipment. The ability to disassemble and install these machines. The ability to manage agricultural equipment in the field. The ability to connect machines to the agricultural puller and carry out organizing and calibrating operations 	

for them in a way that suits the agricultural process required to be performed with the agricultural machine.

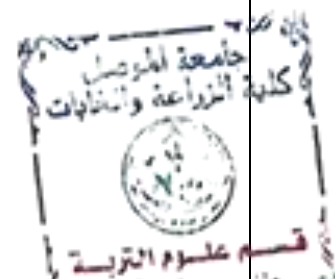
9. Teaching and Learning Strategies

- Interactive lecture
- Brainstorming
- Dialogue and discussion
- Field Training
- Practical exercises
- Field project
- Self-education



10. Course Structure


Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical	<p>a1: Introducing the student to the methods of transmitting motion in agricultural machines and machinery and the means used to transmit motion</p> <p>The student acquires knowledge and concepts related to the methods and means used in transporting and transforming movement in agricultural tractors</p>	Methods and means used in transporting and shifting the movement of agricultural pullers	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam

	3 Practical	<p>b1: Calculating the movement transfer rate in and the methods used in transferring and converting movement in agricultural pullers</p> <p>The student should be able to identify the methods used in transporting and shifting the movement of agricultural tractors</p>	Mathematical relations for calculating the movement transfer ratio in and the methods used in transferring and converting movement in agricultural tractors	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
2	2 Theoretical	<p>a2: Introducing the student to the agricultural tractor, its types and specifications</p> <p>The student acquires knowledge and concepts related to the agricultural tractor, its types and specifications</p>	Agricultural tractor types and specifications	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	3 Practical	<p>b2: Training the student to drive an agricultural tractor</p> <p>The student must be able to operate and drive the agricultural tug in a scientific and correct manner</p>	Driving an agricultural tractor	<p>Interactive lecture, brainstorming, dialogue and discussion, self-learning</p> 	Short practical test1

3	2 Theoretical	<p>a3: The student explains the foundations of design and operation of compression and spark engines, the foundations of design and operation of four- and two-stroke engines.</p> <p>The student acquires knowledge and concepts related to internal combustion engines</p>	Internal combustion engines	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	3 Practical	<p>b3: The student shows the component parts of the engine</p> <p>The student should be able to disassemble and install engine parts</p>	The main and auxiliary parts of the engine	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
4	2 Theoretical	<p>a4: The student shows the timing device, the pilot wheel, the crankshaft, and the power stages in different sequences</p> <p>The student acquires knowledge and concepts related to the timing</p>	Timing device, pilot wheel, crankshaft and power stages in different sequences	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam




		device, pilot wheel, crankshaft, and power stages in different sequences			
	3 Practical	<p>b4: Calculates the working cylinder volume of the engine</p> <p>The student should be able to evaluate the functions of working parts in agricultural equipment and machinery</p>	Technical terminology of the engine and the mathematical relationship of the engine	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
5	2 Theoretical	<p>a5: The student shows the fuel injection device for compression engines</p> <p>The student acquires knowledge and concepts related to the fuel injection device for compression engines</p>	Fuel injection device for compression engines	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	3 Practical	<p>b5: Repair and maintenance of the fuel injection system in agricultural tractors</p> <p>The student should be able to identify faults in the agricultural tractor engine</p>	Fuel injection system in agricultural tractors and its maintenance	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1

6	2 Theoretical	<p>a6: The student learns about the lubrication device and the cooling device in agricultural tractors</p> <p>The student acquires knowledge and concepts related to the lubrication device and the cooling device</p>	Lubrication device and cooling device in agricultural pullers	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	3 Practical	<p>b6: Repair and maintenance of the water-cooling system and the lubrication system in agricultural pullers</p> <p>The student should be able to identify faults in the agricultural tractor engine</p>	The cooling and lubrication system in the agricultural tug and its maintenance	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
7	2 Theoretical	<p>a7: The student shows the transmission devices in the agricultural tug (clutch and gearbox).</p> <p>The student acquires knowledge and concepts related to the transmission devices in the</p>	Transmission devices in the agricultural tug (clutch and gearbox).	<p>Interactive lecture, brainstorming, dialogue and discussion, self-learning</p> 	Semester exam 1, final exam

		agricultural tug (clutch and gearbox)			
	3 Practical	<p>b7: Repair and maintenance of transmission devices in agricultural pullers (clutch and gear box in agricultural pullers)</p> <p>The student should be able to monitor safety conditions when working on agricultural equipment and machinery</p>	Maintenance and repair of transmission devices (clutch - gearbox)	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
8	2 Theoretical	<p>a8: The student shows the transmission devices in the agricultural tractor (the differential device and the vertical device)</p> <p>The student acquires knowledge and concepts related to the transmission devices in the agricultural tractor (the differential device and the vertical device)</p>	Transmission devices in the agricultural tug (differential device and vertical device)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	3 Practical	b8: Repair and maintenance of transmission devices in	Maintenance and repair of transmission devices (differential	Interactive lecture, brainstorming, dialogue and discussion, field	short exams, assignment of duty,

