

Course description template

1. Course Name:	
Forage Crops	
2. Course code:	
FOCR359	
3. Term/Year:	
First semester, Autumn 2025–2026	
4. Date this description was prepared:	
1/9/2025	
5. Available forms of attendance:	
In-person + online	
6. Number of study hours (total) / Number of units (total):	
2 Theory + 3 Practical (3.5 units)	
7. Name of the course instructor (if there is more than one, please list them):	
Dr. Khaled Khalif Nazzal	
salim abdulla Email: salimalghazal@uomosul.edu.iq	
Raghad ayman abdulrazzaq Email: raghad.hadid@uomosul.edu.iq	
8. Course Objectives	
Theoretical objectives: ☐ Enable understanding and assimilation of pasture management material. ☐ Enabling the student to know the most important ways to protect natural pastures. ☐ Enabling the student to become familiar with the most important types of natural pastures. ☐ Enabling the student to detect and know the palatability of pasture plants.	Practical Skills: ☐ Enabling the student to identify the most important pastoral plants. ☐ The types of natural pastures and methods of protecting and appreciating them. ☐ Its payload and exploitation. ☐ The student can judge the quality of pasture plants.
9. Teaching and learning strategies	
Theoretical: • Enable understanding and assimilation of pasture management material.	Practical: - Assigning group work to reveal leadership skills.

• Enabling the student to know the most important ways to protect natural pastures. • Enabling the student to become familiar with the most important types of natural pastures. • Enabling the student to detect and know the palatability of pasture plants. • The student can judge the quality of pasture plants.	- Assigning tasks and a report for each field visit. -
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10. Course Structure

Week	Hours	Intended Learning Outcomes	Topic / Unit	Teaching Method	Assessment Method
1 2	2 theoretical	Determines the positive and negative relationship of leguminous fodder crops and soils.	Theoretical: The importance of fodder crops and its importance. Practical: dividing fodder crops / Poaceae family.	Theoretical: Auditory methods, Writing style on the board, Dialogue style. Direct practical: Assigning tasks report.	Short exams, assignments, discussions.
	3 practical	Compares samples of feed.			
	2 theoretical	a2 a7	Theoretical: Alfalfa crop. Practical: botanical description for the Alfalfa crop.	Auditory methods, Writing style on the board, Dialogue style. Direct practical: Assigning tasks report.	Short exams, assignments, discussions.
	3 practical				
3 4	2 theoretical	a3 a8	Theoretical: The yield of Bersim (Bur clover) is about. Practical: Botanical description of a crop around.	Auditory methods, Writing style on the board, Dialogue style. Direct practical: Assigning tasks report.	Short exams, assignments, discussions.
	3 practical	They remember their feed sources, checks the types of toxins and their quantities in the feed.			

	2 theoretical 3 practical	a4 a9 It explains the most important factors affecting the production of fodder crops and compares different types of fodder crops.	Theoretical: Egyptian clover crop. Practical: botanical description...	Auditory methods, Writing style on the board, Dialogue style. Direct practical	Short exams, assignments, discussions.
1	2 theoretical 3 practical	Determines the positive and negative relationship of leguminous fodder crops and soils. Compares samples of feed.	Theoretical: The importance of fodder crops and its importance. Practical: dividing fodder crops / Poaceae family.	Theoretical: Auditory methods, Writing style on the board, Dialogue style. Direct practical: Assigning tasks report.	Short exams, assignments, discussions.
2 3	2 theoretical 3 practical	a2 a7	Theoretical: Alfalfa crop. Practical: botanical description for the Alfalfa crop.	Auditory methods, Writing style on the board, Dialogue style. Direct practical: Assigning tasks report.	Short exams, assignments, discussions.
	2 theoretical 3 practical	a3 a8 They remember their sources, checks the types of toxins and their quantities in feed.	Theoretical: The yield of Bersim (Bur clover) is about. Practical: Botanical description of a crop around.	Auditory methods, Writing style on the board, Dialogue style. Direct practical: Assigning tasks report.	Short exams, assignments, discussions.
5	3 (Practical)	a24: Explain land leveling operations	Land leveling	Assignments	Homework

	2 (Theory)	b33: Explain program implementation	Third stage: implementation	Lectures	Quizzes
6	3 (Practical)	c22: Field application and contour line determination	Contour line staking	Assignments	Homework
	2 (Theory)	a6: Explain cultivation stage	Fourth stage: cultivation	Lectures	Quizzes
	3 (Practical)	c25: Effect of leveling on physical and chemical properties	Effect of leveling on productivity	Assignments	Homework
7 8	—	First Midterm Examination	—	—	Exam
	2 (Theory)	b1: Management of reclaimed lands	Management of reclaimed lands	Lectures	Quizzes
9	3 (Practical)	c45: Determine soil salinity in field and laboratory	Methods of salinity estimation	Assignments	Homework
	2 (Theory)	c37: Reclamation of gypsiferous soils	Gypsiferous land reclamation	Lectures	Quizzes

10	3 (Practical)	a24: Leaching requirements	Theoretical basis of salts	Assignments	Homework
	2 (Theory)	b33: Reclamation of calcareous soils	Calcareous land reclamation	Lectures	Quizzes
11	3 (Practical)	c22: Leaching requirement calculations	Leaching requirements	Assignments	Homework
	2 (Theory)	b33: Reclamation of sandy soils	Sandy land reclamation	Lectures	Quizzes
12	3 (Practical)	c4: Leaching operations	Leaching processes	Assignments	Homework
	2 (Theory)	a6: Indicators of crop tolerance to salinity	Salinity tolerance indicators	Lectures	Quizzes
13	3 (Practical)	c37: Indicators of leaching completion	Indicators of leaching completion	Assignments	Homework

	2 (Theory)	b9: Irrigation water quality	Irrigation water quality	Lectures	Quizzes
14	3 (Practical)	a16: Soil sodification due to leaching	Soil sodification	Assignments	Homework
	2 (Theory)	b1: Salinity control adaptation methods	Salinity control	Lectures	Quizzes
15	3 (Practical)	c4: Hazards of sodicity	Sodicity hazards	Assignments	Homework

11. Course Assessment

No.	Assessment Method	Assessment Time	Marks	Weight (%)
1	Final theoretical report + practical reports	Week 15	7 Theory + 6 Practical	13%
2	Quiz (1)	Week 3	4 Theory + 2 Practical	6%
3	Midterm Exam (Theory + Practical)	Week 9	10 Theory + 5 Practical	15%
4	Quiz (2)	Week 12	4 Theory + 2 Practical	6%
5	Final Practical Exam	Practical exam week	20	20%
6	Final Theoretical Exam	Theoretical exam week	40	40%
Total			100	100%

12. Course Assessment

Required Textbook	Fodder crops and pastures, Muhammad Sa Radwan and Abdul Qasim Al-Fakhri
Main References	Cops and Forage Archives
Supplementary References	ICARDA, Arab Organization Agricultural Development
Electronic references, websites	

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أ.د. سالم عبدالله يونس



رئيس القسم
أ.م.د. ميسر محمد عزيز

Course description template

1. Course Name:	
Genetics	
2. Course code:	
GENT212	
3. Term/Year:	
First semester, Autumn 2025–2026	
4. Date this description was prepared:	
1/9/2025	
5. Available forms of attendance:	
In-person + online	
6. Number of study hours (total) / Number of units (total):	
2 Theory + 3 Practical (3.5 units)	
7. Name of the course instructor (if there is more than one, please list them):	
Prof. Dr. Wiam Yahya Rasheed	
Prof. Dr. Wiam Yahya Rasheed Al-Shakarchy wiam.al-shakarchy@uomosul.edu.iq	
Abdullah Khder Mohammad abdullah.mohammad@uomosul.edu.iq	
8. Course Objectives	
Theoretical objectives: ☐ • Enable the student to understand and understand plant genetics . • Realizing the relationship of this science to the possibility of developing horticultural plants by providing the student with theoretical and practical materials on plant genetics . • Familiarity with how to exploit this science in developing horticultural crops . • A comprehensive study of Mendel's genetic laws . • Exploring the most important theories of geneticists and their role in developing this science	
9. Teaching and learning strategies	

Theoretical: • Interactive lecture • Brainstorming • Dialogue and discussion • Field Training • Practical exercises • Field project • Self-education			Practical:		
10. Course Structure					
Week	Hours	Intended Learning Outcomes	Topic / Unit	Teaching Method	Assessment Method
1 2	2 theoretical	a1: Learn about the most important science of plant genetics.	Introduction to genetics and its relationship to other sciences	Interactive lecture, brainstorming, dialogue and discussion, self-learning.	Short test, final test. Short practical test 1. Final test.
	3 practical	b5: Discovers the functions and importance of plant cell components. c1: Explains the dominant recessive traits in plants.	Plant cell and its components Genetic terms and definitions	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning. Interactive lecture, brainstorming, dialogue and discussion, self-learning.	
	2 theoretical	b6: Enumerate the stages of meiosis in the first stage of division.	Division in the plant cell	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Viewings and homework
3 4	2 theoretical	b1: Explains the law of isolation.	Mendel's first law	Interactive lecture, brainstorming, dialogue discussion, self-learning.	Final test
	3 practical				

	2 theoretical 3 practical	b7: Tests for backcrossing.	Mendel's first law	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Homework
1	2 theoretical 3 practical	a2: Learn about the law of free distribution of genetic factors.	Mendel's second law	Interactive lecture, brainstorming, dialogue discussion, self-learning.	Short test, final test
2 3	2 theoretical	b8: Determine the dominant genotypes from hybridization according to Mendel's second law.	Mendel's second law	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning.	Field evaluation.
	3 practical	a3: He is familiar with the most important types of hereditary sovereignty.	Modifications in Mendelian ratios	Interactive lecture, brainstorming, dialogue discussion, self-learning.	Final test.
	2 theoretical 3 practical	b9: Discover the difference between incomplete dominance and complete dominance.	Incomplete dominance	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Viewings and homework
5	3 (Practical)	c2: Explains the types of lethal genes and their effect on plants. b10: Explain the genes that cause the death of an organism.	Deadly genes Deadly genes	Interactive lecture, brainstorming, dialogue and discussion, self-learning. Interactive lecture, brainstorming, dialogue and discussion, field training, practical	Semester exam 1, final exam. Semester exam 1, final exam.

				exercises, and self-learning.	
	2 (Theory)	a4: Describes the most important types of excellence. c4: Distinguishes cases of superiority.	superiority	Interactive lecture, brainstorming, dialogue and discussion, self-learning. Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Final test. Viewings and homework.
6	3 (Practical)	a5: Identify examples and characteristics of multiple alleles.	Multiple alleles	Interactive lecture, brainstorming, dialogue discussion, self-learning.	Final test
	2 (Theory)	c5: Shows the color of fur in wild rabbits.	Multiple alleles	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Short practical test 2
	3 (Practical)	b2: Explains the concept of blood groups in humans and the comparison between them. b11: Tests blood groups and types. b3: Distinguish classification of types chromosomal maps.	Blood groups in humans Blood groups in humans Chromosomal maps	Interactive lecture, brainstorming, dialogue and discussion, self-learning. Interactive lecture, brainstorming, dialogue and discussion, field training, practical	Final test. Viewings and homework. Final test.

				exercises, and self-learning.	
				Interactive lecture, brainstorming, dialogue discussion, learning.	
7 8		c6: Explains how to draw a chromosomal map. b4: Determines genetic crossing over. b12: Distinguish between crossing over and genetic relatedness through a diagram.	Chromosomal maps Gene correlation and genetic crossing over Connection and crossing over	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning. Interactive lecture, brainstorming, dialogue and discussion, self-learning. Interactive lecture, brainstorming, dialogue discussion, field training, practical exercises, and self-learning.	Viewings and homework. Short test, final test. Viewings and homework.
	2 (Theory)	e1: Identifying and diagnosing the types of flowers available in college fields for pollination. e2: Determines the appropriate time to perform castration and vaccination operations.	Solve the problem	Interactive lecture, brainstorming, dialogue and discussion, self-learning. Interactive lecture, brainstorming, dialogue discussion, field training, practical exercises, and self-learning.	A report. Field evaluation.

9	3 (Practical)	c3: Explains the types and forms of traits affected by sex.	Traits influenced and linked to sex	Interactive lecture, brainstorming, dialogue discussion, learning.	Semester exam 1, final exam
	2 (Theory)	b7: Identify the most important traits affected by sex. d1: He conducts discussion sessions on training students on the use of multiplication tools. c8: Identify the most important characteristics associated with sex.	Sex-influenced traits Report and discuss Sex-linked traits	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning. Interactive lecture, brainstorming, dialogue and discussion, self-learning. Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning.	Semester exam 1, final exam. A report. Short practical test 3.
10	3 (Practical)	a6: Learn about the nature and components of genetic material. d2: Conducts discussion panels to learn about kaisma and its relationship to the chromosome.	The nature of the genetic material Reports and discussion	Interactive lecture, brainstorming, dialogue and discussion, self-learning. Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Short test, final test. Field project.
	2 (Theory)	a1: Learn about the most important science of plant genetics.	Introduction to genetics and its relationship to other sciences	Interactive lecture, brainstorming, dialogue and discussion, self-learning.	Short test, final test. Short practical test 1.

		b5: Discovers the functions and importance of plant cell components. c1: Explains the dominant and recessive traits in plants.	Plant cell and its components Genetic terms and definitions	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning. Interactive lecture, brainstorming, dialogue and discussion, self-learning.	Final test.
11	3 (Practical)	b6: Enumerate the stages of meiosis in the first stage of division.	Division in the plant cell	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Viewings and homework
	2 (Theory)	b1: Explains the law of isolation.	Mendel's first law	Interactive lecture, brainstorming, dialogue discussion, learning.	Final test
12	3 (Practical)	b7: Tests for backcrossing.	Mendel's first law	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Homework
	2 (Theory)	a2: Learn about the law of distribution of genetic factors	Mendel's second law	Interactive lecture, brainstorming, dialogue discussion, learning.	Short test, final test
13	3 (Practical)	b8: Determine the dominant genotypes from hybridization according to Mendel's second law.	Mendel's second law Modifications in Mendelian ratios	Interactive lecture, brainstorming, dialogue and discussion, field training, practical	Field evaluation. Final test.

		a3: He is familiar with the most important types of hereditary sovereignty.		exercises, and self-learning.	
	2 (Theory)	b9: Discover the difference between incomplete dominance and complete dominance.	Incomplete dominance	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Viewings and homework
14	3 (Practical)	c2: Explains the types of lethal genes and their effect on plants.	Deadly genes	Interactive lecture, brainstorming, dialogue and discussion, self-learning.	Semester exam 1, final exam.
		b10: Explain the genes cause the death of an organism.	Deadly genes	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning.	Semester exam 1, final exam.
	2 (Theory)	a4: Describes the most important types of excellence.	superiority	Interactive lecture, brainstorming, dialogue and discussion, self-learning.	Final test.
		c4: Distinguishes cases superiority.		Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning.	Viewings and homework.

15	3 (Practical)	a5: Identify examples characteristics of multiple alleles.	Multiple alleles	Interactive lect brainstorming, dialogue discussion, learning.	Final test
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11. Course Assessment

No.	Assessment Method	Assessment Time	Marks	Weight (%)
1	Final theoretical report + practical reports	Week 15	7 Theory + 6 Practical	13%
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5	Final Practical Exam	Practical exam week	20	20%
6	Final Theoretical Exam	Theoretical exam week	40	40%
Total			100	100%

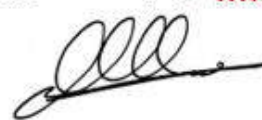
12. Course Assessment

Required Textbook	A-Book: Basics of Genetics (Dr. Adnan Hassan Muhammad Adhari) / Ministry of Higher Education - University of Mosul
Main References	A- Book: General Inheritance (Dr. Abdul Hussein Al-Faisal).
Supplementary References	ICARDA, Arab Organization Agricultural Development
Electronic references, websites	Nothing

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أ.د. سالم عبدالله يونس




رئيس القسم
أ.د. ميسر محمد عزيز



Course description template

1. Course Name:	
land reclamation	
2. Course code:	
LARE457	
3. Term/Year:	
First semester, Autumn 2025–2026	
4. Date this description was prepared:	
1/9/2025	
5. Available forms of attendance:	
In-person + online	
6. Number of study hours (total) / Number of units (total):	
2 Theory + 3 Practical (3.5 units)	
7. Name of the course instructor (if there is more than one, please list them):	
Dr. Khaled Khalif Nazzal	
Aman Adel Mawlood Aman_adel@uomosul.edu.iq	
Ms. Shaimaa Ghanem Daoud Shaymiaa.Al-taie1983@uomosul.edu.iq	
8. Course Objectives	
Theoretical objectives: -1To prepare students capable of evaluating and characterizing salinity-affected soils according to scientific concepts and principles. -2To enable students to enter the agricultural sector with high efficiency through participation in land reclamation projects for salt-affected lands. -3To encourage students to pursue higher education and gain valuable experience when applying for postgraduate studies.	Practical Skills: -1To enable the student to use analytical instruments. -2To enable the student to determine the composition of saline soils in the laboratory. -3To enable the student to perform various types of instrumental and chemical analyses. -4To enable the student to interpret the results of analyses and distinguish between normal and abnormal results.
9. Teaching and learning strategies	
.1Knowledge and understanding. .2Identifying the problem of salinity, its treatment, and methods of coexisting with it.	My work involves: - Adapting to teamwork to uncover skills.

.3Understanding the ionic composition of salts. .4Identifying the saline phases of soils affected by salinity. .5The possibility of creating a salinity map of salinity-affected areas to develop scientific programs for their reclamation.	- -Assigning tasks and reports to each committee.
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10. Course Structure

Week	Hours	Intended Learning Outcomes	Topic / Unit	Teaching Method	Assessment Method
1	2 (Theory)	a5: Explain the concept of reclamation and its impact on agricultural production locally and globally	Concept of land reclamation and its role in agricultural production	Lectures, writing, discussion	Quizzes
	3 (Practical)	a9: Explain land reclamation programs and their stages	Saline land reclamation program	Assignments reports	Homework, discussions
2	2 (Theory)	b1: Explain saline and sodic soils	Reclamation of saline and sodic soils	Lectures, discussion	Quizzes
	3 (Practical)	a13: Explain methods of collecting site data for reclamation projects	Investigation, research, and study stage	Assignments reports	Homework, discussions
3	2 (Theory)	b9, b16: Explain stages of reclamation programs and decision-making based on project data	Saline land reclamation program	Lectures	Quizzes

4	3 (Practical)	b16: Design and decision-making stage	Design and decision-making stage	Practical tasks	Assignments
	2 (Theory)	c4: Decision-making based on collected data	Second stage: calculations, designs, decisions	Lectures	Quizzes
5	3 (Practical)	a24: Explain land leveling operations	Land leveling	Assignments	Homework
	2 (Theory)	b33: Explain program implementation	Third stage: implementation	Lectures	Quizzes
6	3 (Practical)	c22: Field application and contour line determination	Contour line staking	Assignments	Homework
	2 (Theory)	a6: Explain cultivation stage	Fourth stage: cultivation	Lectures	Quizzes
	3 (Practical)	c25: Effect of leveling on physical and chemical properties	Effect of leveling on productivity	Assignments	Homework
7 8	—	First Midterm Examination	—	—	Exam

	2 (Theory)	b1: Management of reclaimed lands	Management of reclaimed lands	Lectures	Quizzes
9	3 (Practical)	c45: Determine soil salinity in field and laboratory	Methods of salinity estimation	Assignments	Homework
	2 (Theory)	c37: Reclamation of gypsiferous soils	Gypsiferous land reclamation	Lectures	Quizzes
10	3 (Practical)	a24: Leaching requirements	Theoretical basis of salts	Assignments	Homework
	2 (Theory)	b33: Reclamation of calcareous soils	Calcareous land reclamation	Lectures	Quizzes
11	3 (Practical)	c22: Leaching requirement calculations	Leaching requirements	Assignments	Homework
	2 (Theory)	b33: Reclamation of sandy soils	Sandy land reclamation	Lectures	Quizzes
12	3 (Practical)	c4: Leaching operations	Leaching processes	Assignments	Homework

	2 (Theory)	a6: Indicators of crop tolerance to salinity	Salinity tolerance indicators	Lectures	Quizzes
13	3 (Practical)	c37: Indicators of leaching completion	Indicators of leaching completion	Assignments	Homework
	2 (Theory)	b9: Irrigation water quality	Irrigation water quality	Lectures	Quizzes
14	3 (Practical)	a16: Soil sodification due to leaching	Soil sodification	Assignments	Homework
	2 (Theory)	b1: Salinity control adaptation methods	Salinity control	Lectures	Quizzes
15	3 (Practical)	c4: Hazards of sodicity	Sodicity hazards	Assignments	Homework

11. Course Assessment

No.	Assessment Method	Assessment Time	Marks	Weight (%)
1	Final theoretical report + practical reports	Week 15	7 Theory + 6 Practical	13%
2	Quiz (1)	Week 3	4 Theory + 2 Practical	6%
3	Midterm Exam (Theory + Practical)	Week 9	10 Theory + 5 Practical	15%
4	Quiz (2)	Week 12	4 Theory + 2 Practical	6%
5	Final Practical Exam	Practical exam week	20	20%
6	Final Theoretical Exam	Theoretical exam week	40	40%
Total			100	100%

12. Course Assessment

Required Textbook	Land Reclamation – Dr. Ahmed Haidar Zubaidi, 1989
Main References	Environmental Soil Chemistry
Supplementary References	Mesopotamia Journal of Agriculture Iraqi Journal of Soil Science
Electronic references, websites	

Course Description Form

1. Course Name:	
Design and Analysis of Agricultural Experiment	
2. Course Code:	
DAAE302	
3. Semester / Year:	
2025 – 2026	
4. Description Preparation Date:	
1 / 9 / 2025	
5. Available Attendance Forms:	
Attendance +online	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 Theory + 2 Practical 75 hours / 3 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dheyaa Fathi Aljuburi / Dhufir Abdul Razzaq Email: dfhrdheyaa@uomosul.edu.iq / dhufir.al-najmawi@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	- Enable the student to understand, comprehend and identify the types of designs used in agricultural experiments. - Selection of results after analysis to reach superior coefficients. - Identify the types of tests that are performed before and after the experiment
9. Teaching and Learning Strategies	
Strategy	- Interactive lectures. - Dialogue and discussion. - Brainstorming. - Reports and homework. - Scientific visits.
10. Course Structure	

Week	Hours	Code	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theoretical (2)	A1	symbols – mediation measures – dispersion measures – hypothesis testing	General statistical review	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
	Practical (3)	B5	Statistical Codes - Solving Questions About	General statistical review	Interactive lecture and brainstorming, dialogue, and discussion	Quiz

			Mediation and Dispersion Measures			
2	Theoretical (2)	B1	Types of experiments - Basic rules for designing experiments - Experimental error and confounding - How to choose an experimental design for any experiment - Methods to be followed in scientific experiments - One-factor experiments with random experimental designs	definitions Full random design, complete random sectors, and Latin square	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
	Practical (3)	A3	Types of experiments - Design of experimental and its sources - how to use the right design	Types of designs used in agricultural experiments	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
3	Theoretical (2)	C1	Design definition - advantages and disadvantages - planning for experimentation and randomly distributing transactions	Complete Randomized Design (CRD)	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
	Practical (3)	B6	Advantages and disadvantages of CRD design- drawing a design diagram-solving questions about the design	Complete Randomized Design (CRD)	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
4	Theoretical (2)	C2	How to collect and analyze data statistically – estimating the components of variance	Equation of the mathematical model and estimation of its components	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
	Practical (3)	C6	Mathematical Model Equation - How Field Data Is Collected - How Variance Components Are Estimated	Variance Components	Interactive lecture and brainstorming, dialogue, and discussion	Quiz Homework
5	Theoretical (2)	D1	Definition of design - its advantages and disadvantages - planning for the experiment and distributing coefficients randomly - equation of the mathematical model and estimating its components	Randomized Complete Design	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
	Practical (3)	C7	Advantages and disadvantages of RCDB design - equation of the mathematical model - solving direct and indirect questions about the design	Randomized Complete Design	Interactive lecture and brainstorming, dialogue, and discussion	Quiz Homework

6	Theoretical (2)	D2	Estimating Variation Components – Estimating Missing Observation Values – Estimating the relative efficiency of the design compared to the complete random design	of contrast components – missing observations – Relative efficiency of design	Interactive lecture and brainstorming, dialogue, and discussion	1 st Exam
	Practical (3)	B7	Solve questions about viewing components-Solve questions about missing observations-Solve questions estimating the relative efficiency of design compared to a design	Variation Components – Estimating Missing Observation Values – Estimating the Relative Efficiency of Design	Interactive lecture and brainstorming, dialogue, and discussion	1 st Exam
7	Theoretical (2)	B2	of design - its advantages and disadvantages - Planning for the experiment and distributing coefficients randomly - Equation of the mathematical model and estimating its components -	Latin Square Design	Interactive lecture and brainstorming, dialogue, and discussion	Quiz Homework

			How to collect data and analyze it statistically			
	Practical (3)	B8	Advantages and disadvantages of LSD Design - How to draw an experiment diagram using Latin square design	LSD Latin Square Design	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
8	Theoretical (2)	A2	Identify the different designs use 1 in field experiments	Visit the Field Crops Department Research Station to learn about the designs used in the experiments	Interactive lecture and brainstorming, dialogue, and discussion	Quiz Homework
	Practical (3)	C8	Practical Application at the Field Crops Department Experiment Station	Visit the field crops research station to learn about the designs used in agricultural experiments	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
9	Theoretical (2)	C3	Types and conditions of use of any of them - Test by the Dont method - Test in a way with less significant difference - Test by Duncan method Multi-range	of comparisons between averages of transactions	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
	Practical (3)	D5	Solving examples of using the Donut method - solving examples of using the LSD method - solving questions about using the Duncan method	of testing and comparing averages	Interactive lecture and brainstorming, dialogue, and discussion	Quiz Homework
10	Theoretical (2)	D3	How to Calculate the Relative Efficiency of LSD - Design Estimating the ewing Lost Value of esign LSD D	efficiency and lost viewing of LSD design	Interactive lecture and brainstorming, dialogue, and discussion	Quiz Report
	Practical	C9	Advantages and			Quiz

	(3)		disadvantages of factor experiments - drawing a factor experiment - what are factor coefficients and interaction effects	first part of factorial experiments	Interactive lecture and brainstorming, dialogue, and discussion	
11	Theoretical (2)	B3	Definition of factorial experiments - their benefits - disadvantages of the experiment - diagram of the mathematical model of the factor	first part of factorial experiments	Interactive lecture and brainstorming, dialogue, and discussion	Quiz Report
	Practical (3)	D6	Solving Questions About Factor Experiments Using CRD Design - Solving Questions About Factor Experiments Using RCB Design - Solving Question About Factor Experiments Using LSD Design	second part of factorial experiments	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
12	Theoretical (2)	C4	the interaction between factors through the analysis of variance table and graph	second part of factorial experiments	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
	Practical (3)	B9	How to collect data - what is data - data tabulation - analyze data statistically	collection and analysis statistically	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
13	Theoretical (2)	B4	Interaction graph - representation of factor coefficients by symbols - usefulness of interference between factors	Interaction in factor experiments	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
	Practical (3)	A4	Writing the anova table for factorial experiments with an two factors - drawing interaction between factors graph	Interaction between factors through Anova table and graph	Interactive lecture and brainstorming, dialogue, and discussion	Quiz
14	Theoretical (2)	C5	Definition - benefits - reasons for its use - how to implement experiments	Split-plot Experiments	Interactive lecture and brainstorming, dialogue, and discussion	2 nd Exam
			with two workers according to split-plot with the three designs mentioned above			
	Practical (3)	A5	Advantages of experiments with the split-plot system - solving questions about split-plot experiments - reasons for using split-plot	Split-plot Experiments	Interactive lecture and brainstorming, dialogue, and discussion	2 nd Exam
15	Theoretical (2)	D4	application on taking measurements of traits and entering them in tables	How to take measurements of traits and put them in tables	Interactive lecture and brainstorming, dialogue, and discussion	
	Practical (3)	B10	application on taking measurements and placing them in tables	How to take measurements of traits in the field and put them in tables	Interactive lecture and brainstorming, dialogue, and discussion	
11. Course Evaluation						
No.	Evaluation Methods		Evaluation Date (week)	Degrees	Relative weight	

1	theatrical Quiz	1 – 14	10	20%
2	Practical Quiz	1 – 14	10	
3	1 st Exam	6	20	30%
4	1 st Exam	6	10	
5	Reports	11 – 10	10	20%
6	Homework	4 – 5 – 7 – 8 – 9	10	
7	2 nd Exam	14	20	30%
8	2 nd Exam	14	10	
	Total		100	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book of Design and Analysis of Experiments - Khasha Mahmoud A. Agricultural Abdul Aziz Muhammad Khalaf Alla -Rawi and 2000
Main references (sources)	Book of Statistical Methods in Agricultural Experiments - Khaled Muhammad Dawood and Zaki Abdel Elias 1990
Recommended books and references (scientific journals, reports...)	Lectures in Probability and Statistics: Lectures given at the Winter School in Probability and Statistics held in Santiago de Chile
Electronic References, Websites	https://www.statista.com/

Course description template

1. Course Name:	
Field crop insects	
2. Course code:	
FICI424	
3. Term/Year:	
First semester, Autumn 2025–2026	
4. Date this description was prepared:	
1/9/2025	
5. Available forms of attendance:	
In-person + online	
6. Number of study hours (total) / Number of units (total):	
2 Theory + 3 Practical (3.5 units)	
7. Name of the course instructor (if there is more than one, please list them):	
Dr. Khaled Khalif Nazzal	
Mutassim Ibrahim Shamoon (mutassim.shamoon@uomosul.edu.iq)	
Ahmad Thamir Hammadi (ahmad.hammad@uomosul.edu.iq)	
8. Course Objectives	
Theoretical objectives: ☐ Should be able to define the concept of field crop insects and the information that must be available to know the types of insects. ☐ Choosing the suitability of factors affecting insects that infect crops. ☐ Differentiating between different planning systems and the appropriate ones. ☐ Understand the basics of planning and use them in establishing an insect laboratory. ☐ Distinguishing between types of insects according to the information gained during studying the nature of their infestation and identifying their shapes and damages.	Practical Skills: ☐ Familiarity with the information the trainee needs and what is available to him to master his work in dealing with insects and determining the nature of the infestation. ☐ The student's awareness of the factors affecting insects and their environment and how to diagnose, combat and control them. ☐ Determine the appropriate type and the best way to diagnose the infestation and know the type of insect and how to deal with it.

			☐ A comprehensive study of the various types of insects, how to identify them, the nature of the infestation, and the percentage of damage they cause to the crop.		
9. Teaching and learning strategies					
☐ Interactive lecture ☐ Brainstorming ☐ Dialogue and discussion ☐ Field Training ☐ Practical exercises ☐ Field project ☐ Self-education			My work involves: - Adapting to teamwork to uncover skills. - -Assigning tasks and reports to each committee.		
10. Course Structure					
Week	Hours	Intended Learning Outcomes	Topic / Unit	Teaching Method	Assessment Method
1	2 (Theory)	Identify the taxonomic position of insects in the animal kingdom. B1: Possesses knowledge concepts of the factors helped the spread of insects.	Taxonomic position of insects and their characteristics, factors that aided their spread	Interactive lect brainstorming, dialogue-discuss self-learning	Semester exam 1, final exam
	3 (Practical)	The student learns about concept of: entomology insect classification.	About entomology, classification of insects, insect body sections	Interactive lect brainstorming, dialogue discussion, learning-training self-learning	Short practical test 1
2	2 (Theory)	a2: Determines the benefits and harms of insects. b1: Possesses the knowledge and concepts to know the critical economic limit.	Insect harms, benefits, critical economic limit of infestation and economic damage	Interactive lect brainstorming, dialogue-and discussion, learning	Semester exam 1, final exam

	3 (Practical)	a2: The student will be able to identify the mouth: their types, the abdominal area, the parts of insects chest area, and the parts associated with it.	Insect mouth parts, Chest area, Abdominal area	Interactive lect brainstorming, dialogue discussion, training, pract exercises, and s learning	Direct drawing
3	2 (Theory)	a2: The student will be able to identify the types of reproduction in insects and insect development.	Types of reproduction in insects	Interactive lect brainstorming, dialogue discussion, learning-training self-learning	Field evaluation
4	3 (Practical)	a2: Determines methods of controlling insects that infect the Poaceae family. C4: Draws up plans programs to combat it.	Pest control methods Practical (grass insects, description of the insect and form of damage)	Interactive lect dialogue brainstorming discussion, learning	Semester exam 1, final exam, report
	2 (Theory)	d4: The student should be able to develop his cognitive and research abilities on insects that infect the Poaceae family. c2: The student should be able to diagnose insects that infect the Poaceae family.	Insects that infect agricultural crops, Pests of the Poaceae family	Interactive lect brainstorming, dialogue discussion, training, pract exercises, and s learning	Practical short test 2, direct drawing
5	3 (Practical)	a2: Determines methods of controlling insects that infect the Poaceae family. c4: Draws up plans and programs to combat it.	Wheat and barley insects, their life cycles and control	Interactive lect brainstorming, dialogue-discuss self-learning	Semester exam 1, final exam, report
	2 (Theory)	d4: The student should be able to develop his cognitive and research abilities on insects that infect the Poaceae family. c2: The student should be able to diagnose insects that infect the Poaceae family.	Insects that infect agricultural crops, Pests of the Poaceae family	Interactive lect brainstorming, dialogue discussion, training, pract exercises, and s learning	Field evaluation

6	3 (Practical)	First semester exam. a2: Determines methods of controlling insects that infect the Poaceae family. C4: Draws up plans and programs to combat it.	First semester exam, Insects that infect corn crops	Interactive lecture, brainstorming, dialogue-and discussion, learning	Short test, final test
	2 (Theory)	c58: The student should be able to master the concepts related to insects that infect crops. c2: The student should be able to diagnose insects that infect the corn crop.	Corn crop pests	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning	Direct drawing and homework
	3 (Practical)	c25: Effect of leveling on physical and chemical properties	Effect of leveling on productivity	Assignments	Homework
7 8	—	a2: Determines methods of controlling insects that infect the Poaceae family. C4: Draws up plans and programs to combat it. c2: The student should be able to diagnose insects that infect crops.	Rice insects, their life cycles, and control	Interactive lecture, brainstorming, dialogue-and discussion, learning	Semester exam 2, final exam
	2 (Theory)	b1: Management of reclaimed lands	Management of reclaimed lands	Lectures	Quizzes
9	3 (Practical)	a2: Determines methods of controlling insects that infect the leguminous family. C4: Draws up plans and programs to combat it.	Crop pests: Rice, Insects of leguminous crops, their life cycles and control	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, project, self-learning	Field project
	2 (Theory)	c2: The student should be able to diagnose insects that infect the leguminous family.	Pests of leguminous crops	Interactive lecture, brainstorming, dialogue-and discussion, self-learning	Semester exam 2, final exam

10	3 (Practical)	C2: The student should be able to diagnose insects that infect the leguminous family.	Pests of leguminous crops	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning	Direct drawing and homework
	2 (Theory)	a2: Determines methods of controlling insects that infect the cotton crop. C4: Draws up plans and programs to combat it.	Cotton crop insects, their life cycles and control	Interactive lecture, brainstorming, dialogue-and discussion, self-learning	Semester exam 2, final exam
11	3 (Practical)	c2: The student should be able to diagnose insects that infect the cotton crop.	Cotton insects	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning	Direct drawing and homework
	2 (Theory)	a2: Determines methods of controlling insects that infect sugar beets. c4: Draws up plans and programs to combat it.	Sugar beet insects, their life cycles and control	Interactive lecture, brainstorming, dialogue-self discussion learning	Semester test 2
12	3 (Practical)	c2: The student should be able to diagnose insects that infect sugar beet crops.	Beet insects	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning	Direct drawing and homework
	2 (Theory)	a2: Determines methods of controlling insects that infect tobacco. C4: Draws up plans and programs to combat it.	Sugar tobacco crop insects, their life cycles and control	Interactive lecture, dialogue brainstorming-and discussion, self-learning	Final test

13	3 (Practical)	c2: The student should be able to diagnose insects that infect the tobacco crop.	Tobacco insects	Interactive lecture, brainstorming, dialogue discussion, training, practical exercises, and self-learning	Direct drawing and homework
	2 (Theory)	a2: Determines methods of controlling insects that infect the sunflower. C4: Draws up plans and programs to combat it.	Sunflower crop insects, their life cycles and control	Interactive lecture, brainstorming, dialogue-and discussion, self-learning	Final test
14	3 (Practical)	c2: The student should be able to diagnose the insects that infect the sunflower crop.	Sunflower insects	Interactive lecture, brainstorming, dialogue discussion, field and training practical exercises and self-learning	Direct drawing and homework
	2 (Theory)	a2: Determines methods of controlling insects that infect castor beans. C4: Draws up plans and programs to combat it.	Castor bugs, their life cycles and control	Interactive lecture, brainstorming, dialogue-and discussion, self-learning	Final test
15	3 (Practical)	c2: The student should be able to diagnose the insects that infect the castor crop.	Castor bugs	Interactive lecture, dialogue, brainstorming, discussion, training, practical exercises, and self-learning	Direct drawing and homework

11. Course Assessment

No.	Assessment Method	Assessment Time	Marks	Weight (%)
1	Final theoretical report + practical reports	Week 15	7 Theory + 6 Practical	13%
2	Quiz (1)	Week 3	4 Theory + 2 Practical	6%
3	Midterm Exam (Theory + Practical)	Week 9	10 Theory + 5 Practical	15%
4	Quiz (2)	Week 12	4 Theory + 2 Practical	6%
5	Final Practical Exam	Practical exam week	20	20%
6	Final Theoretical Exam	Theoretical exam week	40	40%

Total			100	100%
12. Course Assessment				
Required Textbook	The theoretical book on field crop insects / written by Dr. Salem Jamil Girgis, Dr. Hamza Kazim Abbas, and Dr. Muhammad Abdel Karim			
Main References	The theoretical book on field crop insects / written by Dr. Salem Jamil Girgis, Dr. Hamza Kazim Abbas, and Dr. Muhammad Abdel Karim			
Supplementary References	Pests of Field Crops and Pastures [Identification and Control / PT Bailey (Editor)]			
Electronic references, websites	https://www.amazon.com/Pests-Field-Crops-Pastures-Identification/dp/0643067582			

Description of the beekeeping course

1. Course name:
Beekeeping
2. Course code:
APIC312
3. Semester/Year: Annual
Spring semester/Stage 3 / Field Crops/
4. The date this description was prepared
2026 / 2 / 1
5. Available attendance forms:
In-person + online
6. Number of study hours (total)/number of units (total):
75 hours / 3 units
7. Name of the course administrator (if more than one name is mentioned)
Assistant Professor Doctor. Mohammed Yousuf Sayed Ghani mohammed_yousuf76@uomosul.edu.iq Assistant Lecturer. Ahmed Thamer Hammadi ahmed.thamer@uomosul.edu.iq
8. Course objectives
• The learner should be able to define the concept of beekeeping and the information that must be available to practice the beekeeping profession. • Choosing the appropriateness of the factors affecting beekeeping and its products. • Differentiate between different planning systems and the appropriate ones • Understand the basics of planning and use them to create an ideal apiary • Distinguishing between types of bees and their products according to the information gained. • Familiarity with the information a beekeeper needs and what is available to him to master his work • The beekeeper's awareness of the factors affecting the beekeeping profession • Determine the appropriate type of bees and what should be considered when choosing the appropriate breed A comprehensive study of the various types of bees and their products and determining the controls and conditions that must be observed when establishing apiaries.
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	Name of the unit or topic	Learning method	Evaluation method
1	theoretical 1	a1 Learn about the concept of beekeeping, its : benefits, an introduction and definition of beekeeping , and the historical development of bee science b1 He possesses the practical and mental : knowledge and concepts that help him in beekeeping d3 Community members participate and : about the importance of work to educate them increasing apiaries and its impact on increasing production and improving income .and living E1 It contributes to enhancing knowledge of : honey types among community members and making them aware of the importance of bees easing production to improve and incr .individual income and serve society	The importance of the science of bee science The origin and / origin of bees / Division and classification of bees / Types of honey bees widespread in the world / Breeds of honey bees read in the widesp world / Standard characteristics of bee breeds / Strain of Iraqi honey bees	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	practical 3	c1 recognizes on Concept profession : education Bees , Its benefits , Individuals Sect b1 has Knowledge And concepts the : operation And mentality that Help him in Bee hive management d3 participates Individuals the society And it : mportantly more works on Educating them I the lid Vegetarian And its impact in Refresh profession education Bees In a way general e1 contributes in Strengthen Valuable : Understanding I have Individuals the society And make them aware With importance Production education Bees To improve Agricultural And the environment And service the society	Identifying the members of the honey bee sect, the general structure of the worker's body, the head and its appendages, simple eyes, compound eyes, antennae, mouth parts, jaw glands, .ngeal glandsphary	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	Short practical test 1
2	theoretical 1	a2 Determines the economic importance of : bee products and their benefits B1 mental He possesses the practical and : knowledge and concepts that help him identify the members of the bee colony c5 Successfully balances the investment and : use of bee products and employs them in a way that is compatible with production processes For different types and breeds of eesb	The most important honey bee products and their benefits	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	practical 3	c3 Uses the information the student needs : master his and what is available to him to work	The thorax and its appendages, the wings and their appendages, the legs and their modifications antennae cleaner,) pollen basket), other modifications , respiratory stomata, .thoracic glands	Interactive lecture, brainstorming, dialogue discussion, field and training, practical -exercises, and self learning	Direct drawing
3	theoretical 1	a2 Determines the standard characteristics of : the bee colony, the types of bees, and the	Identify the most important members of	Interactive lecture, brainstorming, dialogue	Semester exam 1 ,

		specifications that must be available in a good . their impact on production bee strain and	the honey bee sect, their specifications, and the life cycle of each	-and discussion, self learning	final exam
	practical 3	c3 Uses the information the student needs : and what is available to him to master his work	Nasanov's gland , stinging apparatus and its glands, scent glands	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	Field evaluation
4	theoretical 1	a2 Determines the information the beekeeper : needs and what is available to him to master his work c4 Draws up plans and programs for : development in the field of beekeeping and hive farming in accordance with the of the environment and society requirements d3 Community members participate and : work to educate them about the importance of increasing beehives and its impact on increasing an individual's income and .improving their livelihood e1 wledge It contributes to enhancing kno : among community members and making them aware of the importance of bees, improving the environment, and serving the community	Identify the most important necessary supplies and their types to be used in the apiary	Interactive lecture, dialogue ,brainstorming -and discussion, self learning	Semester exam 1 , final exam report ,
	practical 3	c3 Uses the information the designer needs : and what is available to him to perfect his work	Internal anatomy and specialized organs of worker honey bees, parts mouth	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Practical short test 2 direct , drawing
5	theoretical 1	c4 Draws up plans and programs for : the developing bee hives that help increase process of pollinating flowers and other crops d3 Community members participate and : work to educate them about the importance of increasing vegetation cover and its impact on controlling pollution e 1 It contributes to enhancing and : culture of beekeepers among developing the community members and the role of bees in plant pollination processes	Honey bees and flowers / Honey bees and vegetable crops / Pollination / Fertilization / The importance of honey bees in pollinating crops	,Interactive lecture brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam report ,
	practical 3	c9 The student should be able to practically : implement the use of beekeeping tools in the examination process c12 use modern The student should be able to : techniques in apiary management and honey production	Beekeeper tools and supplies, colony inspection tools, frame cleaning tools, foundation wax production tools, queen production and rearing tools, honey sorting tools, nutrients and their .types	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Field evaluation
6	theoretical 1	a2 Determines the appropriate times for : feeding bees c4 bees Plans the necessary needs for feeding : The most important alternatives used in nutrition	Types of nutrition / feeding with carbohydrates and their alternatives / precautions to be taken during feeding	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, inal testf
	practical 3	c3 Uses the information the designer needs : and what is available to him to perfect his	Types of beehives municipal, modern,)	Interactive lecture, brainstorming, dialogue	Direct drawing

		work c58 The student should be able to master the : process of transferring the sect from the municipal cell to the modern cell	.(and illustrative	and discussion, field training, practical -exercises, and self learning	and homework
7	theoretical 1	a3 to stop the Utilizes available capabilities : theft process between bee colonies c3 More than one method is used to control : theft operations between sects+First monthly exam	The concept of theft / theft behavior / reasons for theft / signs of theft / how to steal+First monthly exam	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	practical 3	First monthly exam	First monthly exam	Interactive lecture, brainstorming, dialogue and discussion, field training, practical field project, ,exercises learning-self	Field project
8	theoretical 1	a3 Determines the signs of swarming in bee : colonies c3 More than one method is used to control : expulsions between sects	Signs of eviction / Reasons for eviction / / Types of eviction Disadvantages of eviction / Ways to prevent eviction / Industrial eviction and methods of dividing bees	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	practical 3	c3 designer needs Uses the information the : and what is available to him to perfect his work C58 The student should be able to master the : process of wiring wooden frames	Tire cleaning + a tour of the apiary	Interactive lecture, brainstorming, dialogue and discussion, field practical ,training -exercises, and self learning	Direct drawing and homework
9	theoretical 1	a4 Identifies new ways to strengthen bee : colonies And signs of pesticide poisoning c3 Uses what the beekeeper needs to : strengthen colonies	Reasons for the sects / weakness of ways to strengthen weak sects / pesticide poisoning	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	practical 3	c3 Uses the information the designer needs : perfect his and what is available to him to work	History of making base wax, installing base wax on tires	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
10	theoretical 1	a2 innovative and new methods in Identifies : raising queen bees	Methods of raising queens	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester test 2
	practical 3	c3 Uses the information the designer needs : perfect his and what is available to him to work c58 That He is requester Able on that : Perfects practical transformation Sect from cell Municipal to cell Modern	Converting the municipal (local) cell into a modern wooden cell (practical application), writing a report on the process conversion and following up on the community's progress in the .following weeks	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
11	theoretical 1	a2 the most important and useful Identifies : honey bee products c3 Uses different bee products In increasing : per capita income	Wax, royal jelly, bee venom, propolis , pollen	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test

	practical 3	c3 Uses the information the student needs : and what is available to him to master his work	Honey bee products, honey and its specifications, honey crystallization, honey adulteration	Interactive lecture, brainstorming, dialogue field ,and discussion training, practical -exercises, and self learning	Direct drawing and homework
12	theoretical 1	a2 Identify the most important diseases that : affect bees And the most dangerous for sects c3 Uses treatments that are safe for bees and : to treat infected colonies the environment	Identify the most important types of fungal, bacterial and viral diseases that affect honey bees / Identify the most important insect and animal pests that affect honey bees	Interactive lecture, brainstorming, dialogue -ssion, selfand discu learning	Final test
	practical 3	c3 Uses the information the student needs : and what is available to him to master his work	Wax, royal jelly, bee venom, propolis , pollen	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
13	theoretical 1	a2 Determines the characteristics of : crystallized honey c3 It uses innovative and modern methods to : detect honey adulteration	Honey bee products, its honey and specifications, honey crystallization, honey adulteration	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	practical 3	c3 Uses the information the designer needs : and what is available to him to perfect his work b38 The student should be able to understand : the extent of the problems and risks resulting from infection with pathogens and pests that affect honeybees, specifying the mechanisms for managing these problems, and appreciating .isksthe elements of potential r	Identify the most important types of fungal, bacterial and viral diseases that affect honey bees / Identify the most important insect and animal pests that affect honey bees	Interactive lecture, brainstorming, dialogue and discussion, field practical ,training -exercises, and self learning	Direct drawing and homework
14	theoretical 1	c3 Uses different nectar sources : c5 Balances bee colonies after being exposed : to pesticide poisoning a2 Identify signs of chemical pesticide : poisoning	nectar and Sources of pollen in Iraq, bee poisoning with chemical pesticides, plants toxic to honeybees, symptoms and signs, prevention of poisoning	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	practical 3	c3 Uses the information the designer needs : and what is available to him to perfect his work	Sources of nectar and pollen in Iraq, bee poisoning with ,chemical pesticides	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Short practical test 3
15	theoretical 1	c3 Able to prepare scientific research and : studies in his field of specialization + Second month exam	Second month exam plants toxic to honeybees, symptoms and signs, prevention poisoning of	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	practical 3	c3 Able to prepare scientific research and : studies in his field of specialization	Second month exam	,Interactive lecture brainstorming, dialogue and discussion, field training, practical exercises, field project, learning-self	Field project