		agricultural pullers (differential device and vertical device) in agricultural pullers The student should be able to choose the appropriate plowing method according to the conditions and nature of the field to be plowed	and vertical devices)	training, practical exercises, and self-learning	discussions
9	2 Theoretical	c1: The student shows the power transmission devices in the agricultural tractor The student acquires knowledge and concepts related to power transmission devices in agricultural tractors	Power transmission devices in agricultural pullers	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	3 Practical	b9: Operating and maintaining power transmission devices in agricultural tugs The student should be able to choose the appropriate plowing method according to the conditions and	Power transmission parts (operation and maintenance)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning 	short exams, assignment of duty, discussions

		nature of the field to be plowed			
10	2 Theoretical	c2: The student shows the primary and secondary soil preparation and preparation equipment The student acquires knowledge and concepts related to primary soil preparation and preparation equipment	Primary and secondary soil preparation and preparation equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	3 Practical	b10: Identifying plowing methods and types, applying mathematical relationships to calculate theoretical productivity, actual productivity, and field efficiency of plows. The student should be able to calculate the theoretical and actual productivity and field efficiency of tillage equipment	Methods of plowing with plows, their types, and mathematical and computational applications for plowing equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning 	short exams, assignment of duty, discussions
11	2 Theoretical	c3: Scientific visit The student acquires	Scientific visit	Interactive lecture, brainstorming, dialogue and discussion, field training, practical	short exams, assignment of duty,

		<p>knowledge and concepts related to secondary and special soil preparation and preparation equipment</p> <p>The student should be able to monitor safety conditions when working on agricultural equipment and machinery</p>		exercises, and self-learning	discussions
	3 Practical	<p>a13: Identifying the methods of netting and connecting agricultural machinery to the agricultural puller</p> <p>The student should be able to organize and connect agricultural machinery to the agricultural puller</p>	Methods of netting and connecting agricultural machinery to the agricultural puller	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
12	2 Theoretical	<p>a9: The student shows the seeding and agricultural equipment</p> <p>The student should be able to know seed and agricultural equipment</p>	Seeding and farming equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	3 Practical	b11: Laboratory and field organization of	Calibrating and maintaining seed and agricultural	Interactive lecture, brainstorming, dialogue and	short exams, assignment of

		grain seeds The student should be able to organize grain seeds	equipment	discussion, field training, practical exercises, and self-learning	duty, discussions
13	2 Theoretical	a10:The student is introduced to fertilization equipment The student should be able to know fertilization equipment	Fertilization equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	3 Practical	b12: Calculates and organizes the amount of fertilizer needed per unit area The student must be able to operate and organize fertilization equipment	Calibration and maintenance of fertilization equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
14	2 Theoretical	a11:The student is introduced to the hydraulic sprinkler Pneumatic, disinfectants and mechanical control The student acquires knowledge and concepts related to pest control equipment	Control equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	3 Practical	b13: Calculates and regulates the amount of	Calibrating and maintaining control equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical	short exams, assignment of duty,

		pesticide needed per unit area The student should be able to organize chemical control sprays		exercises, and self-learning	discussions
15	2 Theoretical	a12: The student learns about the combined grain harvester. The student should be able to know about harvesting equipment	Harvesting equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	3 Practical	b14: Sustaining and maintaining harvesting equipment The student must be able to operate harvesting equipment	Sustaining and maintaining harvesting equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions

11. Course Evaluation

	Evaluation methods	Evaluation date (week)	Grade	Relative weight %
1	Report 1	Week Four	2.5	2.5
2	Report 2	Week Five 2.5	2.5	2.5
3	Short test (1) Quiz	Week Six	2	2
4	Short Test (2) Quiz	Week Fourteen	2	2
5	Short Test (3) Quiz	Week Fifteen	1	1
6	Semester test (1)	sixth week	7.5	7.5
7	Semester test (2)	the eleventh week	7.5	7.5
8	final theoretical exam final semester exams 40 40	final semester exams	40	40
9	Practical field project	week fifteen	5	5

10	Field evaluation	weeks three and five	2	2
11	short practical tests (1) Quiz	the first week	1	1
12	short practical tests (2) Quiz	Week Four	0.5	0.5
13	Short practical test (3) Quiz	Week Fourteen	1	1
14	Direct drawings and homework	weeks 6, 8, 9, 10, 11, 12, and 13	5.5	5.5
15	Final practical exams	Final semester exams	20	20
Total	100		100%	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Agricultural tugs. Written by Dr. Abdel Salam Muhammad Ezzat and Lotfi Hussein Muhammad Ali. 2- Agricultural machines and machinery, written by Dr. Yassin Hashem Al-Tahan and Dr. Muhammad Jassim Al-Naama.
Main references (sources)	Agricultural machines and machinery, written by Dr. Yassin Hashem Al-Tahan and Dr. Muhammad Jassim Al-Naama
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Teacher of Theoretical part
Dr. Muosab abd alwihid mohammed



Teacher of practical part
Mr. Ammar Wael Saleh

Dr. Abdul Qader Abash Sbkal
Chairman of the Scientific Committee

Dr. Khaled Anwar Khaled
Head of Soil Science and Water Resources