1. Course evaluation				
T	Calendar methods	(Calendar date (week	Class	Relative % weight
1	Report 1	fourth week	2.5	2.5
2	Report 2	fifth week The	2.5	2.5
3	(Short test (1Quiz	sixth week	2	2
4	(Short test (2Quiz	The fourteenth week	2	2
5	(Short test (3Quiz	The fifteenth week	1	1
6	(Semester test (1	the sixth week	7.5	7.5
7	(Semester test (2	The eleventh week is difficult	7.5	7.5
8	Final theoretical test	Final semester exams	40	40
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	(Short practical test (1Quiz	The first week	1	1
12	(Short practical test (2Quiz	fourth week	0.5	0.5
13	(Short practical test (3Quiz	The fourteenth week	1	1
14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5	5.5
15	Final practical test	Final semester exams	20	20
	the total	100	%100	%100
2. Learning and teaching resources				
(textbooks (methodology, if any Required		Naji-The book on beekeeping and silkworms / written by Dr. Louay Karim		
(Main references (sources		- The book on beekeeping and silkworms / written by Dr. Louay Naji-Karim Al		
Recommended supporting books and scientific journals,) references (... reports		The bees of the world /Charles D. Michener		
Electronic references, Internet sites		https://www.google.com/search?q=%D9%83%D8%AA%D8%A+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&oq=%D9%83%D8%A%D8%A8+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+D8%A7%D9%84%D9%86%D8%AD%D9%84&aqs=chrome..69j0i22i30l2j0i15i22i30l2.6551j0j15&sourceid=chrome&ie=UTF8		

Course Description Form

1. Course Name:					
Seed Technology					
2. Course Code:					
SETE364					
3. Semester / Year:					
Spring second 2024/2025					
4. Description Preparation Date:					
1/2/2025					
5. Available Attendance Forms:					
Presence+ onlien					
6. Number of Credit Hours (Total) / Number of Units (Total)					
(2 theoretical + 2 practical = 5 hours) ×15 weeks = 75 hours / 4 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Lect Rayan Fadhel Ahmed Email: rayanobody79@uomosul.edu.iq Name: Assist. Lect. Khalil Ibrahim Khalil Email: raghad.hadid@uomosul.edu.iq					
8. Course Objectives					
Communicating the concept and objectives of seed technology to students, which include: - Increasing agricultural production by developing good quality seeds from high–yielding varieties - Prepare the seeds at the specified time for sowing. - Ensuring the use of high–quality seeds to achieve expected profit and revenue. - Ensuring appropriate prices for seeds so that they are accessible to average farmers.					
9. Teaching and Learning Strategies					
Strategy	- Interactive lecture - Brainstorming - Dialogue and discussion - Assigning tasks and reporting - He is assigned to prepare a report on one of the topics of seed technology and it will be discussed therein. - Scientific visits. - Assigning group work to reveal leadership skills				
10. Course Structure					
Week	Hours	Required	Unit or subject	Learning	Evaluation

		Learning Outcomes	name	method	method
1	2Theoretical 3Practical	2theoretical: a1: getting to know the concept of seed technology, its goals and sciences 3practical: b4: list the objectives of seed technology	2Theoretical: Seed technology concept 3 practical: The concept of the seed in practice	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
2	2Theoretical 3Practical	2theoretical: a2: he is familiar with the environmental factor, radiation, and the mechanisms of using it to serve the crop 3practical: b5: explains the tools used to extract the sample or samples	2Theoretical: Seed production requirements (irradiation) 3Practical: Tools used to extract the sample	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
3	2Theoretical 3Practical	2theoretical: a3: identify the environmental factor, temperature, and the mechanisms for employing it to serve the crop 3practical: b6: shows the methods for obtaining the practical sample of the samples sent from the consignment	2Theoretical: Heat and temperature factor 3 process: Purity test	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
4	2Theoretical 3Practical	2theoretical: a4: identify the environmental factor, water, and the mechanisms for employing it to serve the crop 3practical: b7: shows the method of analyzing a laboratory seed screening sample	2Theoretical: Water factor 3 practical: Seed purity test components	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
5	2Theoretical 3Practical	2theoretical: a5: identify the soil environmental factor and the mechanisms for employing it to serve the crop 3practical: c4: explains the reasons for the appearance of abnormal (abnormal)	2Theoretical: Soil factor 3 practical: Germination check	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions

		signs.			
6	2Theoretical 3Practical	2theoretical: a6: identify the environmental factor, air and wind, and the mechanisms used to serve the crop 3practical: c5: specifies the issues to be considered in the germination test	2Theoretical: Air and wind factor 3 practical: Orders to be taken into account in the germination test	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
7	2Theoretical 3Practical	2theoretical: b1: explaining the interactions of green and non-green plants, insects, animals, and humans with the crop 3practical: c6: write a report on testing the germination vigor of seeds	2Theoretical: Abiotic factors 3Practical: Germination strength test	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
8	2Theoretical 3Practical	2theoretical: b2: distinguishing between the three natural seed propagation methods and documenting twenty seed treatment techniques and their role in serving the crop 3practical: b8: explains the concept of the thousand seed weight test	2Theoretical: Seed propagation 3Practical: Tests indicating seed quality	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
9	2Theoretical 3Practical	2theoretical: a7: understanding the term seed viability and possible ways to retain seed viability for as long as possible 3practical: d1: show the tests indicating the viability and vigor of seeds	2Theoretical: Vitality and life period of seeds 3Practical: Tests indicating the viability and strength of seeds	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
10	2Theoretical 3Practical	2theoretical: a7: understanding the term seed viability and possible ways to retain seed viability for as long as possible 3practical: d1: show the tests indicating the viability and vigor of seeds	2Theoretical: Cleaning and grading the seeds 3Practical: Seed safety testing	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
11	2Theoretical 3Practical	2theoretical: c1: that the student	2Theoretical: Cleaning and grading	(theoretical) Auditory	Quizzes, assignments,

		acquires the skill of operating and maintaining the cylinder separator 3practical: b9: benefits from harvesting and threshing	the seeds 3Practical: Seed safety testing	methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	discussions
12	2Theoretical 3Practical	2theoretical: c2: that the student acquires the skill of operating and maintaining the separation device according to the specific gravity 3practical: b10: explains how field inspection is conducted	2Theoretical: Separation device according to specific gravity 3Practical: Field inspection	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
13	2Theoretical 3Practical	2theoretical: c3: the student acquires the skill of operating and maintaining the color separator device 3practical: b11: writes about how to store seeds for agricultural purposes	2Theoretical: Chromatic separator device 3Practical: Storage	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
14	2Theoretical 3Practical	2theoretical: e1: the student understands how to receive samples, extract them, and estimate the required tests 3practical: e3: the student understands how to conduct a purity test, as well as being familiar with the tools needed for this test	2Theoretical: Solving a problem (a scientific visit to the Seed Inspection and Certification Department 3Practical: Problem solving (practical applications on how to conduct a purity test as well as identifying the tools needed for this test	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
15	2Theoretical 3Practical	2theoretical: e2: the student is aware of the nature of work in the department, as well as being familiar with the most important laboratory equipment used 3practical: e4: the student understands how to conduct the seed germination process, as well as the tests that indicate the	2Theoretical: Solving a problem (a scientific visit to the fields of the Agricultural Technical College to see the grown fibrous crops, as well as learning about the most important equipment used in the laboratory, especially the cotton ginning machine used to separate the hairs from the seeds 3Practical: Practical	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions

		vitality, quality and strength of the seeds and laboratory tools and equipment.	applications on how to conduct the seed germination process, as well as tests indicating the vitality, quality and strength of seeds, and laboratory tools and devices.		
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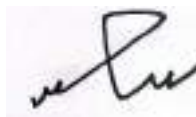
11. Course Evaluation

	Evaluation methods	Evaluation date (week)	Degree	Percentage weight %
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Short test (1) Quiz	Sixth week	2	2
4	Short test (2) Quiz	Fourteenth week	2	2
5	Short test (3) Quiz	Fifteenth week	1	1
6	Semester test (1)	Sixth week	7.5	7.5
7	Semester test (2)	Eleventh week	7.5	7.5
8	Final theoretical test	Final semester test	40	40
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	Third and fifth week	2	2
11	Practical short test (1) Quiz	First week	1	1
12	Short practical test (2) Quiz	Fourth week	0.5	0.5
13	Short practical test (3) Quiz	Fourteenth week	1	1
14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5	5.5
15	Final practical test	Final semester test	20	20
	Total	100	100%	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Seed technology book - written by Prof. Dr. Ahmed Saleh Khalaf and Prof. Dr. Abdel Sattar Asmir Al Rajabo
Main references (sources)	Seed Science Book – Wheat Book – Seed Science and Technology
Recommended books and references (scientific journals, reports...)	Seed testing and certification (local and Arab books and publications) Catalogs of various made seed cleaning plants
Electronic References, Websites	Scientific research sites at Google and Research Gate

Chairman of the Scientific Committee
Dr. Salim Abdullaah




Head of Department
Moyassar Mohammed Aziz



Course Description Form

1. Course Name:	
Fiber Crops	
2. Course Code:	
FICR360	
3. Semester / Year:	
Spring second 2025/2026	
4. Description Preparation Date:	
1/2/2026	
5. Available Attendance Forms:	
Presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(2 theoretical + 4 practical = 5 hours) × 15 weeks = 75 hours / 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Lect Rayan Fadhel Ahmed Email: rayanobody79@uomosul.edu.iq Name: Assist. Lect. Ghadeer Nawaf Thanoon Email: Ghadeer.nawaf.alobaidy@uomosul.edu.iq	
8. Course Objectives	
Theoretical: - The student should be aware of the importance of fiber crops and how to produce them - For the student to imagine the reality of growing fiber crops in Iraq - For the student to become familiar with some ways and means to advance the reality of fiber crop cultivation in Iraq - Identifying the most important devices used for extracting fiber from fibrous crops, as well as identifying the devices used in measuring quality characteristics of cotton fibres.	Practical: - Distinguish between fibrous crops in terms of their external appearance (root - stem - leaves - flowers - fruits - seeds). - Identifying the most important successful varieties grown in Iraq - The student will acquire skills in how to measure the natural properties of fibers, such as length, rank, strength, flexibility, elongation, and elasticity.
9. Teaching and Learning Strategies	
Strategy	- Interactive lecture - Brainstorming - Dialogue and discussion - Assigning tasks and reporting

	- He is assigned to prepare a report on one of the topics of fiber crops and it will be discussed therein. - Scientific visits. - Assigning group work to reveal leadership skills
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	theoretical: a1: defines fiber crops and divides them into several groups b1: divides the fibrous crops into several groups 3practical: a7: botanically describes the main parts of the cotton crop and shows the most important varieties grown in iraq.	theoretical: Fiber crops - their definition and division 3Practical: Botanical description of the cotton crop	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
2	2Theoretical 3Practical	theoretical: a2: identify important properties of filaments that are appropriate in the manufacturing process 3practical: b4: determines the chemical and anatomical composition of the flax seed and fiber	Theoretical: Properties that must be present in textile fibers 3Practical: Anatomical and chemical composition of cotton seeds and fibres	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
3	2Theoretical 3Practical	theoretical: c1: explains the most important fibrous crops grown in iraq and the world 3practical: a8: defines the process of scooping cotton b5: shows the types of halvaj	Theoretical: The most important fiber crops in Iraq and the world 3Practical: scoop	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
4	2Theoretical 3Practical	theoretical: c2: shows the method of measuring the characteristics of the rank and length of the hairs 3practical: a9: botanically describes the main parts of the flax crop and shows the most important varieties grown in iraq.	Theoretical: Natural properties of fiber 3Practical: Botanical description of flax crop	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
5	2Theoretical	theoretical:	Theoretical:	(theoretical)	Quizzes,

	3Practical	c3: explains methods for measuring the qualities of softness, toughness, elongation, and elasticity 3practical: a10: knows maceration and distinguishes between its types b6: enumerate the properties of flax fibres	Supplement the natural qualities of fiber 3Practical: Maceration in flax	Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	assignments, discussions
6	2Theoretical 3Practical	theoretical: b2: identifies the problems of growing and producing fiber crops and recommends a set of means to overcome these problems 3practical: a11: botanically describes the main parts of the jute crop and shows the most important varieties grown in iraq.	Theoretical: Obstacles to the cultivation and production of fiber crops 3Practical: Botanical description of jute crop	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
7	2Theoretical 3Practical	theoretical: d1: distinguishes between cotton groups based on staple length and identifies the most important reasons leading to low productivity 3practical: c4: demonstrates how to extract jute fibers, explaining the most important specifications of these fibers	Theoretical: Cotton crop 3Practical: Maceration in jute	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
8	2Theoretical 3Practical	theoretical: a3: he learns how to carry out the process of planting and thinning the absent shoots, as well as how to carry out the irrigation process and the use and addition of fertilizers. 3practical: a12: botanically describes the main parts of the jaljal crop and shows the most important varieties grown in iraq.	Theoretical: Cotton crop service operations 3 practical: Botanical description of the jaljal crop	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions

9	2Theoretical 3Practical	theoretical: a4: learn about the folding process, leaf drops, and familiarize yourself with the stages of cotton manufacturing processes 3practical: c5: proves how to extract jingle fibers and explains the most important specifications of these fibers	Theoretical: Supplementing cotton crop service operations 3 process: Matting in Jaljal	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
10	2Theoretical 3Practical	theoretical: a5: he is familiar with the economic importance of linen and its service processes 3practical: a13: botanically describes the main parts of the sisal crop and shows the most important varieties grown in iraq.	Theoretical: Flax crop 3Practical: Botanical description of the sisal crop	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
11	2Theoretical 3Practical	theoretical: b3: explains how to introduce flax into manufacturing processes 3practical: b7: shows the physical and chemical properties of sisal fibres	Theoretical: Stages of preparing and manufacturing linen 3 Practical: Properties of sisal fibres	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
12	2Theoretical 3Practical	theoretical: a6: he is familiar with the economic importance of jute and jute crops and learns about the process of fiber extraction 3practical: a14: botanically describes the main parts of the ramie crop and shows the most important varieties grown in iraq.	Theoretical: Jute and jute crop 3 practical: Botanical description of the ramie crop	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
13	2Theoretical 3Practical	theoretical: a7: he is familiar with the economic importance of jute and jute crops and learns	Theoretical: The crop of sisal and ramie 3 practical: Properties of ramie	(theoretical) Auditory methods. Style of writing on the	Quizzes, assignments, discussions

		about the process of fiber extraction 3practical: b8: shows the physical and chemical properties of ramie fibres	fibers	blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	
14	2Theoretical 3Practical	theoretical: e1: is aware of the most important reasons leading to a decrease in the area and productivity of fibrous crops 3practical: e3: understands the practical applications of how to perform the cotton ginning process and how to separate the seeds from the fibers	Theoretical: Solving a problem (a scientific visit to the Nineveh Agriculture Directorate) 3Practical: Solving a problem (practical applications on how to perform the cotton ginning process and how to separate the seeds from the fibers)	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions
15	2Theoretical 3Practical	theoretical: e2: understands the correct and appropriate methods for extracting and separating fibers from plants 3practical: e4: students share the necessary information and techniques for growing fiber crop plants in the field	Theoretical: Solving a problem (a scientific visit to the fields of the Agricultural Technical College to see the grown fibrous crops, as well as learning about the most important equipment used in the laboratory, especially the cotton ginning machine used to separate the hairs from the seeds) 3Practical: Solving the problem (field observations of fiber crop plants grown in Iraq with methods of growing them in the field)	(theoretical) Auditory methods. Style of writing on the blackboard. Dialogue style Direct. (practical) Assigning tasks and reporting.	Quizzes, assignments, discussions

11. Course Evaluation

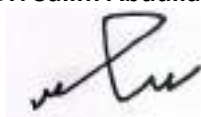
	Evaluation methods	Evaluation date (week)	Degree	Percentage weight %
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Short test (1) Quiz	Sixth week	2	2
4	Short test (2) Quiz	Fourteenth week	2	2
5	Short test (3) Quiz	Fifteenth week	1	1
6	Semester test (1)	Sixth week	7.5	7.5
7	Semester test (2)	Eleventh week	7.5	7.5
8	Final theoretical test	Final semester test	40	40
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	Third and fifth week	2	2

11	Practical short test (1) Quiz	First week	1	1
12	Short practical test (2) Quiz	Fourth week	0.5	0.5
13	Short practical test (3) Quiz	Fourteenth week	1	1
14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5	5.5
15	Final practical test	Final semester test	20	20
	Total	100	100%	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Cultivation of industrial crops in Iraq (Dr. Abdul Hamid Ahmed Al-Younis, Mr. Abdul Sattar Abdullah Al-Kuraimi). Fiber crops / Dr. Iyad Talaat Shaker
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Fiber Plants Biology, Biotechnology and Applications / K.G. Ramawat and M.R. Ahuja (2016)
Electronic References, Websites	Mesopotamia Agriculture Magazine - Crop science

**Chairman of the Scientific
Committee**
Dr. Salim Abdullaah




Head of Department
Moyassar Mohammed Aziz



Course Description Form

1. Course Name:
Cereal Crops
2. Course Code:
CECR361
3. Semester / Year:
2026-2025
4. Description Preparation Date:
1/2/2026
5. Available Attendance Forms:
Attended
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours including 2 Theoretical + 4 Practical / 4 Unit
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Zaid Mohammed Talal Alhabbar Email: zaid.alhabbar@uomosul.edu.iq
8. Course Objectives
- Learn about the most important countries producing, exporting and importing grain crops in general - Learn about the economic importance, production centers, the original habitat the emergence of the wheat crop, and the appropriate environment for its growth - Determines the important stages in the vegetative and fruitful growth stage the wheat crop and the most important divisions according to chromosomes and temperatures. - Identify the appropriate conditions for growing wheat in the northern and southern regions of Iraq - Understands what the agricultural cycle is, how it is conducted, and what are the benefits and advantages of the agricultural cycle - Learn about the stages of wheat flour production and the relationship of protein to the quality of wheat flour - Learn about the most important insects, diseases and pests that affect wheat crops and how to combat them - Learn about the economic importance, production centers, the original habitat the emergence of the barley crop, and the appropriate environment for its growth - Learn about the economic importance, production centers, the original habitat the emergence of the rice crop, and the appropriate environment for its growth - Learn about the most important methods of cultivation of rice and the stages the pruning process

- Learn about the economic importance, production centers, the original habitat, the emergence of the yellow corn crop, and the appropriate environment for growth
- Learn about the processes of soil service, such as plowing, cultivation, and fertilization, on the productivity of the yellow corn crop

9. Teaching and Learning Strategies

Theoretical: - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning tasks and reporting - The student is assigned to prepare reports based on his own diligence and prepared for discussion with the students	Practical - Assigning group work to reveal leadership skills - Assigning tasks and a report for each lecture
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical + 3 Practical	a1: identify the most important countries producing grain crops - identify the most important countries exporting grain crops - identify the most important countries importing grain crops - memorize the botanical division of grain crops by kingdom, family, type and gender a9: learn about the general botanical description of the shoots of grains	Theoretical: economic importance For grain crops Practical: General botanical description For grain crops	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
2	2 Theoretical + 3 Practical	a2: explains the economic importance of the wheat crop - wheat production centers in the world and Iraq determines the appropriate temperatures for the growth of the wheat crop - determines the humidity and rain suitable for the growth of the wheat crop - divides the wheat crop into types based on the conditions suitable for its growth	Theoretical: (wheat) Practical: botanical description of wheat crop	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions

		a10: learn about the botanical description of the vegetative and fruit collection of the wheat crop			
3	2 Theoretical + 3 Practical	: b1 identify the vegetative and fruiting phases - learn about the division of wheat according to the group of chromosomes, mentioning examples - learn about the division of wheat according to the temperatures suitable for its growth, mentioning examples - learn about the varieties of wheat b5: learn about the botanical description of the vegetative and fruit collection of the wheat crop	Theoretical: growth stages of wheat Practical: botanical description of a crop Wheat	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
4	2 Theoretical + 3 Practical	b2: identifies the most important main components of the wheat grain - classifies wheat varieties based on protein content - identifies the appropriate conditions for cultivation according to the northern and southern regions of Iraq - distinguishes the most important differences between soft and regular wheat varieties b6: identify the botanical description of the vegetative and fruiting systems of the barley crop	Theoretical: Nutritional value of grains Wheat Practical: botanical description of barley crop	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
5	2 Theoretical + 3 Practical	a3: understands what the agricultural cycle is and how to conduct it - understands what the term yoke and yoke (fallowing) is - recognizes the most important benefits of the plowing process - recognizes the appropriate planting time for wheat in the northern and southern regions of Iraq - a11: learn about the botanical description of the vegetative and fruiting systems of the barley crop	Theoretical: Wheat in the agricultural cycle Practical: Botanical description of the barley crop	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
6	2 Theoretical + 3 Practical	a4: determines the most important factors that lead to failure and how to reduce it - knows the extent of the decrease	Theoretical: Harvest of wheat crop	Theoretical: auditory methods	Short exams, assignment of duties, discussions

		occurring at different growth stages of wheat - determines the harvest date for wheat - differentiates between harvesting methods - advantages of mechanical harvesting a12: learn about the botanical description of the vegetative and fruit collection of the rice crop	Practical: Botanical description of the rice crop	Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	
7	2 Theoretical + 3 Practical	b3: enumerate the most important diseases that infect wheat - distinguish the most important pathological symptoms for each disease - methods of resistance to each disease - enumerate the most important insects that infect wheat - distinguish the most important pathological symptoms of each insect - methods of control for each insect b7: identify the botanical description of the vegetative and fruiting systems of the yellow corn crop	Theoretical: Pests affecting wheat Practical: Botanical description of the yellow corn crop	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
8	2 Theoretical + 3 Practical	a5: explains the economic importance of the barley crop - barley production centers in the world and iraq - identify the original habitat and emergence of the barley crop and the environment suitable for its growth - distinguishes between wheat and barley plants - determines the appropriate temperatures for the growth of the barley crop - divides the barley crop into types based on the conditions suitable for its growth a13: learn about the botanical description of the vegetative and fruiting systems of the white corn crop	Theoretical: barley Practical: botanical description of white corn crop	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
9	2 Theoretical + 3 Practical	a6: explains the economic importance of the rice crop - rice production centers in the world and iraq - identifies the original habitat and emergence of the rice crop and the environment suitable for its growth - identifies the	Theoretical: rice Practical: botanical description of millet crop	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style	Short exams, assignment of duties, discussions

		three stages of rice development - determines the appropriate temperatures for the growth of the rice crop - identifies the humidity and rain suitable for the growth of the rice crop - identifies the growth phases six in rice crop a14: identify the botanical description of the vegetative and fruit collection of the millet crop		Practical: Assigning tasks and reporting	
10	2 Theoretical + 3 Practical	a7: learn about the most important cultivation methods for the rice crop - advantages of growing rice by seedling method - determine the appropriate amount of seed - determine the appropriate amount of fertilization and irrigation - learn about the stages of preparing the rice crop for consumption - learn about quality cooking methods - learn about the most important diseases and insects that infect rice a15: learn about the botanical description of the vegetative and fruiting systems of the oat crop	Theoretical: The location of rice in the course agricultural Practical: Botanical description of the oat crop	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
11	2 Theoretical + 3 Practical	a8: explains the economic importance of the yellow corn crop - centers of yellow corn production in the world and iraq - identifies the original habitat and emergence of the yellow corn crop and the environment suitable for its growth - determines the appropriate temperatures and humidity for the growth of the yellow corn crop a16: learn about the botanical description of the vegetative and fruit collection of the rye crop	Theoretical: yellow corn Practical: Botanical description of the rye crop	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
12	2 Theoretical + 3 Practical	b4: learn about the appropriate method and depth of plowing - learn about the appropriate amount and time to add fertilizer - learn about the effect of nitrogen on the growth stages of the yellow	Theoretical: Soil service processes Practical: agricultural courses	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style	Short exams, assignment of duties, discussions

		corn plant - learn about the important methods for raising and improving the yellow corn crop - learn about the most important insects and diseases that affect the yellow corn crop and ways to combat them b8: enumerate agricultural cycles for grain crops		Practical: Assigning tasks and reporting	
13	2 Theoretical + 3 Practical	:d1 suggests the most important differences and similarities in phenotypic appearance and nutritional value between grain crops d2: suggests the most important differences in appearance and nutritional value between grain crops	Theoretical + practical: report and discussion	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
14	2 Theoretical + 3 Practical	e1: estimate the most important parts and main stages in silo grains - the most important laboratory equipment in the silo laboratory e3: estimates the most important parts and main stages in the grain silo - and the most important laboratory equipment in the silo	Theoretical + practical: A field visit to the grain silo in Mosul	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions
15	2 Theoretical + 3 Practical	e2: decides how to conduct the process of examining and certifying seeds e4: decides how to conduct the process of examining and certifying seeds	Theoretical + practical: A field visit to examine and certify seeds	Theoretical: auditory methods Style of writing on the blackboard Direct dialogue style Practical: Assigning tasks and reporting	Short exams, assignment of duties, discussions

11. Course Evaluation

	Evaluation methods	Evaluation date (week)	Degree	Percentage weight %
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Short test (1) Quiz	Sixth week	2	2
4	Short test (2) Quiz	Fourteenth week	2	2
5	Short test (3) Quiz	Fifteenth week	1	1
6	Semester test (1)	Sixth week	7.5	7.5
7	Semester test (2)	Eleventh week	7.5	7.5
8	Final theoretical test	Final semester test	40	40

9	Practical field project	The fifteenth week	5	5
10	Field evaluation	Third and fifth week	2	2
11	Practical short test (1) Quiz	First week	1	1
12	Short practical test (2) Quiz	Fourth week	0.5	0.5
13	Short practical test (3) Quiz	Fourteenth week	1	1
14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5	5.5
15	Final practical test	Final semester test	20	20
	Total	100	100%	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Younis, Dr. Abdel Hamid Ahmed, Mahfouz Abdel Qader Muhammad, Zaki Abdel Elias (1978). Grain production. Ministry of Higher Scientific Education - Iraq. University of Mosul. 369 pages
Main references (sources)	Grain and legume crops
Recommended books and references (scientific journals, reports...)	Non
Electronic References, Websites	Non

Course description of Field crop diseases

: Course Name	.1
Field crop diseases	
: Course Code	.2
FICD363	
Semester / Year : Annual	.3
2026–2025/First semter_third stage	
Date this description was prepared	.4
1/2/2026	
: Available forms of attendance	.5
In Class-InElectronic	
:Number of study hours (total)/number of units (total)	.6
unit hours / 3.575	
Name of the course administrator (if more than one name is mentioned)	.7
Dr. Raghad Nayif M,M,Amar munaf Ahmed	
Course objectives	.8
• The learner should be able to define the concept of disease and the information that must be available to know the medical history • Choosing the appropriateness of the factors affecting the disease and determining its ability to spread • Differentiate between types of pathogens and know all their classifications • Understanding the basics of modern planning to develop a program that explains the forms and patterns of plant diseases • Distinguishing between classes and sections of fungi according to the type of each class • Familiarity with the information the teacher needs and what is available to him to master his work • Identify plant diseases, symptoms and signs, and what must be taken into account when distinguishing between them • A comprehensive study of the various types of control, how to diagnose each disease, and determine the controls and conditions that must be observed when carrying out all instructions to carry out the control in the proper manner	
Teaching and learning strategies	.9
- Interactive lecture - Brainstorming - Dialogue and discussion - Field Training - Practical exercises - Field project - Self- education	

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
Semester exam 1, final exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	An overview of the concept of plant disease	a1 Identify diseases that spread in agricultural fields	1 theoretical	1
Short practical test1	Interactive lecture, brainstorming, dialogue and discussion, field training, self-learning	Laboratory and equipment	Gets acquainted with the laboratory and all laboratory equipment :c3	3 practical	
Semester exam 1, final exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	The importance of field crops	a2 Recognizes the economic importance of field crops and their relationship to diseases	1 theoretical	2
Direct drawing	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Laboratory working conditions	Familiar with all laboratory safety conditions :c6 when conducting laboratory experiments	3 practical	
Semester exam 1, final exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Knowledge of diseases and their history	Get to know a brief history of each disease :a3 spreading in agricultural fields	1 theoretical	3
Field evaluation	Interactive lecture, brainstorming, dialogue and discussion, field training, self-learning	Isolation and diagnosis of pathogens	Isolate the pathogens to be diagnosed :a2	3 practical	
Semester test 1, final test , report	Interactive lecture, brainstorming, dialogue and discussion, self-learning	The presence of pathogens, pathogenicity and Koch's hypotheses	Identify the organisms that cause plant diseases :a4 and understand the meaning of pathogenicity	1 theoretical	4
Practical short test 2 direct , drawing	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Optical microscopes in laboratories	Examine pathogens using optical microscopes :a1	3 practical	
Semester test 1, final test , report	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Symptoms and signs of disease in plant families	a5 Explains the difference between pathological symptoms and pathological signs	1 theoretical	5
Field evaluation	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Pathological causes and their relationship to girls	explains the most common pathogens that lead b6 to losses	3 practical	
Short test,	Interactive lecture,	Environmental Health	Explains the concept of plant pathology and its b1	1	6

final test	brainstorming, dialogue and discussion, self-learning		relationship to environmental health	theoretical	
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Agricultural food media	prepares different food mediaa7	3 practical	
Semester exam 2, final exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Types of weeds on field crops, their damages and methods of controlling them	The most important types of weeds and their :b2 harms	1 theoretical	
Field project	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	Laboratory diagnosis of diseases	Identify the mechanism of laboratory diagnosis :a2 of pathogens	3 practical	7
Semester exam 2, final exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	The importance of pathogens	Master the importance of pathogens and their :b3 relationship to plant health and environmental health	1 theoretical	
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Symptoms, signs, and life cycles	describes the most common symptoms of plant c2 diseases	3 practical	8
Semester exam 2, final exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Combating diseases using nanotechnology and nanomaterials	Master the importance of controlling plantb4 pathogens and diseases	1 theoretical	
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Taking samples from plant parts and soil	Proficient in the process of taking samples from c5 plant parts and soil	3 practical	9
Semester test2	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Modern diagnostic methods	Masters the importance of diagnosing plant b5 diseases by all modern means	1 theoretical	
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Preparing laboratory slides	Purification of pathogens and preparation of c1 laboratory slides	3 practical	10
Final test	Interactive lecture, brainstorming, dialogue	The importance of insect vectors	demonstrates the great importance of studying c1 insect vectors of pathogens	1 theore	11

	and discussion, self-learning			tical	
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Field visits	conducts a field visitd7	3 practical	
Final test	Interactive lecture, brainstorming, dialogue and discussion, self-learning	How to transmit disease and injury	suggests an appropriate method to control the c2 carrier of diseases and how to transmit and infect them	1 theoretical	12
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Sterilization methods	Evaluating the effectiveness of some :e4 sterilization methods	3 practical	
Final test	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Integrated control	Explains an ideal control program and suggests :c3 an optimal method for disease management and control	1 theoretical	13
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Methods of protecting field crops	He is familiar with the most important :b1 agricultural methods used to protect agricultural crops from infection	3 practical	
Short test, final test	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Discussion panel	He leads panel discussions on the critical :d1 importance of the spread of plant diseases and how to control them	1 theoretical	14
Short practical test3	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Artificial infection of laboratory plants	Learn how to prove pathogenicity by artificially a2 infecting tested plants	3 practical	
Short test, final test	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Disease risks to human health	Identify health risks, their impact on human e1 health, and the impact of negligence on public health	1 theoretical	15
Field project	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	Diagnosing pathological symptoms and signs	explains the difference between pathological b1 symptoms and pathological signs	3 practical	
Course evaluation .11					
Relative % weight	Class	Calendar date (week)	Calendar methods	T	

2.5	2.5	fourth week	Report 1	1
2.5	2.5	The fifth week	Report 2	2
2	2	sixth week	Quiz Short test (1)	3
2	2	The fourteenth week	Quiz Short test (2)	4
1	1	The fifteenth week	Quiz Short test (3)	5
7.5	7.5	the sixth week	Semester test (1)	6
7.5	7.5	The eleventh week is difficult	Semester test (2)	7
40	40	Final semester exams	Final theoretical test	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	The first week	Quiz Short practical test (1)	11
0.5	0.5	fourth week	Quiz Short practical test (2)	12
1	1	The fourteenth week	Quiz Short practical test (3)	13
5.5	5.5	Weeks 6, 8, 9, 10, 11, 12 and 13	Live drawings and homework	14
20	20	Final semester exams	Final practical test	15
%100	%100	100	the total	

Learning and teaching resources .12

Field crop diseases - Dr. Raqeeb Akef Al-Ani Demisermjidjergis	Required textbooks (methodology, if any)
Diseases of orchards and vegetables - Dasmir Mikhail Daabd al- Hamid - Tarabiyah Dr. Abd al-Jawad al- Zarari - University of Mosul Plant diseases - Dr. Muhammad Amer Fayyad and Muhammad Hamza - University of Basra Plant Diseases - written by George Akrios and translated by Damahmoud Musa Abba Arqoub Practical plant diseases - written by Abdulaziz Majeed Nakhilan - University of Basra -	Main references (sources)
	Recommended supporting books and references (scientific journals, (...reports
Google scholar Google chrome Google research Researchgate Journal of plant pathology	Electronic references, Internet sites

Practical subject teacher

M,M. Amar munaf Ahmed

Theoretical subject teacher

Dr. . Dr. Raghad Nayif

Course Description Form

1. Course Name:	
Legume crops	
2. Course Code:	
LECR362	
3. Semester / Year:	
2025/2026	
4. Description Preparation Date:	
1/2/2026	
5. Available Attendance Forms:	
presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(75 hours) (4 units) (2 theoretical + 4 practical)	
7. Course administrator's name (mention all, if more than one name)	
Name: Muthanna Abdulbaset Ali Email: drmothanaalameri86@uomosul.edu.iq Name: Raghad ayman Email: raghad.hadid@uomosul.edu.iq	
Course Objectives	
Course Objectives theoretical: - Enabling the student to understand and understand what is related to leguminous crops and their relationship to the formation of bacterial nodules and nitrogen fixation symbiotically and how they grow. - Enabling the student to know the most important ways to distinguish between different legume crops. - Enabling the student to become familiar with the most important sources of improving these crops in order to increase productivity and improve quality. - Enabling the student to discover the mechanisms of fixing atmospheric nitrogen and reducing the use of chemical fertilizers.	• • •

- The student can judge the most important problems and obstacles facing increasing the productivity of leguminous crops.

8. Teaching and Learning Strategies

Strategy	theoretical: - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning tasks and reporting - Presentations of models of nitrogen fixation and different legume crops
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9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
<u>1</u>	2 Theoretical 3 practical	b1:Theoretical: Explains the concept of crop plant development and how the introduction process is carried out b6:practical : Examines various samples of leguminous crops and seed legumes and their importance in the growth conditions of leguminous crops and examines and detects the formation of bacterial nodules and fixation of nitrogen symbiotically.	Theoretical: learning about the development of crop plants and how to perform the introduction process. Practical	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
2	2 Theoretical 3 practical	c1:Theoretical: Explains the most important climatic and soil needs of legumes c4:practical : Determines which samples of bacterial nodules and symbiotic nitrogen fixation are best	Theoretical: Climatic and soil needs of legumes. practical : Mutually pollinated plant groups	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
3	2 Theoretical 3 practical	b2:Theoretical: It is clear of the most important factors affecting the formation of bacterial nodules and nitrogen fixation symbiotically b7:practical : Discover how seed legumes spread and the causes of nutritional and agricultural problems	Theoretical: Factors affecting the formation of bacterial nodules and nitrogen fixation symbiotically. practical : Spread of seed legumes	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions

4	2 Theoretical 3 practical	b3:Theoretical: It judges the extent of consumers' exposure to agricultural problems and some nutritional problems of leguminous crops b8:practical : Measures which types of rhizobia infect the roots of legumes and promotes their spread and their most appropriate use for food preservation	Theoretical: Agricultural problems and some nutritional problems of leguminous crops. practical : Types of rhizobia that infect the roots of legumes and enhancing their spread and use	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
5	2 Theoretical 3 practical	b4:Theoretical: Mastering methods of protecting and preserving legumes using various materials and methods c5:practical : It distinguishes the plant parts of the bean crop from other plants	Theoretical: Bean crop Practical Bean crop	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
6	2 Theoretical 3 practical	a1:Theoretical: Learn about the economic importance of chickpeas - appropriate environmental conditions - operations to service the soil and prepare the land for planting - date of planting - quantity of seeds / D - methods of cultivation - operations to service the crop after planting - diseases and pests that affect the crop and ways to combat them - harvesting the crop c6:practical : It distinguishes the plant parts of the chickpea crop from other plants	Theoretical: chickpea crop practical : Chickpea crop	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
7	2 Theoretical 3 practical	a2: Theoretical: Learn about the economic importance of lentils - appropriate environmental conditions - soil service operations and preparing the land for cultivation - planting date - seed quantity/d - cultivation methods - crop service operations after planting - diseases and pests that affect the crop and ways to combat them - harvesting the crop b9: practical : It distinguishes the plant parts of the lentil crop from other plants	Theoretical: Lentil crop practical : Lentil crop	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
8	2 Theoretical 3 practical	c2: Theoretical: Explains the most important microorganisms	Theoretical: Bean yield practical : Phaseolus crop	Theoretical: Audio methods, writing style on	Short exams, assignments, discussions

		(bacteria) and their relationship to beans and their products b10: practical : Testing types of canned beans		the blackboard , dialogue style Direct practical : Assigning tasks and reporting	
9	2 Theoretical 3 practical	a3: Theoretical: knowledge of the economic importance of soybeans - appropriate environmental conditions - soil service operations and preparing the land for cultivation - planting date - seed quantity/d - cultivation methods - crop service operations after planting - diseases and pests that affect the crop and ways to combat them - harvesting the crop b11: practical : He experiments with different types of media specific to the soybean crop practical : He experiments with different types of media specific to the soybean crop	Theoretical: soybean crop practical : Soybean crop	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
10	2 Theoretical 3 practical	a4: Theoretical: Learn about the economic importance of mung beans - appropriate environmental conditions - soil service operations and preparing the land for cultivation - planting date - seed quantity/d - cultivation methods - crop service operations after planting - diseases and pests that affect the crop and ways to combat them - harvesting the crop b12:practical: He examines various samples of the field's pistachio crop to determine their suitability for cultivation	Theoretical: Mung bean crop Practical: Field pistachio crop :	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
11	2 Theoretical 3 practical	a5: Theoretical: It determines the appropriate environmental conditions for growing peas - soil service operations and preparing the land for planting - planting date - seed quantity/d - cultivation methods - crop service operations after planting - diseases and pests that affect the crop and ways to combat them - harvesting the crop	Theoretical: pea crop practical : Mung crop	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions

		e2: practical : Shows the plant parts of the mung crop			
12	2 Theoretical 3 practical	b5: Theoretical: Runs discussion panels on leguminous crops and ways to improve production b5:practical : Shows the plant parts of the cowpea crop	Theoretical: report and discussion practical : Cowpea crop	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
13	2 Theoretical 3 practical	d1: Theoretical: Identifying health risks from the use of chemicals, their impact on human health, and the impact of negligence on public health b5: practical : Determines the validity of different samples from the jar	Theoretical:: Solving a problem practical : Harthman crop	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
14	2 Theoretical 3 practical	e1: Theoretical: It proposes a suitable method for growing beans and foods that can be produced and applied in food production institutions e1: practical : Explains the plant parts of the pea crop	Theoretical: solving a problem practical : Pea crop	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions
15	2 Theoretical 3 practical	c3: Theoretical: It proposes a suitable method for growing beans and foods that can be produced and applied in food production institutions c2: practical : Aware of the main problems facing the cultivation and production of leguminous crops	Theoretical: solving a problem practical : Solve the problem	Theoretical: Audio methods, writing style on the blackboard , dialogue style Direct practical : Assigning tasks and reporting	Short exams, assignments, discussions

10. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

	Calendar methods	Calendar date (week)	Degree	Relative weight %
1	Report 1	4 week	25	25
2	report 2	5 Weeks	25	25
3	Short test (1) Quiz	6 Weeks	2	2
4	Short test (2) Quiz	14 Weeks	2	2
5	Short test (3) Quiz	15 Weeks	1	1
6	Midterm Exam 1	6 Weeks	7.5	7.5
7	Midterm Exam 2	11 Weeks	7.5	7.5
8	Theoretical final	Final exams test	40	40

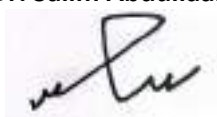
9	practical experience	15 Weeks	5	5
10	practical test	3 and 5 Weeks	2	2
11	Short test (1) Quiz	1 Weeks	1	1
12	Short test (2) Quiz	4 Weeks	0.5	0.5
13	Short test (3) Quiz	14 Weeks	1	1
14	Live drawings and homework	6,9,10,11,12,13 Weeks	5.5	5.5
15	Final practical test	Final exams test	20	20
	the total	100	100	100

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Legume crops (theoretical and practical parts) Dr. Majeed Mohsen Al Ansari
Main references (sources)	Field crop production d. Mohsen Al-Janabi and Dr. Younis Abdel Qader Ali 1997.
Recommended books and references (scientific journals, reports...)	Lectures compiled from recent books posted on the Internet
Electronic References, Websites	Wikipedia encyclopedia (online)

Theoretical subject teacher: Assaint. prof. Dr.. Muthanna Abdul baseit Ali, practical subject teacher: M.M. Raghad ayman

**Chairman of the Scientific
Committee
Dr. Salim Abdullaah**




**Head of Department
Moyassar Mohammed Aziz**



Course Description Form

1. Course Name: Land Cultivation		
2. Course Code: LACU461		
3. Semester / Year: The first 2025/2026		
4. Description Preparation Date: 1/9 /2025		
5. Available Attendance Forms: Attended		
6. Number of Credit Hours (Total) / Number of Units (Total): (75 hours) (3.5 units)		
7. Course administrator's name (mention all, if more than one name)		
1- Name: Mohammed Ameen Haji Email: msc.mohammed.ameen@uomosul.edu.iq 2- Name: Raghad ayman abdulrazzaq Email: raghad.hadid@uomosul.edu.iq		
8. Course Objectives		
Course Objectives (theoretical) 1- Enabling the student to understand and assimilate the scientific material of the program in terms of understanding, memorization, analysis, and synthesis, while acquiring practical skills in identification, diagnosis, and discrimination, and providing the student with theoretical information on how to follow modern methods of land cultivation. 2- Identify the mechanism of salinity damage to plants. 3- Identify the factors for increasing productivity in field crop fields..	(practical) 1- Learn about farming methods. 2- Learn about the effects of salinity on agricultural crops. 3- Learn about irrigation methods.	
9. Teaching and Learning Strategies		
Strategy	(theoretical) Interactive lecture Brainstorming Dialogue and discussion Assigning tasks and reporting	(practical) Assignment to team work Assigning tasks and reporting

		He is assigned to prepare a report entitled from his diligence It is prepared for discussion with students			
100Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3 practical	(theoretical) Known as drought (practical) Enumerates the types of irrigation	(theoretical) Dry farming (practical) Irrigation	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance
2	2Theoretical 3 practical	(theoretical) It represents the soil (practical) Shows the effect of salt stress on plant germination and growth	(theoretical) the soil (practical) Salt stress	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance

3	2 Theoretical 3 practical	(theoretical) Mention the factors for increasing productivity in field crop fields (practical) Explains farming methods in terms of performance	(theoretical) Factors that increase productivity in fields Crops (practical) Farming methods	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance
4	2 Theoretical 3 practical	(theoretical) Enumerates the conditions that must be met by seeds prepared for planting (practical) Shows the environmental factors that affect germination	(theoretical) Agriculture seeds (practical) Germination	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance
5	2 Theoretical 3 practical	(theoretical) List the causes of seed damage (practical) Explains the benefits of storing seeds	(theoretical) Quality of agricultural seeds (practical) Store seeds	(theoretical) Auditory methods. Style of writing on the blackboard.	Short exams, assignment of homework, discussions, student

				Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	attendance
6	2 Theoretical 3 practical	(theoretical) Explains the importance of piety (practical) Explains the reasons for the appearance of abnormal signs	(theoretical) Piety (practical) Gestures	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance
7	2Theoretical 3practical	(theoretical) Shows plants that do not collect salts (practical) Explains the osmotic effect	(theoretical) The nature of salt-tolerant plants (practical) The effect of soil salinity on plant growth	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom.	Short exams, assignment of homework, discussions, student attendance

				(practical) Assigning tasks and reporting.	
8	2 Theoretical 3 practical	(theoretical) List the methods of nitrogen fixation (practical) Shows symptoms of nitrogen deficiency	(theoretical) Nitrogen element and its fixation (practical) Pictures of nitrogen in the ground agricultural	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance
9	2Theoretical 3 practical	(theoretical) Enumerates the steps used to treat stressed ground (practical) Explains methods of adding fertilizers	(theoretical) Types of land defects (practical) Fertilizers - fertilization	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance
10	2Theoretical 3 practical	(theoretical) Know the agricultural cycle	(theoretical) Agricultural cycle (practical)	(theoretical) Auditory methods.	Short exams, assignment

		(practical) It enumerates the conditions that must be met in the thinning process	Patching - cutting - hoeing	Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	of homework, discussions, student attendance
11	2Theoretical 3 practical	(theoretical) Shows the effective foundations for increasing productivity (practical) Shows the notes that should be taken into account before starting Harvesting process	(theoretical) Post-harvest losses (practical) harvest	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance
12	2Theoretical 3 practical	(theoretical) Demonstrates mutual benefit (practical) Demonstrates stillness	(theoretical) Biological factors and their impact on Production and distribution of field crops (practical) Dormancy - hibernation	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style.	Short exams, assignment of homework, discussions, student attendance

				Electronic class Google Classroom. (practical) Assigning tasks and reporting.	
13	2Theoretical 3 practical	(theoretical) Shows crop service operations (practical) Demonstrates the use of agricultural mechanization	(theoretical) Energy expended for service operations (practical) Some processes are used to increase efficiency energy	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance
14	2Theoretical 3 practical	(theoretical) Shows the damage caused by salinity to plants (practical) Shows the effect of soil plate on reproduction	(theoretical) Foundations of farming in desert lands (practical) Indirect effects of salts On plants	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and	Short exams, assignment of homework, discussions, student attendance

				reporting.	
15	2Theoretical 3 practical	(theoretical) Explains land plants according to their classification (practical) Explains the effects of salinity on... Agricultural crops	(theoretical) Agriculture guides (practical) Manifestations of the effect of salinity on Agricultural crops	(theoretical) Auditory methods. Style of writing on the blackboard. Direct dialogue style. Electronic class Google Classroom. (practical) Assigning tasks and reporting.	Short exams, assignment of homework, discussions, student attendance

11.Course Evaluation

	Calendar methods	(Calendar date (week	Degree	Relative weight%
1	Theoretical final report + practical experience reports	theory is 15 weeks	7Theoretical 6 practical	13%
2	Short test Quiz(1)	week (3)	4Theoretical 2 practical	6%
3	Midterm Exam (theoretical and (practical	week (9)	10Theoretical + 5 practical	15%
4	Short test Quiz(2)	week (12)	4Theoretical 2 practical	60%
5	Final practical test	Practical exams week	20%	40%
6	Final theoretical test	theoretical exams week	40%	40%
	Total		100%	100%

12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Land cultivation: Prof. Dr. Medhat Majeed Al-Sahuki.
Main references (sources)	1- Renewable natural resources in arid and semi-arid areas. Year (2005), written by Dr. Atallah Ahmed Abu Hassan and others. 2- Breeding crops to withstand salt stress. Written by Professor Dr. Medhat Majeed Al-Sahuki (2013).
Recommended books and references (scientific journals, reports...)	All books, scientific journals, and reports specialized in land cultivation.
Electronic References, Websites	All references and Internet sites interested in land cultivation.

Theoretical subject teacher : Mohammed Ameen Haji

Practical subject teacher : Raghad ayman abdulrazzaq

Chairman of the Scientific Committee : Prof. Dr. Salim Abdullah Younis

Head of the Field Crops Department : Dr. Maysar Mohammed Aziz

Course Description Form

1. Course Name:					
Research Project 1					
2. Course Code:					
REPR402					
3. Semester / Year:					
First Semester (Autumn) / 2025-2026					
4. Description Preparation Date:					
1/9/2025					
5. Available Attendance Forms:					
Attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
45 Practical hours / 1.5 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Lecturer dr. Mayssar Muhammad Aziz moyassar_aziz@uomosul.edu.iq					
8. Course Objectives					
- Course Objectives			- To be able to analyze data and prepare results to manage the project scientifically. - The student must have the ability to determine agricultural project. - investment priorities and implement them properly and successfully. - The student must be familiar with establishing agricultural projects and investing in them scientifically and economically.		
9. Teaching and Learning Strategies					
- Strategy			- Effective lectures - Brainstorming - Dialogue and discussion - Assigning tasks		
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3 Practical	c1: The student chooses a subject for his research	Choose the research subject	Interactive lecture, brainstorming,	Reports

				dialogue and discussion.	
2	3 Practical	c2: The student proposes a plan for his research	Scientific research plan (research proposal)	Interactive lecture, brainstorming, dialogue and discussion.	Reports
3	3 Practical	b1: The student documents the data and information collected	Collect data and information's	Interactive lecture, brainstorming, dialogue and discussion.	Reports
4	3 Practical	b2: The student chooses the samples and research tools required	choose Samples and research tools	Interactive lecture, brainstorming, dialogue and discussion.	Reports
5	3 Practical	c3: The student writes his graduation research in his own style	Procedures for writing research project	Interactive lecture, brainstorming, dialogue and discussion.	Reports
6	3 Practical	a1: The student learns about the formal controls for his graduation research project	Formal controls in the research project	Interactive lecture, brainstorming, dialogue and discussion.	Reports
7	3 Practical	a2: The student discusses with his supervisor the requirements for the theoretical part of the research	The theoretical part	Interactive lecture, brainstorming, dialogue and discussion.	Reports
8	3 Practical	c4: The student gives examples of previous studies for his research	Presenting previous studies	Interactive lecture, brainstorming, dialogue and discussion.	Reports
9	3 Practical	a3: The student presents to his supervisor the theories and scientific analysis of his subject	Theories and scientific analysis of the subject research	Interactive lecture, brainstorming, dialogue and discussion.	Reports
10	3 Practical	a4: The student discusses with the supervisor the requirements of the practical part of the research	the practical part	Interactive lecture, brainstorming, dialogue and discussion.	Reports
11	3 Practical	b3: The student tests the research data statistically	Analyze data statistically	Interactive lecture, brainstorming, dialogue and discussion.	Reports
12	3 Practical	b4: The student tabulates statistical data for research	Writing tables	Interactive lecture, brainstorming, dialogue and discussion.	Reports
13	3 Practical	a5: The student discusses his research data to derive useful tabular values	Results and conclusions	Interactive lecture, brainstorming, dialogue and discussion.	Reports
14	3 Practical	b5: The student adopts the results of his research	Recommendations	Interactive lecture, brainstorming, dialogue and discussion.	Reports
15	3 Practical	b6: The student presents the sources used in the research	Writing sources	Interactive lecture, brainstorming, dialogue and discussion.	Reports

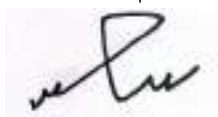
11. Course Evaluation

	Sequence	Evaluating style, date and marks	Relative weight
	1	Distributing the grade from 50 over 14 weeks according to the tasks assigned to the student by the project supervisor, for example collecting resources, writing the project, analyzing data, etc.	50 %
	2	The student is discussed by a committee composed of three faculty members in week 15 and is awarded a grade out of 50 according to what he has accomplished in the project.	50 %
		The total final score is 100	100 %

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Methodical books
Main references (sources)	– The central library at the university, the college – library
Recommended books and references (scientific journals, reports...)	Research from specialized scientific journals
Electronic References, Websites	Research, letters and dissertations from the Internet.

رئيس اللجنة العلمية
أ.د. سالم عبد الله يونس




رئيس القسم
أ.م.د. ميسر محمد عزيز



Course Description Form

Molecular Genetics

1.	Course Name:			
	Molecular Genetics			
2.	Course Code:			
	MOGE462			
3.	Semester / Year:			
	Frist semester/ Four stage/2025-2026			
4.	Description Preparation Date:			
	1-9-2025			
5.	Available Attendance Forms:			
	My presence + Electronic			
6.	Number of Credit Hours (Total) / Number of Units (Total)			
	3 theoretical hours / 3 units /45 hours			
7.	Course administrator's name (mention all, if more than one name)			
	Pro.Dr. Wiam Yahya Rasheed Al-Shakarchy Abdullah Khder Mohammad			
8.	Course Objectives			
Course Objectives	- Enable the student to understand and understand plant genetics - Realizing the relationship of this science to the possibility of developing field crops by providing the student with theoretical and practical materials on plant genetics. - Familiarity with how to exploit this science in developing field crops - A comprehensive study of Mendel's genetic laws - Exploring the most important theories of geneticists and their role in developing this science			
9.	Teaching and Learning Strategies			
Strategy	- Interactive lecture -Brainstorming - Dialogue and discussion -Field Training - Practical exercises - Field project -Self-education			

10. Course Structure

Wee k	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3 Theoretical	a1: Identify cells and their types	The cell and its components	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short Test 1
2	3 Theoretical	c1: Explain the methods of cellular division	Cellular division	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short Test 2 and Homework
3	3 Theoretical	b1: Explain genetic material	Genetic material	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Field Project
4	3 Theoretical	a2: Identify the replication of genetic material	genetic material is replicated	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short Test 3
5	3 Theoretical	a3: Understand the chemical components of genetic material	Chemical composition of genetic material	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short Test 4 and Homework
6	3 Theoretical	c2: Explain the genetic code	Genetic code	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester test 1
7	3 Theoretical	a4: Describe the chemical structure of a chromosome	Chemical structure of the chromosome	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Homework
8	3 Theoretical	a5: Identify gene expression and protein synthesis	Gene expression and protein synthesis	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Field Assessment
9	3 Theoretical	b2: Explain the concept of how gene expression is regulated in prokaryotes and eukaryotes	Regulation of gene expression in prokaryotes and eukaryotes	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Homework
10	3 Theoretical	b3: Identify Genetic material outside the chromosomes	Genetic material outside the chromosomes	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Field Assessment and Homework
11	3 Theoretical	b4: Identify DNA in mitochondria	DNA in mitochondria	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short Test 5

12	3 Theoretical	e1: Identify and characterize how chloroplasts are obtained	Problem solving	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Report and Discussion
13	3 Theoretical	c3: Explain the types of knowledge of gene transfer	Genetic transfer	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester test 2
14	3 Theoretical	d1: Facilitate discussion sessions to train students on gene identification methods	Report and discussion	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Report and Discussion
15	3 Theoretical	a6: Identify the applications of genetic engineering	Applications genetic engineering	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short Test 6

11- Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

NO.	Calendar methods	Calendar date (week)	Class	Relative weight%
1	Report 1	12	2.5	2.5
2	Report 2	14	2.5	2.5
3	Quiz (1)	1	2	2
4	Quiz (2)	2	1	1
5	Quiz (3)	4	1	1
6	Quiz (4)	5	1	1
7	Quiz (5)	11	2	2
8	Quiz (6)	15	1	1
9	Semester test 1	6	7.5	7.5
10	Semester test 2	13	7.5	7.5
11	Practical field project	3	5	5
12	Field evaluation	8	1	1
13	Field evaluation	10	1	1
14	Homework	2,5,7,9,10	5	5
15	Final theoretical test	Final semester exams	60	60
	The total	100	%100	%100

12-Learning and Teaching Resources	
Required textbooks (curricular books, if any)	A- Book: Basics of Genetics (Dr. Adnan Hassan Muhammad Al-Adhari) / Ministry of Higher Education - University of Mosul
Main references (sources)	A- Book: General Inheritance (Dr. Abdul Hussein Al-Faisal)
Recommended books and references (scientific journals, reports...)	A. Book: Genetics (Dr. Makram Diaa Shakara)
Electronic References, Websites	Nothing

Theoretical Lecturer
Pro.Dr. Wiam Yahya Rasheed Al-Shakarchy

Practical Lecturer
Abdullah Khder Mohammad

Chairman of the Scientific Committee
Prof.Dr. Prof.Dr. Salem Abdullah Younis AL-Jubouri

Head of Field Crops Dep.
Assist.Prof.Dr. Moyassar Mohammed Aziz

Field crop management course description

1. Course Name:					
Field crops management					
2. Course Code:					
FICM460					
3. Semester / Year:					
First semester (Autumn) 2023–2024					
4. Description Preparation Date:					
1/9/2023					
5. Available Attendance Forms:					
My presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical hours / 3 practical hours (75 hours) / 3.5 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Waleed Khalid Shahatha, Abdullah Khudair Muhammad Email: w.khalid83@uomosul.edu.iq					
8. Course Objectives					
Course Objectives		- Teaching field crops students knowledge of field crop management. - Teaching crop students to work in institutions and ministries related to agricultural sciences. - Preparing scientific and academic researchers to work in the field of field crop management of all types. - Increasing students' ability to work in the private and governmental agricultural sectors.			
9. Teaching and Learning Strategies					
Strategy		- Interactive lecture - Brainstorming - Dialogue and discussion - Assigning tasks and reporting			
10. Course Structure					
Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	2Theoretical	a1: Recognizes the importance of increasing production and its relationship to human life	Humans and food	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	b2: It shows the suitability and preparation of the land for agriculture	Land preparation and preparation	Assigning tasks and reporting	
2	2Theoretical	a2: Learn about land service processes and their relationship to crop growth	Earth service	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	b3: Explains the process of tillage and its benefits	Tillage, its conditions and disadvantages	Assigning tasks and reporting	
3	2Theoretical	a3: Learn about the importance of irrigation systems and the nature of irrigation waterers	Irrigation channels	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	b4: Measures the appropriate planting depth for planting grain crops	Planting depth	Assigning tasks and reporting	
4	2Theoretical	e1: Aware of the correct and appropriate methods for extracting references	Solve problem	Dialogue and discussion	Short exams, assignments, discussions
	3practical	e2: Decide on the correct and appropriate methods for extracting scientific references	Solve problem	Assigning tasks and reporting	
5	2Theoretical	a4: Learn about crop service operations, including planting dates and their impact on calculating	Crop service	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions

		the thermal units needed for crop growth			
	3practical	b5: Discover the types of plows used in the plowing process	Types of plows	Assigning tasks and reporting	
6	2Theoretical	a5: Learn about plant density and seed quantities according to the crop	Plant density and seed quantities according to crop	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	b6: Discovers the best farming methods	Farming methods	Assigning tasks and reporting	
7	2Theoretical	a6: Knows fertilization and the role of major, secondary and rare fertilizers in growth and increasing yield	Fertilization	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	b7: Discovers the importance of dividing and planning fields for crops	Field division and layout	Assigning tasks and reporting	
8	2Theoretical	a7: Knows seeds and explains the importance of seed quality	Seeds	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	b8: It benefits from the process of softening and leveling the soil for the purpose of agriculture	Smoothing and machines used in the smoothing process	Assigning tasks and reporting	
9	2Theoretical	a8: Compares animal dung and green manure	Soil improvers	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	c1: Distinguishes between flat lands and uneven lands	The flatness of the earth	Assigning tasks and reporting	
10	2Theoretical	a9: Learn about the most important herbicides	Combating jungles	Interactive lecture, brainstorming, dialogue	Short exams, assignments, discussions

		common in major crops		and discussion	
	3practical	b9: Tests appropriate planting dates for growing field crops in Iraq	Planting dates	Assigning tasks and reporting	
11	2Theoretical	a10: Defines irrigation, and explains the role of water in dissolving elements, absorption, and plant growth	Crop irrigation	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	c2: Determines the most appropriate depth for planting plants	Depths of agriculture	Assigning tasks and reporting	
12	2Theoretical	b1: It explains agriculture in prose, passing by terraces, agriculture in lines, and its importance for the type of crop	Methods and depth of cultivation	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	c3: Distinguish between the method of cutting and hoeing	Operations performed after transplantation	Assigning tasks and reporting	
13	2Theoretical	a11: Determines temperature, light, quality, intensity, and duration, humidity, and air	Crop adaptation	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	b10: Discover types of irrigation systems	Irrigation and its types	Assigning tasks and reporting	
14	2Theoretical	a12: Learn about the most important insect diseases that affect field crops and how to prevent them before they appear	Disease and insect control	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	c4: He tests the types of nitrogen	Fertilizers and methods of adding	Assigning tasks and	

		fertilizers and what level of fertilizer is appropriate for each field crop	them	reporting	
15	2Theoretical	a13: Knows the plant cell and its organelles, the root, stem, and leaves	Plant organs and their functions	Interactive lecture, brainstorming, dialogue and discussion	Short exams, assignments, discussions
	3practical	b11: Shows ways to combat weeds growing in fields of field crops	Weeds and ways to combat them	Assigning tasks and reporting	

11. Course Evaluation

Sequence	Calendar methods	Calendar date (week)	Class	Relative weight %
1	Report 1	fourth week	2.5	2.5
2	Report 2	fifth week	2.5	2.5
3	Short test (1) Quiz	sixth week	2	2
4	Short test (2) Quiz	fourteenth week	2	2
5	Short test (3) Quiz	fifteenth week	1	1
6	Semester test (1)	sixth week	7.5	7.5
7	Semester test (2)	eleventh week	7.5	7.5
8	Final theoretical test	Final semester exams	40	40
9	Practical field project	fifteenth week	5	5
10	Field evaluation	third and fifth week	2	2
11	Practical short test (1) Quiz	first week	1	1
12	Short practical test (2) Quiz	fourth week	0.5	0.5
13	Short practical test (3) Quiz	fourteenth week	1	1
14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5	5.5
15	Final practical test	Final semester exams	20	20
	The total	100	100%	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Strategy for managing and irrigating field crops
Main references (sources)	General agricultural plant
Recommended books and references (scientific journals, reports...)	https://magrj.mosuljournals.com/?lang=ar

Course Description Form

1. Course Name:	
Plant physiology	
2. Course Code:	
PLPH210	
3. Semester / Year:	
First Semester (Autumn) / 2025–2026	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Presence + Online	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(2 theoretical + 3 practical = 5 hours) × 15 weeks = 75 hours / 3.5 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. dr. Omar A. Abdulqader Email: edu3ab@uomosul.edu.iq Name: Assist. Lect. Saddam Ibrahim Yahya Email: saddam.alobaidi@uomosul.edu.iq	
8. Course Objectives	
Theoretical: - Enable the student to understand how plant organs and tissues and cell work. - Enable the student to understand the impact of the mechanism environmental conditions on the work of plant organs and tissues and cells. - Enable the student to understand the mechanism in which metabolisms processes (anabolism and catabolism) take place and the factors affecting them. - Enable the student to detect cells and tissues using a microscope. - Enable the student to detect the progress of metabolism processes and the outcome of the total metabolism in plants.	Practical: - Enable the student to identify the most important laboratory methods in detecting plant cells and tissues. - Enable the student to identify the most important laboratory methods in the preparation of solutions and their types, and the method of mixing and adjusting the concentration of solutions, and measuring their concentration. - Enable the student to learn how to measure: water potential, inflationary pressure, water equilibrium, water productivity, water consumption efficiency, transpiration rate, growth, zero growth, daily growth rate, cumulative temperatures, photosynthesis, net photosynthesis,

- The student can judge and evaluate the speed of metabolism processes and their impact on the growth rate and yield.	respiratory rate, pigment measurement and diagnosis, anabolism, catabolism. - Enable the student to identify the diagnosis of nutrient deficiency through the symptoms that affect plants.
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9. Teaching and Learning Strategies

Theoretical: - Interactive Lecture - Brainstorming - Dialogue and discussion - Assignment and report - Presentations of models of the effects of environmental changes and their impact on crop growth and metabolism processes in those crops. - It is mandated to prepare a report on one of the topics of plant physiology and to discuss it in it. - Scientific visits.	Practical: - Commissioning teamwork to reveal leadership skills. - Assigning tasks and a report for each experiment.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	<u>Theoretical(a1, c1):</u> The student learns about the function of the components of cells, tissues and organs, how to apply the concepts and functions of cells, tissues and organs with the environmental conditions <u>Practical(b1):</u> examines and distinguishes cells and tissues of all kinds	Theoretical: Plant cells, tissues and organs: introduction, plant cell components and functions, laboratory safety. Practical: Electron Microscopy, Laboratory Safety Instruments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
2	2Theoretical 3Practical	<u>Theoretical(a2, c2):</u> The student gets acquainted with the solutions and adjusts their concentrations, preparing and adjusting the concentration of solutions in line with the needs of plants. <u>Practical(c7):</u> determines the concentration and type of solution	Theoretical: Solutions: types of solutions, properties of Cell Sap, how to distinguish the type of solutions. Practical: preparation and adjustment of the concentration of solutions	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

3	2Theoretical 3Practical	<u>Theoretical(a3):</u> Knows what spread, imbibition and osmotic solution <u>Practical(b2):</u> Using dyes, it reveals fusion, osmotic and imbibing	Theoretical: Mechanism of fluid transport: diffusion, Imbibition, osmosis. Practical: Diffusion - Osmotic and Imbibition Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions, field assessment
4	2Theoretical 3Practical	<u>Theoretical(a4):</u> The student recognize by the morphology of the plants on the stage of growth or phase that the plant passes through <u>Practical(b3):</u> Measures growth and its rates	Theoretical: plant growth and development, plant cell detection: growth stages, growth measures, Differentiation. Practical: Measuring Growth	Theoretical: auditory styles, blackboard writing style, direct dialogue style, scientific visit Practical: assignment and report	Quizzes, assignments, discussions, report1
5	2Theoretical 3Practical	<u>Theoretical(a5):</u> The student understands the nature of growth in plants through the metabolism of demolition and construction in plants <u>Practical(b4):</u> reveals the phase and growth in plants	Theoretical: metabolism, catabolism and anabolism: primary metabolites, secondary metabolites. Practical: Measuring the curve of growth and its forms	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions, report1, field assessment
6	2Theoretical 3Practical	<u>Theoretical (a6,c3):</u> Identify the importance of secondary metabolic compounds and their role in protecting plants, identify problems of low photosynthesis processes, identify and treat the causes of high respiration <u>Practical(b5):</u> Distinguish primary and secondary metabolic compounds and their functional roles in plants	Theoretical: Water and plants: methods of water absorption, efficiency of water consumption. Practical: Measuring Water Consumption Efficiency and Water Balance	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Semester test, assignment, discussions
7	2Theoretical 3Practical	<u>Theoretical(a7, c4):</u> The student learns about the mechanism of transpiration and how direct and indirect factors are affected by it, determining the zero-growth and the carbon neutrality point and determining the times of photosynthesis based on that, predicting the date of flowering, maturity and water consumption based on the indicators of anabolism, catabolism and growth rates. <u>Practical(b6):</u> Reveals the types, amount and	Theoretical: Transpiration and the factors affecting it: an introduction to the movement of water in plants, types of transpiration, stomata envelopes. Practical: Measurement of transpiration velocity, detection of plant stomata	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

		speed of transpiration in different parts of plants			
8	2Theoretical 3Practical	<u>Theoretical (a8,c5):</u> Illustrates the method of measuring the growth of plants, adjusting and determining the flowering and maturity period based on aggregate temperatures. <u>Practical(b7):</u> Tests daily growth and net photosynthesis	Theoretical: growth and methods of measurement, stages and phases of growth. Practical: Relationship of transpiration to growth, use of stomata envelopes	Theoretical: auditory styles, blackboard writing style, direct dialogue style, scientific visit Practical: assignment and report	Quizzes, assignments, discussions
9	2Theoretical 3Practical	<u>Theoretical(a9):</u> Aware of the absorption water by plants and how it is transmitted within plants <u>Practical(b8):</u> Conducts experiments on plants that demonstrate the mechanism of water absorption by plants	Theoretical: water absorption and transport within plants: water channels, negative absorption, Active absorption. Practical: Water Absorption Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
10	2Theoretical 3Practical	<u>Theoretical(a10,c6):</u> Identify the mechanism of absorption of nutrients by plants, addressing the causes of low water consumption efficiency <u>Practical(b9):</u> Examines the absorption of salt-sensitive and tolerance plants in solutions of different concentrations	Theoretical: absorption of nutrients and factors affecting them, absorption of nutrients and factors affecting them Practical: Nutrient Solutions	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
11	2Theoretical 3Practical	<u>Theoretical(a11):</u> Recognizes the Disadvantages of Photosynthesis Science in C. Plants <u>Practical(e1):</u> Determines the preference for the growth of C4 and C3 crops in climatically different regions	Theoretical: Photosynthesis and Factors Affecting it Practical: Measuring the content and index of chlorophyll	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Semester test , assignment, discussions
12	2Theoretical 3Practical	<u>Theoretical(a12):</u> Understands the mechanism of respiratory at every stage of growth and its relationship to senescence <u>Practical(b10):</u> Measures aerobic and anaerobic respiration	Theoretical: respiration and Factors Affecting it Practical: calculation of respiration in plants of all kinds	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
13	2Theoretical 3Practical	<u>Theoretical(a13):</u> Justifies and judges a scientific debate about the causes of seed dormancy and their importance in the spread of plants in nature	Theoretical: Seed dormancy, seed germination Practical: Germination Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style	Quizzes, assignments, discussions

		Practical(e2): Seed tests determine their vitality and readiness for sowing		Practical: assignment and report	
14	2Theoretical 3Practical	Theoretical(a14): Identifying the Positive and Negative Role of Using Growth Regulators Practical(c8): Determines the type and concentration of growth regulators needed to produce different effects of growth	Theoretical: Growth Regulators Practical: Preparing Growth Regulators	Theoretical: auditory styles, blackboard writing style, dialogue style Practical: assignment and report	Quiz, assignment, discussions
15	2Theoretical 3Practical	Theoretical(a15): Distinguish the types of enzymes in plants and their functional importance in plants Practical(b11): Distinguish the effects of different enzymes	Theoretical: Enzymes, their types and mechanism of action Practical: Enzyme Detection	Theoretical: auditory styles, blackboard writing style, dialogue style Practical: assignment and report	Quiz, assignment, discussions, practical field project

11. Course Evaluation

No.	Evaluation methods	Calendar date (week)	Grade	Relative weight %
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz (1)	Sixth week	2	2
4	Quiz (2)	Fourteenth week	2	2
5	Quiz (3)	Fifteenth week	1	1
6	Semester Exam (1)	Sixth week	7.5	7.5
7	Semester Exam (2)	The first week is difficult	7.5	7.5
8	Final theoretical test	Final Semester Exams	40	40
9	Practical field project	Fifteenth week	5	5
10	Field Assessment	Third and fifth week	2	2
11	Practical Quiz (1)	First week	1	1
12	Practical Quiz (2) Quiz	Fourth week	0.5	0.5
13	Practical Quiz (3) Quiz	Fourteenth week	1	1
14	Homework and discussions	All weeks	5.5	5.5
15	Final Practical Test	Final Semester Exams	20	20

	Total	100	100%	100%
12. Learning and Teaching Resources				
Required textbooks (curricular books, if any)	Lectures prepared by the subject teacher			
Main references (sources)	Lambers, H., Chapin, F. S., & Pons, T. L. (2008). Plant physiological ecology (Vol. 2, pp. 11-99). New York: Springer. Mohr, H., & Schopfer, P. (Eds.). (2012). Plant physiology. Springer Science & Business Media. Kochhar, S. L., & Gujral, S. K. (2020). Plant physiology: Theory and applications. Cambridge University Press. THOMAS LAZAR, Taiz, L. and Zeiger, E.(2003). Plant physiology. 3rd edn., Annals of Botany, Volume 91, Issue 6, May, Pages 750–751. https://doi.org/10.1093/aob/mcg079			
Recommended books and references (scientific journals, reports...)	Bajracharya, D. 1999. Experiments in Plant Physiology – A Laboratory Manual. New Delhi: Narosa Publishing House. Bhatla, S. C. and Lal, M. A.. 2018. Plant Physiology, Development and Metabolism. Singapore: Springer. Dennis, D. T. et al. 1997. Plant Metabolism. New York: Addison Wesley/Longman. Devlin, R. M. 2017. Outline of Plant Physiology. India: MedTech.Google Scholar Devlin, R. M., Witham, F. H., and Blaydes, D. F.. 2017. Exercises in Plant Physiology. 2nd ed. India: MedTech. Fitter, A., and Hay, R.. 2012. Environmental Physiology of Plants. 3rd ed. Academic Press. Maheshwari, S. C. 2003. ‘A Rise of Experimental Plant Physiology in India–A Personal View’. Souvenir: 2nd International Congress of Plant Physiology, New Delhi, India. 1–13.Google Scholar Mauseth, J. D. 2019. Botany–An Introduction to plant Biology. 6th ed. Boston: Jones and Bartlett Publishers.Google Scholar Narwal, S. S. et al. 2009. Plant Biochemistry. Studium Press, LLC.Google Scholar Nelson, D. L., and Cox, M. M.. 2017. Lehninger Principles of Biochemistry. 7th ed. Machmillan Higher Education.Google Scholar Kärin, Nickelsen, and Govindjee, . 2011. The Maximum Quantum Yield Controversy: Otto Warburg and the ‘Midwest-Gang’. Bern Studies in the History and Philosophy of Science, University of Bern. Switzerland: Institut für Philoshie. Voet, D., and Voet, J. G.. 2019. Fundamentals of Biochemistry. 5th ed. New York: John Wiley Sons Inc.			
Electronic References, Websites	Plant Physiology Journal – American Society of Plant Biologists https://academic.oup.com/plphys/advance-articles Plant & Cell Physiology (PCP) https://academic.oup.com/pcp/advance-articles American Society of Plant Biologists https://aspb.org/ Journal of Plant Physiology			

	https://www.sciencedirect.com/journal/journal-of-plant-physiology Plant Physiology Reports https://www.springer.com/journal/40502 Google Scholar https://scholar.google.com/ The Botanical Society of America https://cms.botany.org/home.html Botany- Canadian Science Publishing https://cdnsiencepub.com/journal/cjb Encyclopedia Britannica https://www.britannica.com/science/botany
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Course Description Form

1. Course Name:	
Drug plants	
2. Course Code:	
MEPL458	
3. Semester / Year:	
First Semester (Autumn) / 2025–2026	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Presence+ Online	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(2 theoretical + 3 practical = 5 hours) × 15 weeks = 75 hours / 3.5 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. dr. Ryan F. Ahmed Email: edu3ab@uomosul.edu.iq Name: Assist. Lect. Saddam Ibrahim Yahya Email: saddam.alobaidi@uomosul.edu.iq	
8. Course Objectives	
Theoretical: - Enable the student to understand how to grow drug plants. - Enable the student to understand how to extract medicinal materials from plants. - Enable the student to understand how to store drug plants safely. - Enable the student to understand how to prepare drug plants for marketing. - Introducing the student to the medically active substances produced by plants and the correct scientific methods for extracting them. - The student can judge the reasons for the low extraction of active substances in drug plants and their low consternation in their tissues.	Practical: - Enable the student to know the method of extracting active substances, and choose the best methods. - Knowledge and diagnosis of medicinal plants. - Determine the best time to harvest. - Conducting cultivation experiments for a drug plant and applying agricultural operations to it.
9. Teaching and Learning Strategies	

Theoretical: - Interactive Lecture - Brainstorming - Dialogue and discussion - Assignment and report - Presentations of models of drug plant cultivation systems in a number of countries around the world. - Tasks the preparation of a report on one of the topics of the production of drug plants and discusses it. - Scientific visits.	Practical: - Commissioning teamwork to reveal leadership skills. - Assigning tasks and a report for each experiment.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	<u>Theoretical(a1,c1):</u> The student learns about medicinal plants, their definition, concept, terminology, classification, and the species and genera to which they belong, and how to employ hydroponics concepts in the production of medicinal plants. <u>Practical(b1):</u> examines and distinguishes varieties and genera of drug plants	Theoretical: Introduction to medicinal and aromatic plants. Practical: genera and plant hosts that include medicinal plants.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
2	2Theoretical 3Practical	<u>Theoretical(a2,c2):</u> The student learns about the geographical distribution of medicinal and aromatic plants, Explains methods of storing medicinal plants. Practical(c6): The concentration and type of medically active substances are determined depending on the Chromatography method	Theoretical: geographical distribution of medicinal and aromatic plants. Practical: methods of storing medicinal plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
3	2Theoretical 3Practical	<u>Theoretical(a3):</u> Acquainted with the extraction of medically active substances <u>Practical(b2):</u> reveals the type and concentration of	Theoretical: division of medicinal and aromatic plants. Practical: methods for extracting medically active substances	Theoretical: auditory styles, blackboard writing style, direct dialogue style	Quizzes, assignments, discussions

		medically active substances		Practical: assignment and report	
4	2Theoretical 3Practical	<u>Theoretical(a4):</u> The student learns about the classification of medicinal plants according to the chemical division of medicinal plants. <u>Practical(b3):</u> measures the amount of active substances	Theoretical: Chemical division of medicinal plants, Practical: plant parts containing medically active substances	Theoretical: auditory styles, blackboard writing style, direct dialogue style, scientific visit Practical: assignment and report,	Quizzes, assignments, discussions
5	2Theoretical 3Practical	<u>Theoretical(a5):</u> The student understands how to adulterate medicinal plants. <u>Practical(b4):</u> reveals the phase of growth in plants	Theoretical: methods of cheating in medicinal plants, Practical: Extraction of medicinal and essential oils	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
6	2Theoretical 3Practical	<u>Theoretical(a6,c3):</u> Identify the correct methods in marketing medicinal plants, identify the problems of low medically active substances in plant tissues, identify and treat the causes of high respirometry in medicinal plant parts <u>Practical(b5):</u> Distinguish primary and secondary metabolic compounds	Theoretical: Storing Medicinal Plants Practical: Extraction with organic solvents	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
7	2Theoretical 3Practical	<u>Theoretical(a7,c4):</u> The student learns how to produce arak, determine the appropriate production cycle for the arak crop, predict the date of flowering, maturity and water consumption based on construction and demolition indicators and growth rates <u>Practical(b6):</u> Detects the types and amount of active substances in tissues at different stages and their impact on environmental conditions	Theoretical: Corruption of medicinal plants, inducement of the formation of medically active substances in plants, arak. Practical: Preparation of medicinal preparations from medicinal plants, botanical description of arak plant and cultivation method	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
8	2Theoretical 3Practical	<u>Theoretical(a8,c5):</u> The student learns how to produce arak, determine the appropriate production cycle for the jojoba crop, predict the	Theoretical: Jojoba Practical: botanical description of jojoba and planting method	Theoretical: auditory styles, blackboard writing style, direct dialogue style, scientific visit	Quizzes, assignments, discussions

		date of flowering, maturity and water consumption based on construction and demolition indicators and growth rates Practical(b7): Tests the amount of daily growth and net photosynthesis		Practical: assignment and report	
9	2Theoretical 3Practical	Theoretical(a9): The student learns how to produce arak, determine the appropriate production cycle for the evening primrose crop, predict the date of flowering, ripening and water consumption based on construction and demolition indicators and growth rates Practical(b8): Applies stimulating agents to plants to increase the compounds of active substances	Theoretical: Evening primrose, arak Practical: botanical description of evening primrose and arak and planting method	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
10	2Theoretical 3Practical	Theoretical(a10): Recognizes the disadvantages of belladonna production using greenhouses Practical(b9): examines and identifies plant root twisting	Theoretical: Belladonna Practical: botanical description of the belladonna plant and cultivation method	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
11	2Theoretical 3Practical	Theoretical(a11): It gives examples of fields suitable for producing galingale. Practical(e1): Decides the preference for growing plants using greenhouses, hydroponics or traditional agriculture	Theoretical: galingale Practical: botanical description of galingale and planting method	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
12	2Theoretical 3Practical	Theoretical(a12): It determines the period of renewal of the planting, the density of planting, and the conditions for selecting Colchicum for cultivation. Practical(b10): Measures decomposition in stored plant tissues	Theoretical: Colchicum Practical: botanical description of a plant for Colchicum and planting method	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
13	2Theoretical 3Practical	Theoretical(a13): Manages and judges a scientific debate about the reasons for the spread of saffron fraud	Theoretical: Saffron Practical: botanical description of the Saffron plant and planting method	Theoretical: auditory styles, blackboard writing style, direct dialogue style	Quizzes, assignments, discussions

		Practical(e2): Determines the number of years for the renewal of saffron fields		Practical: assignment and report	
14	2Theoretical 3Practical	Theoretical(a14): Identifying the Positive and Negative Role of Ultrasonic Use in Extraction Processes Practical(c7): Selects the time and location for mowing Stevia plants	Theoretical: Stevia Practical: botanical description of the stevia plant and planting method	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
15	2Theoretical 3Practical	Theoretical(a15): It mentions the types of aquatic medicinal plants that can be grown in the Iraqi aquatic environment Practical(b11): Distinguish the effects of various enzymes on the extraction of active substances in aquatic medicinal plants	Theoretical: The Use of aquatic Plants as Medicinal Plants Practical: extraction of active substances from aquatic plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

11. Course Evaluation

No.	Evaluation methods	Calendar date (week)	Grade	Relative weight %
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz (1)	Sixth week	2	2
4	Quiz (2)	Fourteenth week	2	2
5	Quiz (3)	Fifteenth week	1	1
6	Semester Exam (1)	Sixth week	7.5	7.5
7	Semester Exam (2)	The first week is difficult	7.5	7.5
8	Final theoretical test	Final Semester Exams	40	40
9	Practical field project	Fifteenth week	5	5
10	Field Assessment	Third and fifth week	2	2
11	Practical Quiz (1)	First week	1	1
12	Practical Quiz (2) Quiz	Fourth week	0.5	0.5
13	Practical Quiz (3) Quiz	Fourteenth week	1	1
14	Homework and discussions	All weeks	5.5	5.5
15	Final Practical Test	Final Semester Exams	20	20
	Total	100	100%	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures prepared by the subject teacher
Main references (sources)	Farooqi, A.A. and B.S. Sreeramu (2004). Cultivation of Medicinal and Aromatic Crops. Pub: Orient Blackswan. PP:344. Neffati, M., Najjaa, H., & Máthé, Á. (Eds.). (2017). Medicinal and Aromatic Plants of the World-Africa Volume 3 (Vol. 3). Springer. pp:402. Yaniv, Z., & Dudai, N. (Eds.). (2014). Medicinal and aromatic plants of the middle-east . Dordrecht Heidelberg New York London: Springer. PP:302.

Recommended books and references (scientific journals, reports...)	Encyclopedia of Medicinal Plants Atlas of Medicinal Plants Iraqi and Arab flora Scientific Journals
Electronic References, Websites	Journal of Applied Research on Medicinal and Aromatic Plants https://www.sciencedirect.com/journal/journal-of-applied-research-on-medicinal-and-aromatic-plants Arabian Journal of Medicinal and Aromatic Plants Hatsps://reviews.i.m.m/index.php/ajmap/ Journal of Medicinal and Aromatic Plant Studies https://dergipark.org.tr/en/pub/jmaps

Course Description Form

1. Course Name:	
Biology of Weeds	
2. Course Code:	
BIWE459	
3. Semester / Year:	
First Semester (Autumn) / 2025–2026	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Presence + online	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(2 theoretical + 4 practical = 4 hours) × 15 weeks = 75 hours / 3 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Lecturer dr. Dheyaa Fathi Aljuburi Email: dfhrdheyaa@uomosul.edu.iq Ghadeer Nawaf Dhnoon ghadeer.nawaf.alobaidy@uomosul.edu.iq	
8. Course Objectives	
Theoretical: - - Enable the student to understand and understand the concept of weeds and its benefits, harms and regionalization. - - Enable the student to understand the concept of competition and reproduction of the weed. - - Enable the student to understand the spread and contradiction of life. - - Enable the student to detect the results of experiments and determine the danger of the weeds. The student can judge and evaluate the speed of metabolism processes and their impact on the growth rate and yield.	- Enable the student to identify the local and scientific naming and its conditions. - Enable the student to identify the most important methods of germination and dormancy and the factors affecting them. - Enable the student to identify how to implement experiments and estimate the percentage of competition for the weed.
9. Teaching and Learning Strategies	
Theoretical:	Practical:

- | | |
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| <ul style="list-style-type: none"> - Interactive Lecture - Brainstorming - Dialogue and discussion - Assignment and report - Application of field experiments to combat germination and dormancy - Tasks the preparation of a report on one of the topics of weed biology, reproduction and propagation and discussed therein. - Scientific visits. | <ul style="list-style-type: none"> - Commissioning teamwork to reveal leadership skills. - Assigning tasks and a report for each experiment. |
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	b1,aa1 Theoretical: Identify, enumerate and explain weeds and recognize the harms and benefits of weeds. b7,a10 Practical: Defines and shows local and scientific nomenclature and types of classifications.	Theoretical: Introduction, some definitions, the importance of the weed, its harms and benefits. Practical: scientific and domestic nomenclature of the weed.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
2	2Theoretical 3Practical	b2 Theoretical: Illustrates and distinguishes between annuals, dioeces and perennials and the characteristics of the growth characteristics of each of them. c12,b8,a11 Practical: Shows, explains and explains the natural and artificial division of the weed, the benefits of each species.	Theoretical: diagnosis of the weed and its divisions. Practical: natural and artificial division of the weed.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
3	2Theoretical 3Practical	c1,a2 Theoretical: Defines the acclimatization of weed plants and shows the characteristics that relate to the characteristics of growth and seed production qualities. b9,a12 Practical: Definition, Explanation and Clarification of Regionalization and	Theoretical: acclimatization of weed plants. Practical: qualities of acclimatized plants for growing and seed production.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

		Weed Recipes for Nature of Growth and Seed Production Recipes.			
4	2Theoretical 3Practical	b3 Theoretical: recognizes the phenotypic qualities of the weed in dry and desert areas b10 Practical: Shows, identifies and illustrates weed characteristics in dry and desert areas and their morphological changes	Theoretical: The influence of the environment on the phenotypic and anatomical structure of the weed and the resistance of the weed to drought. Practical: drought resistance methods for the weed and its adaptations.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report, scientific visit	Quizzes, assignments, discussions
5	2Theoretical 3Practical	c2 Theoretical: Determines the means of spread of weedseeds by human action, natural factors and factors affecting their spread b11 Practical: Illustrates and identifies the means of spread of jungles and the morphological and environmental traits that help in their spread.	Theoretical: weed propagation and factors affecting propagation. Practical: phenotypic qualities that help to spread.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
6	2Theoretical 3Practical	c3,a3 Theoretical: Defines and explains germination and dormancy factors affecting germination and dormancy. b12,a13 Practical: Explains, identifies and shows methods of breaking dormancy in vitro and natural nature in the environment and agricultural fields.	Theoretical: Germination of weed seeds and factors affecting them and dormancy Practical: Methods of breaking dormancy naturally and in vitro.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
7	2Theoretical 3Practical	c4,a4 Theoretical: Recognizes the perennial jungle of Saad, Al-Thail, Al-Danan, Al-Halfa, Al-Halyan. 10 b. d4 .b13 Practical: Illustrates and shows weeds and their diagnosis according to plant hosts or groups .	Theoretical: The most dangerous jungle in the world. Practical: Getting to know the presentation of videos and photos and field tours to identify the weeds.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
8	2Theoretical 3Practical	c5,a5 Theory: Shows and clarifies the concept of competition and the factors affecting the preparation of weeds in	Theoretical: Competition between weeds and crops and the factors affecting it	Theoretical: auditory styles, blackboard writing style, direct dialogue style	Quizzes, assignments, discussions

		the fields and the competitiveness of weeds crops b14 Practical: deduces the qualities that weeds possess to compete in agricultural and non-agricultural environments	Practical: Jungle qualities for competition	Practical: assignment and report, scientific visit	
9	2Theoretical 3Practical	c6,b4 Theory: Explains the concept of propagation and renewal and the benefits and harms of fires on the plant environment c13 Practical:Identifies the role of fires, floods and storms in the regeneration of plant environments	Theoretical: Jungle fires and plant adaptations to fires. Practical: weed adaptations after exposure to fires, floods and dust storms.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
10	2Theoretical 3Practical	c7,b5 Theoretical: Identify the concept of allelopathy, parts of plants containing allelopathy, and methods of entry of allelopathy into the environment c14 Practical: analyzes the qualities possessed by vegetatively and radically parasitic weeds on crop plants.	Theoretical: Allelopathy. Practical: qualities of parasitic weeds.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
11	2Theoretical 3Practical	b6,a6 Theoretical: Differentiates between aquatic and saline jungles compared to field jungle c15 Practical: Defines and shows the characteristics of aquatic weed plants and jungle saline areas.	Theoretical: water jungles and salt jungles. Practical: qualities of aquatic and salt weeds.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
12	2Theoretical 3Practical	c8,a7 Theoretical: Recognize and Reason, Parasitic Jungles, Dodder and Haluk b15 Practical: illustrates and deduces the pros and cons of weed biotagonism on crops .	Theoretical: parasitic weed. Practical: the pros and cons of the biosynthesis of the weed on crops.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
13	2Theoretical 3Practical	a8 Theoretical: Understands reproduction in weed plants and its types	Theoretical: Reproduction in weed plants.	Theoretical: auditory styles, blackboard writing style, direct dialogue style	Quizzes, assignments, discussions

		b16 Practical: Shows the types of reproduction, the strengths of each species and the factors affecting each.	Practical: factors affecting the breeding processes in the weeds.	Practical: assignment and report	
14	2Theoretical 3Practical	c9 Theoretical: Recognize and explain the problems of weeds in agricultural fields and their impact on the production of seeds of higher grades of crops. c16 Practical: Infringes the problems of weeds in agricultural fields and their impact on the production of seeds of higher grades of crops.	Theoretical: A scientific visit to the Department of Seed Inspection and Certification. Practical: A scientific visit to the Department of Seed Inspection and Certification.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
15	2Theoretical 3Practical	c10 Theoretical: Explains the methods of carrying out agricultural experiments and estimating the impact of weeds on them. b17 Lab: Experiments with sampling methods and cutting method in determining the amount of weed and interpreting results in agricultural research.	Theoretical: Agricultural Experiments on Jungle Plants. Practical: Methods of collecting weed samples and dealing with them Discussion of sample results and methods of interpretation.	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

11. Course Evaluation

	Sequence	Calendar methods	Calendar date (week)	Class
	1	Report 1	fourth week	2.5
	2	Report 2	fifth week	2.5
	3	Short test (1) Quiz	sixth week	2
	4	Short test (2) Quiz	fourteenth week	2
	5	Short test (3) Quiz	fifteenth week	1
	6	Semester test (1)	sixth week	7.5
	7	Semester test (2)	eleventh week	7.5
	8	Final theoretical test	Final semester exams	40
	9	Practical field project	fifteenth week	5
	10	Field evaluation	third and fifth week	2
	11	Practical short test (1) Quiz	first week	1
	12	Short practical test (2) Quiz	fourth week	0.5
	13	Short practical test (3) Quiz	fourteenth week	1
	14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5
	15	Final practical test	Final semester exams	20
		The total	100	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures prepared by the subject teacher
Main references (sources)	– Barbara D. Booth & Clarence J. Swanton AND Stephen D. Murphy.2003.Weed Ecology in Natural and Agricultural Systems - – Robert L. Zimdahl / 2007.Fundamentals of Weed Science . THOMAS J. MONACO & STEPHEN C. WELLER AND FLO M. ASHTOM. 2002.WEED SCIENCE
Recommended books and references (scientific journals, reports...)	– https://magrj.mosuljournals.com/ – https://www.tjas.org/index.php/tjas – https://journals.sagepub.com/
Electronic References, Websites	Journal of Plant Physiology https://www.sciencedirect.com/journal/journal-of-plant-physiology Plant Physiology Reports https://www.springer.com/journal/40502 Google Scholar https://scholar.google.com/

Course Description Form Computer applications4

1. Course Name:	
Computer applications4	
2. Course Code:	
COMA401	
3. Semester / Year:	
First semester/ 2026-2025	
4. Description Preparation Date:	
2026 / 2 / 1	
5. Available Attendance Forms:	
In presence , Online	
6. Number of Credit Hours (Total) / Number of Units (Total):	
3 practical hours/1.5 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Najla Matti Isaac Email: najla.matti@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	• Enable the student to become familiar with the SAS statistical program and its applications in agricultural experiments. • Enable the student to know and understand programs in the SAS language and apply the steps and procedures followed to use the SAS statistical program in analyzes of agricultural experiments. • Enabling the student to write programs in the SAS language for various agricultural and scientific experiments. • Providing the student with the skills of dealing with data types when writing programs in the SAS language. • Enabling the student to correct grammatical and linguistic errors that appear when implementing programs written in the SAS language • Enable the student to read, understand and interpret the results and outputs of implementing programs written in SAS.

9. Teaching and Learning Strategies

Strategy	- Interactive lecture - Brainstorming - Dialogue and discussion - Field Training - Practical exercises - Field project - Self-education
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3 practical	a1: The student learns about the SAS program and its importance in analyzing reactive analytics and the fraudulent tools in it.	What is the SAS program - storing and retrieving information - modifying and programming data - writing reports - statistical analysis - processing records	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	Final test.
2	3 practical	a2: The student is familiar with the windows of the SAS program, the information from each window, and how to deal with them, and is familiar with the general matters that people who want to use the SAS program must have in order to use statistical analyses.	SAS windows - writing and loading the program window - program execution steps window - results window. Who uses SAS software? Why SAS- General matters that people who want to use SAS software for the purpose of statistical analysis should have in mind.	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	Report, Final test.
3	3 practical	c1 shows the negative trace of SAS.	General steps for writing a SAS program.	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	Homework1, Final test.
4	3 practical	c2: The student employs functions, their importance, and usage formulas in writing a program in the SAS language	Functions	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	Quiz1, Final test.
5	3 practical	d1: The student applies the creation of new data from the input data set using mathematical operations or functions and formulas used in	Create new data from an input data set using mathematical operations or functions.	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	Homework2, Final test.

		writing a program in the SAS language.			
6	3 practical	d2: The student tests creating data using the IF statement and the formulas used in writing a program in the SAS language	- Generate data using IF conditional statements. + scientific visit.	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	scientific visit, Final test.
7	3 practical	d3: The student implements the use of Portuguese sentences to delete data from a data set and the usage formulas in writing a program in the SAS language	- Using conditional statements to delete data from the data set in the program + Semester exam 1	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	semester test1, Final test.
8	3 practical	b1: The child sorts and arranges data and formulas used in writing a program in the SAS language	- Sorting and arranging data Use the PROC SORT statement	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	practical test1, Final test.
9	3 practical	b2: The artist uses the iterative profile plot tool with only one orthogonal syntax and their formula in writing an integrated SAS program.	- Applications in descriptive statistics - One-way frequency distribution table - Two-way frequency distribution table PROC FREQ	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	Homework3, Final test.
10	3 practical	b3: The student produces cooperation and association standards by using their formulas in writing a program in the SAS language	- Measures of mediation and measures of dispersion. PROC MEANS	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	Quiz2, Final test.
11	3 practical	b4: The student tries out the T-test response and the formula used in writing a program in the SAS language	- Test of means and analysis of variance - t-test	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	Homework, Final test.
12	3 practical	b5: The student evaluates the balanced analysis of variance plot and the formula used in writing a program in the SAS language	- Analysis of variance formula PROC ANOVA-	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	practical test2, Final test.
13	3 practical	b6: The student experiments with the unbalanced analysis of variance and the formulas used in writing a program in the SAS language	PROC GLM + Semester exam 2	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	semester test2, Final test.
14	3 practical	b7: The student defines the contract and syntax	PROC CORR correlation coefficient formula	Interactive lecture, brainstorming,	Homework, Final test.

		used in writing a Bulgarian SAS program		dialogue and discussion, practical exercises, and self-learning.	
15	3 practical	b8 The student does not rule out the regression equation and the formulas used in writing the Bulgaria SAS program	PROC REG REGRESSION FORMULA	Interactive lecture, brainstorming, dialogue and discussion, practical exercises, and self-learning.	practical test3, Final test.

11. Course Evaluation

t	Evaluation methods	Evaluation date (one week)	Grade	Relative weight %
1	Report 1	second week	2	2%
2	Homework1	the third week	1	1%
3	Short test Quiz1	fourth week	2	2%
4	Homework2	The fifth week	1	1%
5	Scientific visit	the sixth week	1.5	1.5%
6	Semester test1	Seventh week	10	10%
7	Practical test1	The eighth week	2.5	2.5%
8	Homework3	Week nine	1	1%
9	Short test Quiz2	The tenth week	2	2%
10	Homework4	Week eleven	1	1%
11	Practical test2	The twelfth week	2.5	2.5%
12	Semester test2	The thirteenth week	10	10%
13	Homework5	The fourteenth week	1	1%
14	Practical test3	The fifteenth week	2.5	2.5%
15	Final practical test	Final semester exams	60	60%
	The total		100	100%

12. Learning and Teaching Resources

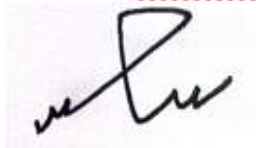
Required textbooks (curricular books, if any)	A curriculum was prepared by computer professors at the college based on the SAS software guide.
Main references (sources)	- SAS software guide - A Handbook of Statistical Analyses using SAS. (authors: Geoff Der and Brian S. Everitt) Data analysis using the SAS statistical program, written by Dr. Firas Rashad Al-Samarrai
Recommended books and references (scientific journals, reports...)	Statistical analysis using the SAS package, prepared by: Abdullah Al-Shahrani
Electronic References, Websites	https://www.sas.com/en_sg/training/offers/free-training.html https://video.sas.com/detail/videos/how-to-tutorials https://www.udemy.com/course/sas-programming-for-beginners

<https://sascrunch.com/courses/sas-base-programming-for-absolute-beginners-free-version/>



subject teacher: Najla Matti Isaac

Chairman of the Scientific
Committee
Dr. Salim abdullah





Head of Department
Moyassar Mohammed Aziz



Course Description Form

1. Course Name:					
English Language 4					
2. Course Code:					
ENGL 400					
3. Semester / Year:					
2026-2025					
4. Description Preparation Date:					
2026 / 2 / 1					
5. Available Attendance Forms:					
Presence + Online live meeting and Google classroom					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 Hours 2 Unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Omar AbdulHameed Al-Kurjia					
Email : omarkj@uomosul.edu.iq					
8. Course Objectives					
Course Objectives		- To going on studying the English language in special and scientific language - Widening student mind about scientific and literature English vocabularies - Helping the students to think and write in English			
9. Teaching and Learning Strategies					
Strategy		Making use of the electronic available methods a like auditory or visual in addition to the white board plus google classroom			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2hours Presence	(A)The student should be able to know the basics of the English language	Practicing English with " No Place like Home" + Reading out clearly and learning pronunciation + Vocabulary	Electronic lectures, videos, posters and other methods related to learning	Exams Reports Discussions quiz
2	2hours	(A)The student should	Expat Tales : Ian	Electronic lectures,	Exams -

	Presence	be able to know the tenses of the English language	Walker in Chile: Spoken English informal Reading out, Listening, speaking, everyday English	videos, posters and other methods related to learning	Reports Discussions - quiz
3	2hours Presence	(A)The student should be able to know the rules of the English language	Expat Tales 2 : Thomas Creed in Korea: Language + conversation with students	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
4	2hours Presence	(A)The student should be able to know the basics of the English language	Practicing English with " The Blind Assassin" + Reading out clearly and learning pronunciation + Vocabulary	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
5	2hours Presence	(A)The student should be able to know the basics of the English language	Starting with Sheep" Dealing with English in Agriculture within different specialties (reading and pronunciation)	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
6	2hours Presence	(A)The student should be able to know the basics of the English language	Language Focus Part 1 English in Agriculture 2 : Homemade butter	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
7	2hours Presence	(A)The student should be able to know the basics of the English language	Conspiracy Theory 1 : The Death of Diana Reading out, Listening, speaking,	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
8	2hours Presence	(A)The student should be able to know the basics of the English language	Two Famous Brands : Starbucks Coffee Reading out, Listening, speaking, everyday English	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
9	2hours Presence	(A)The student should be able to know the basics of the English language	Conspiracy Theory 2 : The Apollo Moon Landings , Reading out, Listening, speaking,	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz

10	2hours Presence	(A)The student should be able to know the basics of the English language	Conspiracy Theory 3 The death of JFK -, Reading out, Listening, speaking, everyday English	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
11	2hours Presence	(A)The student should be able to know the basics of the English language	Apple Macintosh Progressive interaction with students+ feedback+	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
12	2hours Presence	(A)The student should be able to know the basics of the English language	The Kippers" Read, Digest and Analyze"	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
13	2hours Presence	(A)The student should be able to know the basics of the English language	The Coldest & Earliest places on Earth Reading out , Translation to Arabic , learning pronunciation	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
14	2hours Presence	(A)The student should be able to know the basics of the English language	F.R.I.E.N.D.S Past .Reading out , Translation to Arabic , learning pronunciation	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz
15	2hours Presence	(A)The student should be able to know the basics of the English language	Jamie Oliver (The Worlds Greatest Chef) interaction with students+ feedback+	Electronic lectures, videos, posters and other methods related to learning	Exams - Reports Discussions - quiz

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

No.	Evaluation Methods	Evaluation Date (Week)	Marks	Relative Weight (%)
1	Quiz (1)	Week 4	Theoretical (5)	5
2	Monthly Exam (1)	Week 6	Theoretical (15)	15
3	Quiz (2)	Week 8	Theoretical (5)	5
4	Monthly Exam (2)	Week 13	Theoretical (15)	15
5	Quest rate.	Seasonal rates are announced at the end of the semester.	Theoretical: (40)	40
6	Final Theoretical Test.	The Week Of Theoretical Exams.	60	60
Total			100	100

12. Learning and Teaching Resources

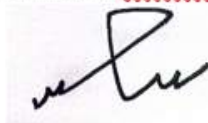
Required textbooks (curricular books, if any)	
Main references (sources)	New Headway - English course Upper Intermediate 2020

Recommended books and references (scientific journals, reports...)	New Headway - English course Upper Intermediate 2020
Electronic References, Websites	• British Council – Upper-Intermediate (B2) https://learnenglish.britishcouncil.org/general-english/upper-intermediate-b2 (Grammar, vocabulary, listening, and reading exercises) • Perfect English Grammar https://www.perfect-english-grammar.com (Detailed grammar explanations and exercises)




A.L. Omar AbdulHameed Al-Kurjia

Chairman of the Scientific
Committee
Dr. Salim abdullah




Head of Department
Moyassar Mohammed Aziz



Plant Breeding

1

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical	a1: Learn about education and the most important sciences related to it	Plant breeding and its purposes	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short test, final test
	3 practical	b4: Examines the most important new wheat inputs	Input	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Short practical test1
2	2 Theoretical	c1: Explains the steps in the formation of pollen grains and female gametes	Pollination and fertilization	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 practical	b5: Discover the factors affecting crop establishment	Residence - its definition and the factors affecting it	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Viewings and homework
3	2 Theoretical	a2: Identify the most important reproductive systems in plants	Reproduction in plants	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 practical	b6: Measures the quantitative characteristic of the outcome	Important economic traits of crop plants	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Homework
4	2 Theoretical	e1: Identifying and diagnosing the types of flowers available in college fields for pollination	Solve the problem	Interactive lecture, brainstorming, dialogue and discussion, self-learning	a report
	3 practical	e2: Determine the appropriate date for pollination of wheat plants	Solve the problem	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Field evaluation
5	2 Theoretical	c2: distinguishes between cases of male infertility.	Male infertility	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 practical	b7: Discovers the pollination process in plants	Artificial insemination	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Viewings and homework
6	2 Theoretical	b1: shows self-incompatibility systems	Self-incompatibility	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	3 practical	c6: Testing self-pollination in wheat and barley	Self-pollination in crop plants	Interactive lecture, brainstorming, dialogue and discussion, field	Semester exam 1, final exam

				training, practical exercises, and self-learning	
7	2 Theoretical	b2: Explain the most important factors affecting external appearance and compare genetic and environmental factors	Genetic variations and their relationship to plant breeding	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 practical	b8: Examines methods of inheritance	Inheritance	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Viewings and homework
8	2 Theoretical	b3: Master the most important types of genetic action and its features	Important factors in determining the act of election	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 practical	b9: Experiments with self-pollination in wheat and cross-pollination in maize	Artificial Vaccination	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Short practical test 2
9	2 Theoretical	a3: Learn about the inheritance of a trait and its importance in selection	Estimation of some genetic parameters	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 practical	c7: Determines the average degree of dominance	degree of dominance	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Viewings and homework
10	2 Theoretical	d1: Runs discussion panels to train students to present topics related to genetic improvement	Report and discuss	Interactive lecture, brainstorming, dialogue and discussion, self-learning	a report
	3 practical	b10: Explains Selection and its importance	Selection	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Viewings and homework
11	2 Theoretical	a4: Learn the most important theories of Heterosis	Heterosis	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short test, final test
	3 practical	c8: Distinguish the most important genetic variations between plants	The importance of genetic variations	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Viewings and homework
12	2 Theoretical	c3: Explains the types of mutations and their benefits.	Mutation breeding	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 2, final exam
	3 practical	b11: Trying to perform the castration process in crossbreeding in barley	Heterosis	Interactive lecture, brainstorming, dialogue and discussion, field	Semester exam 2, final exam

				training, practical exercises, and self-learning	
13	2 Theoretical	c4: Shows the most important types of chromosomal duplication	Chromosomal duplication and its relationship to plant breeding	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 practical	d2: Runs discussion panels to train students to present topics related to hybridization processes	Report and discuss	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Field evaluation
14	2 Theoretical	c5: Explains the most important types of resistance and their sources	Education for disease resistance	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short test, final test
	3 practical	b12: Explains the most important tools used in pollination	Plant breeder tools	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Short practical test 3
15	2 Theoretical	a5: Learn about the most important methods of breeding self-pollinating plants	Methods of breeding self-pollinating plants	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 practical	c9: Decides to conduct a field inspection and use a plant breeding record	Field inspection	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	Field project

11- Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

NO.	Calendar methods	Calendar date (week)	Class	Relative weight%
1	Report 1	4	2.5	2.5
2	Report 2	10	2.5	2.5
3	Quiz (1)	1	2	2
4	Quiz (2)	11	2	2
5	Quiz (3)	14	1	1
6	Semester test 1	6	7.5	7.5
7	Semester test 1	12	7.5	7.5
8	Final theoretical test	Final semester exams	40	40
9	Practical field project	15	5	5
10	Field evaluation	4 , 13	2	2
11	Practical Quiz 1	1	1	1
12	Practical Quiz 2	8	0.5	0.5
13	Practical Quiz 3	14	1	1
14	Homework	2,3,5,7,9,10,11	5.5	5.5
15	Final practical test	Final semester exams	20	20
	The total	100	%100	%100

12-Learning and Teaching Resources	
Required textbooks (curricular books, if any)	A - Book: Plant Breeding and Improvement (Dr. Medhat Majeed Al-Sahuki, Dr. Hamid Jaloub Ali, and Dr. Muhammad Ghaffar Ahmed) / Ministry of Higher Education and Scientific Research - University of Baghdad.
Main references (sources)	A- Book: Plant Breeding Methods (Dr. Ahmed Abdel Moneim Hassan) (Cairo University)
Recommended books and references (scientific journals, reports...)	A- Scientific references specialized in plant breeding and books concerned with the science of education
Electronic References, Websites	Nothing

**Chairman of the Scientific
Committee**
Dr. Salim Abdullaah




Head of Department
Moyassar Mohammed Aziz



Course Description Form

1. Course Name:					
Seminar					
2. Course Code:					
SEM404					
3. Semester / Year:					
First Semester (spring) / 2025–2026					
4. Description Preparation Date:					
1/2/2026					
5. Available Attendance Forms:					
Attendance + online					
6. Number of Credit Hours (Total) / Number of Units (Total)					
1 hour and 15 weeks, so the total number of hours is 15 hours / 1 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Lecturer dr. Mayssar Muhammad Aziz moyassar_aziz@uomosul.edu.iq					
8. Course Objectives for theory part					
.The student realizes the importance of scientific research .To be able to conduct and implement scientific research .To be able to write, arrange, and produce research in an academic manner .To be able to analyze data, prepare results, and present them in a scientific manner . To possess self-confidence, the ability to conduct calm dialogue, and had expert of the persuasion art					
9. Teaching and Learning Strategies					
- Strategy' of theory part			- Effective lectures - Brainstorming - Dialogue and discussion - Assigning tasks		
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1 theoretical	a1: Getting to know the concepts of the seminar to develop the student's ability to scientific presentation of any scientific topic	The concept and basics of the seminar	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Discussions and short quiz
2	1 theoretical	a2: What is the concept of scientific	Scientific research and its goals	Interactive lecture, brainstorming,	Discussions and short quiz

		research and its goals?		dialogue and discussion, selflearning	
3	1 theoretical	a1: What is the problem or research question and realizes the importance of defining the problem and the goal of defining it	Research problem, importance Research and research objectives	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
4	1 theoretical	c2: Realizes the importance of hypotheses in scientific research and organizes the hypotheses for the episode accordingly	Research hypothesis and its characteristics	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
5	1 theoretical	a2: Learn about the methodology of scientific research c2: The seminar's methodology is organized according to the scientific method	Scientific research methodology	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
6	1 theoretical	a1: Learn about the types of research according to academic classifications c2: The loop is organized accordingly	Types of scientific research	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
7	1 theoretical	a1: Identify data, its types, and tools and methods for collecting and arranging data	Tools and methods for collecting data	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
8	1 theoretical	a2: Identifying and knowing the specifications of good research, which will determine the specifications of a good researcher	Specifications of a successful scientific researcher	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
9	1 theoretical	c1: Organize data b2: Practice collecting data and putting it into tables or templates	The sample, its collection, and the steps for selecting the sample	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
10	1 theoretical	a1: Identify methods of tabulating that collected data c4: Analyze the data using a statistical program	Data classification and tabulation methods	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
11	1 theoretical	c2: Organizing tables, figures and appendices	Tables, figures and appendices	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
12	1 theoretical	c2: Organizing and writing sources according to	How to write sources	Interactive lecture, brainstorming, dialogue and	Discussions and short quiz

		international classifications of writing		discussion, selflearning	
13	1 theoretical	c2: Arlangilg sources according to templates or indexing forms	Indexing of sources	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
14	1 theoretical	b2: Plactice using the computer d2: Create a slidesho* presntation file using the computer	Knowledge of using siide shorv softvrare on thc computer	Interactive lecture, brainstorming, dialogue and discussion, selflearning	Discussions and short quiz
15	1 theoretical	e3: ReaJizing the imporlance olself-confidence, calm dialogue, and the art of persuasion when delivering and discussing the seminar	Seminar presentation on PPT presentation software for slide show	Interactive lecture, brainstorming, dialogue and discussion, selfleami	Discussions and short quiz

11. Course Evaluation

Evaluation Method	Evaluation Datc	Evaluation Degree %	Evaluation Wcight %
Quiz	Weeks 2-14	40	40
An evaluation lbrm for five professors liom the departmenr attending rhe seminar	Week 14-15	60	60
Total	After week 15	100	10

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	– Kumar, Ranjit (2011) -Research Mcthodology A Step-by-Step, Chcnai, India. – Stapleton. Paul Stapleton; Anthony Youdeowei; Joy Mukanyange and Helenvan Houten (1995) Scientific Writing for West Africa Rice Development Association.
Recommended books and references (scientific journals, reports...)	Research from specialized scientific journals
Electronic References, Websites	Google scholar, Research Gate, Academia, Research Academy

Course Description Form

1. Course Name:					
Research Project 2					
2. Course Code:					
REPR403					
3. Semester / Year:					
First Semester (spring) / 2025–2026					
4. Description Preparation Date:					
1/2/2026					
5. Available Attendance Forms:					
Attendance + onlien					
6. Number of Credit Hours (Total) / Number of Units (Total)					
45 Practical hours / 1 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Lecturer dr. Mayssar Muhammad Aziz moyassar_aziz@uomosul.edu.iq					
8. Course Objectives					
- Course Objectives			- To be able to analyze data and prepare results to manage the project scientifically. - The student must have the ability to determine agricultural project. - investment priorities and implement them properly and successfully. - The student must be familiar with establishing agricultural projects and investing in them scientifically and economically.		
9. Teaching and Learning Strategies					
- Strategy			- Effective lectures - Brainstorming - Dialogue and discussion - Assigning tasks		
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3 Practical	c1: The student chooses a subject for his research	Choose the research subject	Interactive lecture, brainstorming,	Reports

				dialogue and discussion.	
2	3 Practical	c2: The student proposes a plan for his research	Scientific research plan (research proposal)	Interactive lecture, brainstorming, dialogue and discussion.	Reports
3	3 Practical	b1: The student documents the data and information collected	Collect data and information's	Interactive lecture, brainstorming, dialogue and discussion.	Reports
4	3 Practical	b2: The student chooses the samples and research tools required	choose Samples and research tools	Interactive lecture, brainstorming, dialogue and discussion.	Reports
5	3 Practical	c3: The student writes his graduation research in his own style	Procedures for writing research project	Interactive lecture, brainstorming, dialogue and discussion.	Reports
6	3 Practical	a1: The student learns about the formal controls for his graduation research project	Formal controls in the research project	Interactive lecture, brainstorming, dialogue and discussion.	Reports
7	3 Practical	a2: The student discusses with his supervisor the requirements for the theoretical part of the research	The theoretical part	Interactive lecture, brainstorming, dialogue and discussion.	Reports
8	3 Practical	c4: The student gives examples of previous studies for his research	Presenting previous studies	Interactive lecture, brainstorming, dialogue and discussion.	Reports
9	3 Practical	a3: The student presents to his supervisor the theories and scientific analysis of his subject	Theories and scientific analysis of the subject research	Interactive lecture, brainstorming, dialogue and discussion.	Reports
10	3 Practical	a4: The student discusses with the supervisor the requirements of the practical part of the research	the practical part	Interactive lecture, brainstorming, dialogue and discussion.	Reports
11	3 Practical	b3: The student tests the research data statistically	Analyze data statistically	Interactive lecture, brainstorming, dialogue and discussion.	Reports
12	3 Practical	b4: The student tabulates statistical data for research	Writing tables	Interactive lecture, brainstorming, dialogue and discussion.	Reports
13	3 Practical	a5: The student discusses his research data to derive useful tabular values	Results and conclusions	Interactive lecture, brainstorming, dialogue and discussion.	Reports
14	3 Practical	b5: The student adopts the results of his research	Recommendations	Interactive lecture, brainstorming, dialogue and discussion.	Reports
15	3 Practical	b6: The student presents the sources used in the research	Writing sources	Interactive lecture, brainstorming, dialogue and discussion.	Reports

11. Course Evaluation

	Sequence	Evaluating style, date and marks	Relative weight
	1	Distributing the grade from 50 over 14 weeks according to the tasks assigned to the student by the project supervisor, for example collecting resources, writing the project, analyzing data, etc.	50 %
	2	The student is discussed by a committee composed of three faculty members in week 15 and is awarded a grade out of 50 according to what he has accomplished in the project.	50 %
		The total final score is 100	100 %

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Methodical books
Main references (sources)	– The central library at the university, the college – library
Recommended books and references (scientific journals, reports...)	Research from specialized scientific journals
Electronic References, Websites	Research, letters and dissertations from the Internet.

**Chairman of the
Scientific Committee
Dr. Salim Abdullaah**




**Head of Department
Moyassar Mohammed
Aziz**



Course Description Form

1.	2. Course Name:					
	Pasture management					
3.	4. Course Code:					
	PAMA433					
5.	6. Semester / Year:					
	2025/2026 second semester (spring)					
7.	8. Description Preparation Date:					
	2026 2-1					
9.	10. Available Attendance Forms:					
	My presence + onlien					
11.	12. Number of Credit Hours (Total) / Number of Units (Total)					
	(2 theoretical + 2 practical = 5 hours) ×15 weeks = 75 hours / 3. units Two hours my theory , Two hours of work					
13.	14. Course administrator's name (mention all, if more than one name)					
	Name: DR. salim abdulla Younis Email: salimalghazal@uomosul.edu.iq Name : Ahmed Majeed Abdullah ahmed3079@uomosul.edu.iq					
15.	16. Course Objectives					
	Practical: Enabling the student to identify the most important pastoral plants The types of natural pastures and methods of protecting and appreciating them Its payload and exploitation			Heoretical Enable understanding and assimilation of pasture management material Enabling the student to know the most important ways to protect natural pastures Enabling the student to become familiar with the most important types of natural pastures Enabling the student to detect and know the palatability of pasture plants The student can judge the quality of pasture plants		
17.	18. Teaching and Learning Strategies					
	Practical: Assigning group work to reveal leadership skills Assigning tasks and a report for each field visit			theoretical Interactive lecture Brainstorming Dialogue and discussion Assigning tasks and reporting View examples of forage crop plants		
19.	20. Course Structure					
We ek	Hours		Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 heoretical 3 ractical	a1 a6	It uses special ideas in managing natural pastures and its relationship with other science	Theoretical: The importance of pastures Practical botanical description For plants of the Poaceae family	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasks And report	Short exams, assignments, discussions
2	2 heoretical 3 practical	a2 a7	Identify the most important causes of pasture degradation Determine which plants are more toxic	Theoretical: Types of pasture Practical: botanical description For the leguminous fam	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasks And report	Short exams, assignments, discussions

3	2 heoretical 3 practical	a3 a8	He compares the factors affecting the growth of pastures and compares these factors and their effect on plants. Differentiates between poisonous plants and others .	Theoretical: Factors affecting NPT Pastures . Practical: technical methods of measurement Pastures grew .	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions
4	2 heoretical 3 practical	a4 a9	It gives examples of the extent which pastures are vulnerable degradation . Classifies which types of plants are most suitable for growing pastures	Theoretical: Grazing areas in Iraq . Practical: measuring quantitative traits .	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions
5	2 heoretical 3 practical	a5 a10	Finds ways to protect natural pastures and can be applied to the pastures of Nineveh Governorate . Identify the types of toxins in plants	Theoretical: Physiology fodder plants part One . Practical: measuring qualitative characteristics .	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions
6	2 heoretical 3 practical	b1 b3	It carries out the most important steps to identify the most important leguminous plants common in natural pastures . Shows which plants are most susceptible to grazing.	Theoretical : physiology of pasture plants These . Practical: grazing systems conditions	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions
7	2 heoretical 3 practical	b2 b4	It implements the most important special recommendations in cultivating the most important common grass plants in natural pastures . Determines the types and quantities of toxins found in pasture plants	Theoretical: Animal management in pasture Practical: salting	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions
8	2 heoretical 3 practical	c1 b5	Distinguish between the most important factors through which pasture germination can be improved Distinguish types of animals	Exploiting pasture Practical: Animal behavior, part one	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions
9	2 heoretical 3 practical	c2 b6	Selects the most important poisonous grazing plants found in . Illustrates different types of plants to grow in pastures	Theoretical: pasture exploitation, part two Practical: methods for measuring exploitation Pasture	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions
10	2 heoretical 3 practical	d1 b7	Identifies the most important harmful plants in natural pastures . He carries out various samples of pasture plants to determine their suitability for animal feed .	Theoretical trend of pasture condition Practical: methods of measuring condition Pasture	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions
11	2 heoretical 3 practical	d2 c3	Explains some of the benefits of natural pastures Carrying out samples of pasture plants	Theoretical: animal load Practical: Methods of measuring animal load	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasksAnd report	Short exams, assignments, discussions

12	2 theoretical 3 practical	d3 c4	It explains the extent to which humans benefit from pastures and the ways to benefit from them. Write a report on toxic and non-toxic plants	Theoretical: cladding Practical: cladding methods	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasks And report	Short exams, assignments, discussions
13	2 theoretical 3 practical	d4 c5	Supports the protection and revitalization of pastures and methods for measuring their growth Distinguish between harmful and harmless plan	Theory: harmful plants Practical: getting to know each other Harmful plants in pastures	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasks And report	Short exams, assignments, discussions
14	2 theoretical 3 practical	e1 d5	Recognizes the environmental and biological risks that affect pasture safety Explain why some plants are declining pasture	A field visit to one of the pastures Natural Practical: identifying plants For natural pastures	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasks And report	Short exams, assignments, discussions
15	2 theoretical 3 practical		He decides to use one of the methods to protect pastures Trying out some growing plan	Theoretical: A field visit to artificial pastures Practical: Solve a problem	Auditory methods Writing style On the board Dialogue style Direct practical: Assigning tasks And report	Short exams, assignments, discussions

16	Course Evaluation				
Sequence	Calendar methods	Calendar date (week)	Class	Relative weight %	
1	Report 1	fourth week	2.5	2.5	
2	Report 2	fifth week	2.5	2.5	
3	Short test (1) Quiz	sixth week	2	2	
4	Short test (2) Quiz	fourteenth week	2	2	
5	Short test (3) Quiz	fifteenth week	1	1	
6	Semester test (1)	sixth week	7.5	7.5	
7	Semester test (2)	eleventh week	7.5	7.5	
8	Final theoretical test	Final semester exams	40	40	
9	Practical field project	fifteenth week	5	5	
10	Field evaluation	third and fifth week	2	2	
11	Practical short test (1) Quiz	first week	1	1	
12	Short practical test (2) Quiz	fourth week	0.5	0.5	
13	Short practical test (3) Quiz	fourteenth week	1	1	
14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5	5.5	
15	Final practical test	Final semester exams	20	20	
	The total				
	Required textbooks (curricular books, if any)		Fodder crops and pastures, Muhammad Sayed Radwan Abdullah Qasim Al-Fakhri		

100

	Main references (sources)	
	Recommended books and references (scientific journals, reports...)	Cops and Forage Archives
	Electronic References, Websites	ICARDA, Arab Organization for Agricultural Development

Theoretical subject teacher
Dr. Salim Abdullah Younis

Practical subject:
Ahmed Majeed Abdullah

**Chairman of the Scientific
Committee**
Dr. Salim Abdullaah




Head of Department
Moyassar Mohammed Aziz



Course Description Form

1. Course Name:	
Environmental stress	
2. Course Code:	
ECST464	
3. Semester / Year:	
Second Semester (Spring) / 2025–2026	
4. Description Preparation Date:	
1/2/2026	
5. Available Attendance Forms:	
Presence + Online	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(2 theoretical + 3 practical = 5 hours) × 15 weeks = 75 hours / 3.5 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist Sadam Ibraheem Yahia (saddam.alobaidi@uomosul.edu.iq)	
Name: Assist Gadeer Nawaf (ghadeer.nawaf.alobaidy@uomosul.edu.iq)	
8. Course Objectives	
Theoretical: - Enable the student to understand the effect of environmental stresses on plant organ functions and plant production. - Enable the student to understand the effects of environmental changes on crop productivity. - Enable the student to possess scientific methods and concepts that enable him to neutralize or reduce the effects of environmental stresses and environmental changes. - Enable the student to estimate and identify crops suitable for cultivation in marginal or stressful environments of crops and follow scientific methods in increasing the ability of plants to withstand environmental stresses.	Practical: - Enable the student to identify the impact of environmental stresses through scientific experiments. - Enable the student to measure environmental stresses on plants and predict their effects on the yield. - Enable the student to apply the coefficients that increase the resistance of plants to environmental stresses.
9. Teaching and Learning Strategies	
Theoretical:	Practical:

- Interactive Lecture
- Brainstorming
- Dialogue and discussion
- Assignment and report
- Presentations of models of the effects of environmental changes and their impact on crop growth and vital processes in those crops.
- Tasks the preparation of a report on one of the topics of environmental stress and discusses it.
- Scientific visits.

- Commissioning teamwork to reveal leadership skills.
- Assigning tasks and a report for each experiment.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	<u>Theoretical(a1,c1):</u> The student learns about the types and causes of environmental stresses, how to apply the concepts of environmental stress resistance to crops <u>Practical(b1):</u> examines and distinguishes cells and tissues of all kinds under stress	Theoretical: Types of Environmental Stresses Practical: Examination and differentiation of cells and tissues of all kinds under stress	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
2	2Theoretical 3Practical	<u>Theoretical(a2,c2):</u> The student learns about the physiology of environmental stresses, It regulates and controls the concentration of solutions to suit the needs of plants <u>Practical(c7):</u> determines the concentration and type of solution	Theoretical: Stress measurement methods Practical: determination of concentration and type of solutions	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
3	2Theoretical 3Practical	<u>Theoretical(a3):</u> Knows what environmental stress measures are <u>Practical(b2):</u> Using tinctures, reveals diffusion, osmosis and imbibition	Theoretical: Metabolic stress Practical: Environmental stress measurement	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions, field assessment
4	2Theoretical 3Practical	<u>Theoretical(a4):</u> The student judges by the shape of plants the type of environmental stress	Theoretical: Stress Simulation Methods Practical: Measuring Growth and its Rates	Theoretical: auditory styles, blackboard writing style, direct	Quizzes, assignments, discussions, report1

		Practical(b3): Measures growth and its rates		dialogue style, scientific visit Practical: assignment and report	
5	2Theoretical 3Practical	Theoretical(a5): The student judges the nature of growth in plants through the metabolism of demolition and construction in plants Practical(b4): reveals the phase of growth in plants	Theoretical: Water Stress Practical: Measuring Water Equilibrium	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions, report1, field assessment
6	2Theoretical 3Practical	Theoretical(a6,c3): Identify the importance of secondary metabolic compounds and their role in protecting plants from environmental stresses, identify problems of low photosynthesis processes, identify and treat the causes of high respiratory Practical(b5): Distinguish primary and secondary metabolic compounds and their functional roles in plants	Theoretical: the movement of water within the plant when water tension occurs Practical: Identification of stress -induced metabolic compounds	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Semester test, assignment, discussions
7	2Theoretical 3Practical	Theoretical(a7,c4): The student learns about the mechanism of water equilibrium and how direct and indirect factors are affected by it, determining the zero growth and determining photosynthesis times based on that, predicting the date of flowering, maturity and water consumption Practical(b6): Reveals the types and amount of transpiration and its speed in different parts of plants	Theoretical: The effect of water stress on physiological processes Practical: Transpiration Measurement	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
8	2Theoretical 3Practical	Theoretical(a8,c5): Learn about the method of measuring growth of environmentally stressed plants, adjusting and determining the flowering and maturation period based on aggregate temperatures	Theoretical: Anatomical comparison between stress-prone plants and water-balanced plants Practical: Measuring Growth	Theoretical: auditory styles, blackboard writing style, direct dialogue style, scientific visit Practical: assignment and report	Quizzes, assignments, discussions

		Practical(b7): Tests the amount of daily growth and net photosynthesis			
9	2Theoretical 3Practical	Theoretical(a9): water absorption by plants and how it is transmitted within plants Practical(b8): Conducts experiments on plants that demonstrate the mechanism of water absorption by plants	Theoretical: The Effect of Water Stress on Productivity Practical: Water Absorption	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
10	2Theoretical 3Practical	Theoretical(a10,c6): Identify the mechanism of absorption of nutrients by plants and the effect of salinity stress and pH on that process, addressing the causes of low water consumption efficiency Practical(b9): Examines the absorption of salt-sensitive and resistant plants in solutions of different concentrations	Theoretical: Metabolic Components Practical: Absorbing Elements	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
11	2Theoretical 3Practical	Theoretical(a11): Recognizes the disadvantages of soil subdues on the absorption process Practical(e1): Determines the preference for the growth of c3 and c4 crops in climatically different regions	Theoretical: The Morphology of Stress-Prone Plants Practical: Photosynthesis	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Semester test , assignment, discussions
12	2Theoretical 3Practical	Theoretical(a12): respiration is judged at every stage of growth and its relationship to aging Practical(b10): Measures aerobic and anaerobic respiration	Theoretical: Acclimatization Practical: respiration and senescence	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
13	2Theoretical 3Practical	Theoretical(a13): Manages and judges a scientific debate on plant acclimatization Practical(e2): determines from the characteristics of the plant how well it adapts to grow in a particular environment	Theoretical: Heat Stress Practical: Anatomical features of stressed plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
14	2Theoretical 3Practical	Theoretical(a14): Determining the positive and negative role of the anatomical and morphological features	Theoretical: saline stress and degree of reaction Practical: morphological features of stressed plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style	Quiz, assignment, discussions

		of drought-resistant plants Practical(c8): Determines by anatomy and phenotypic the extent of adaptation to environmental stress factors		Practical: assignment and report	
15	2Theoretical 3Practical	Theoretical(a15): Enumerates the types of materials used in seed priming and their functional importance in stressed plants Practical(b11): distinguish the effects of seed priming on plants	Theoretical: seed priming Practical: Perform seed priming experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quiz, assignment, discussions, practical field project

11. Course Evaluation

No.	Evaluation methods	Calendar date (week)	Grade	Relative weight %
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz (1)	Sixth week	2	2
4	Quiz (2)	Fourteenth week	2	2
5	Quiz (3)	Fifteenth week	1	1
6	Semester Exam (1)	Sixth week	7.5	7.5
7	Semester Exam (2)	The first week is difficult	7.5	7.5
8	Final theoretical test	Final Semester Exams	40	40
9	Practical field project	Fifteenth week	5	5
10	Field Assessment	Third and fifth week	2	2
11	Practical Quiz (1)	First week	1	1
12	Practical Quiz (2) Quiz	Fourth week	0.5	0.5
13	Practical Quiz (3) Quiz	Fourteenth week	1	1
14	Homework and discussions	All weeks	5.5	5.5
15	Final Practical Test	Final Semester Exams	20	20
	Total	100	100%	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures prepared by the subject teacher
Main references (sources)	Matthew, A.J and P. M. Hasegawa (2003). Plant Abiotic Stress. 2nd Edition. Wiley Pub. PP: 336. Shabala S. (2017). Plant Stress Physiology. 2nd Edition. CABI Pub. PP: 376. Rao, K. M., Raghavendra, A. S., & Reddy, K. J. (Eds.). (2006). Physiology and molecular biology of stress tolerance in plants. Springer Science & Business Media. Kumar, R. R., Praveen, S., & Rai, G. K. (Eds.). (2022). Thermotolerance in Crop Plants. Springer Nature. Ansari, S. A., Ansari, M. I., & Husen, A. (Eds.). (2022). Augmenting Crop Productivity in Stress Environment. Springer Nature Singapore.

	Larcher, W. (2003). Physiological plant ecology: ecophysiology and stress physiology of functional groups. Springer Science & Business Media.
Recommended books and references (scientific journals, reports...)	Plant Stress Journal https://www.sciencedirect.com/journal/plant-stress
Electronic References, Websites	https://study.com/learn/lesson/environmental-stressors-concept-examples.html https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9141089/ https://explore.globalhealing.com/what-is-environmental-stress/ https://onlinelibrary.wiley.com/doi/10.1111/j.1420-9101.2005.00962.

**Chairman of the Scientific
Committee**
Dr. Salim Abdullaah




Head of Department
Moyassar Mohammed Aziz



Course Description Form

1. Course Name:	
Weeds Control	
2. Course Code:	
WECO463	
3. Semester / Year:	
Second Semester (Spring) / 2025–2026	
4. Description Preparation Date:	
1/2/2026	
5. Available Attendance Forms:	
Presence + online	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(2 theoretical + 2 practical = 5 hours) × 15 weeks = 75 hours / 3. units	
7. Course administrator's name (mention all, if more than one name)	
Name: Lecturer dr. Dheyaa Fathi Aljuburi Email: dfhrdheyaa@uomosul.edu.iq . Ghadeer Nawaf Thanoon Email: Ghadeer.nawaf.alobaidy@uomosul.edu.iq	
8. Course Objectives	
- Theoretical - - Enable the student to understand and understand how the benefits and harms of weeds and means of regionalization. - - Enable the student to understand the concept of competition and spread to the weed. - - Enable the student to understand the methods of combating weeds of all kinds. - - Enable the student to determine the correct control methods according to the conditions of the field and the types of weeds present. - - Enable the student to diagnose the weed groups and their mechanisms of work. - - The student can judge and evaluate the appropriate herbicide and the effect of the residual and the appropriate doses of herbicides..	- Practical - - Enable the student to identify and the possibility of diagnosing weeds. - - Enable the student to identify the use of the appropriate sprayer and methods of calibration and determine the optimal concentration. - - Enable the student to identify how to: methods of carrying out agricultural experiments, collecting samples and making measurements on them.

9. Teaching and Learning Strategies

Theoretical:

- Interactive Lecture
- Brainstorming
- Dialogue and discussion
- Assignment and report
- Application of field experiments to combat germination and dormancy
- Tasks the preparation of a report on one of the topics of weed biology, reproduction and propagation and discussed therein.
- Scientific visits.

Practical:

- Commissioning teamwork to reveal leadership skills.
- Assigning tasks and a report for each experiment.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	b1, a1 Theoretical: Defines, enumerates and explains weeds, their benefits and harms b7 Practical: Enumerates the division and classification of jungle plants	Theoretical: Weeds and their definitions. Practical: naming, classifying, and subdividing weed plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
2	2Theoretical 3Practical	A2 Theoretical: Defines regionalization and enumerates the characteristics related to regionalization and the means of spreading the weed. B8 practical: Explains the adaptive characteristics of weed plants	Theoretical: acclimatization of weed plants and methods of their spread. Practical: Characteristics of adapted weed plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
3	2Theoretical 3Practical	b2, a3 Theoretical: Know the antibiotics (define the antibiotics, number of places where the antibiotic materials are located). B9 Practical: Enumerates the different methods of reproduction of weed plants	My theory: competition. Practical: Methods of reproduction in weed plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
4	2Theoretical 3Practical	a4, b3 Theoretical: Describe the methods of entry of antagonistic substances (explain the methods of entry of antagonistic substances	My theory: the contradiction of life. Practical: The effect of dormancy on weed plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style	Quizzes, assignments, discussions

		into the environment, explain the methods of washing and volatilization). c5 practical: Explains the effect of dormancy on weed plants		Practical: assignment and report, scientific visit	
5	2Theoretical 3Practical	A5, B4, C1 Theoretical: Uses resistance methods (identify the best methods used to limit the spread of the weed). C6 Practical: Explains preventive methods to reduce the spread of the weed	Theoretical: Ways to control weeds. Practical: Characteristics of the weed and preventive means to limit its spread	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
6	2Theoretical 3Practical	C2 Theoretical: Employ means to limit the spread of weeds (employ mechanical and agricultural methods to eliminate weeds spreading in agricultural fields). B10 Practical: Explains the quantitative characteristics of the weed	Theoretical: methods of resistance. Practical: quantitative characteristics and sampling methods	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
7	2Theoretical 3Practical	b5 Theoretical: Writes about the history of chemical control and the benefits of control (write a report on chemical control explaining how pesticides were used for the first time, explain the benefits of chemical control). b11. D4 Practical: Explains weed pesticides	Theoretical: Chemical control. Practical: Identifying herbicides and evaluating herbicides	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
8	2Theoretical 3Practical	C3 Theoretical: shows the factors determining the lethal effect (among the factors determining the lethal effect of any chemical compound). b12 Practical: Explains the physical and chemical properties of pesticides	Theoretical: chemical groups. Practical: physical and chemical properties and improved materials	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report, scientific visit	Quizzes, assignments, discussions
9	2Theoretical 3Practical	C4 Theoretical: Test the penetration of pesticides into the leaves (test the locations of pesticide penetration during the chemical control department). d5 Practical: Determines the volume of spray solution	Theoretical: absorption and transport of pesticides. Practical: components and volume of spray solutions and pesticide spraying machines	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

10	2Theoretical 3Practical	b6, c5 Theoretical: Schedule the transport of pesticides (schedule the transport of pesticides from the drop of the pesticide to its arrival in the killing areas). b13 Practical: Explains the types of nozzles and their uses	Theoretical: Absorption and transfer of pesticides. Practical: Calibration of sprayers and types of nozzles	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
11	2Theoretical 3Practical	D1 Theoretical: Determines the types of selectivity (specify the type of selectivity when spraying pesticides on wheat plants and they are not affected, determine the type of selectivity when observing broad-leaved weed plants being affected, and serve as the effect of thin-leaved plants). b14 Practical: Distinguish the optional types of pesticides	Theoretical: Optional Practical: Types of electives	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
12	2Theoretical 3Practical	D2 Theoretical: Explain morphological selectivity and physiological selectivity (explain how the pesticide is transformed inside the plant, explain the mechanism of morphological selectivity in plants). b15 Practical: Measures aerobic and anaerobic respiration	Theoretical: Optional Practical: Sustainability of pesticides in soil	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
13	2Theoretical 3Practical	D3 Theoretical: Explains the relationship of pesticides and the environment (explain the relationship of pesticides and the environment in terms of the time of addition and the concentration of the pesticide). c7 Practical: tests the methods of pesticide transport within the soil	Theoretical: Weed pesticides and the environment Practical: Methods of transport of pesticides into the soil	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
14	2Theoretical 3Practical	e1 Theoretical: Verify the existence of sustainability (investigate why pesticides persist in the soil or on plant parts). Practical: Documenting various weed observations	Theoretical: Sustainability Practical: watching weed plants	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

15	2Theoretical 3Practical	e2 Theoretical: Measures the retention of pesticides in the soil (measure the retention period of the pesticide in the soil and do you think there are factors related to its remaining effective in the soil). Practical: Measures the amount of pesticide needed for control	Theoretical: Sustainability Practical: measuring the amount of pesticide for control	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
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11. Course Evaluation

	Sequence	Calendar methods	Calendar date (week)	Class
	1	Report 1	fourth week	2.5
	2	Report 2	fifth week	2.5
	3	Short test (1) Quiz	sixth week	2
	4	Short test (2) Quiz	fourteenth week	2
	5	Short test (3) Quiz	fifteenth week	1
	6	Semester test (1)	sixth week	7.5
	7	Semester test (2)	eleventh week	7.5
	8	Final theoretical test	Final semester exams	40
	9	Practical field project	fifteenth week	5
	10	Field evaluation	third and fifth week	2
	11	Practical short test (1) Quiz	first week	1
	12	Short practical test (2) Quiz	fourth week	0.5
	13	Short practical test (3) Quiz	fourteenth week	1
	14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5
	15	Final practical test	Final semester exams	20
		The total	100	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures prepared by the subject teacher
Main references (sources)	– Barbara D. Booth & Clarence J. Swanton AND Stephen D. Murphy.2003.Weed Ecology in Natural and Agricultural Systems - – Robert L. Zimdahl / 2007.Fundamentals of Weed Science . – THOMAS J. MONACO & STEPHEN C. WELLER AND FLOYD M. ASHTOM. 2002.WEED SCIENCE
Recommended books and references (scientific journals, reports...)	– https://magrj.mosuljournals.com/ – https://www.tjas.org/index.php/tjas – https://journals.sagepub.com/
Electronic References, Websites	Journal of Plant Physiology https://www.sciencedirect.com/journal/journal-of-plant-physiology Plant Physiology Reports

	https://www.springer.com/journal/40502 Google Scholar https://scholar.google.com/
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**Chairman of the Scientific
Committee
Dr. Salim Abdullaah**



**Head of Department
Moyassar Mohammed Aziz**



Course Description Form

1. Course Name:	
Plant Growth Regulators	
2. Course Code:	
PLGR307	
3. Semester / Year:	
Second Semester (Spring) / 2025–2026	
4. Description Preparation Date:	
1/2/2026	
5. Available Attendance Forms:	
Presence + Online course	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(2 theoretical + 4 practical = 5 hours) × 15 weeks = 75 hours / 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. dr. Omar A. Abdulqader Email: edu3ab@uomosul.edu.iq Name: Assist. Lect. Khalil Ibrahim Khalil Email: khaleelibk@uomosul.edu.iq	
8. Course Objectives	
Theoretical: - Introducing the student to agricultural growth regulators and the role of growth hormones in plant life. - Clarifying most of the physiological phenomena controlled by plant hormones such as growth, seed germination, dormancy of buds and seeds, fruit ripening and aging. - Introduce the student to how to use organizations in a correct scientific way and their interactions with each other. - Introducing the student to how to use growth organizations and obstacles in the practical aspect for the purpose of increasing the yield.	Practical: - The student acquires the skill of preparing solutions from growth regulators in addressing negative physiological phenomena and improving positive phenomena for the purpose of increasing production. - Conducting scientific experiments to see the effect of growth regulators. - Detection and appreciation of phytohormones and growth regulators.

- Introducing the student to how to address some of the phenomena that accompany plant growth

9. Teaching and Learning Strategies

Theoretical:

- Interactive Lecture
- Brainstorming
- Dialogue and discussion
- Assignment and report
- Presentations of models of the effects of growth regulators on agricultural crops.
- It is tasked with preparing a report on one of the topics of growth organizations and discussing it in it.
- Scientific visits.

Practical:

- Commissioning teamwork to reveal leadership skills.
- Assigning tasks and a report for each experiment.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	<u>Theoretical(a1,c1):</u> The student learns about the types of growth regulators and plant hormones, how to apply growth regulators in increasing the yield <u>Practical(b1):</u> examines and distinguishes the types of diffusers solutions	Theoretical: Introduction to Hormones and Growth Regulators Practical: Learn about the shapes of growth regulators	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
2	2Theoretical 3Practical	<u>Theoretical(a2,c2):</u> The student is introduced to Auxin, Measures and adjusts the concentration of solutions to suit the needs of plants <u>Practical(c7):</u> determines the concentration and type of diffuser solutions	Theoretical: Auxin: discovery, existence, Transmission in the plant Practical: How to prepare Auxin	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
3	2Theoretical 3Practical	<u>Theoretical(a3):</u> Knows what measures of biological responses are <u>Practical(b2):</u> Reveals using a regulated concentration using standard solutions	Theoretical: The mechanism of action of Auxin and their physiological effects Practical: Auxin Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

4	2Theoretical 3Practical	<u>Theoretical(a4):</u> Through the degree of response, the student identifies the internal content of auxins <u>Practical(b3):</u> Measures growth, rates and its impact on Auxin, GA and CK	Theoretical: gibberellins, their discovery, presence and transmission in plants Practical: how to prepare gibberellins	Theoretical: auditory styles, blackboard writing style, direct dialogue style, scientific visit Practical: assignment and report	Quizzes, assignments, discussions
5	2Theoretical 3Practical	<u>Theoretical(a5):</u> The student learns about the nature of growth in plants, including the balance of hormones that stimulate and inhibit growth <u>Practical(b4):</u> Reveals the physiological effects of gibberellins by experiment	Theoretical: Gibberellins Practical: Gibberellins Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
6	2Theoretical 3Practical	<u>Theoretical(a6,c3):</u> Identify the importance of CK in the reproductive tissues of plants, determine the pathways of biosynthesis of CK, identify and treat the causes of leaf and fruit loss <u>Practical(b5):</u> distinguish between the effect of both CK and GA	Theoretical: Cytokinins: Definition and Location, Biostructure, Biosynthesis Practical: How to prepare Cytokinins	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
7	2Theoretical 3Practical	<u>Theoretical(a7,c4):</u> The student learns about the mechanism of action of the CK, determining and modifying the shelf life of the leaves, predicting the date of flowering and maturity <u>Practical(b6):</u> Reveals the mechanism of action of cytokinins and their physiological effects through an experiment	Theoretical: Cytokinins: mechanism of action, physiological effects, Cytokinins and Senescence Practical: Cytokinins Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
8	2Theoretical 3Practical	<u>Theoretical(a8,c5):</u> Illustrates the method of ethylene transmission, determining the ripening period <u>Practical(b7):</u> Tests the effect of ethylene on broad, thin-leaved plants	Theoretical: Ethylene Motion and Transmission Practical: Ethylene Preparation Method	Theoretical: auditory styles, blackboard writing style, direct dialogue style, scientific visit Practical: assignment and report	Quizzes, assignments, discussions
9	2Theoretical 3Practical	<u>Theoretical(a9):</u> ethylene and Obsolete Senescence and Maturation Events in Plants	Theoretical: Ethylene: mechanism of action, physiological effects, economic importance of ethylene	Theoretical: auditory styles, blackboard writing style, direct dialogue style	Quizzes, assignments, discussions

		Practical(b8): He conducts experiments on plants demonstrating the physiological effects of ethylene	Practical: Ethylene Experiments	Practical: assignment and report	
10	2Theoretical 3Practical	Theoretical(a10,c6): Identify the mechanism of effect of ABA in stomata and plant dyes, Explains the reasons for the low efficiency of water consumption Practical(b9): examines the effects of paper treatment with ABA	Theoretical: Growth Inhibitors (ABAs) Practical: Preparation method (ABA)	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
11	2Theoretical 3Practical	Theoretical(a11): Recognizes the cons of high ABA Practical(e1): Determines the preference of treatment with ABA and salicylic in stimulating plants to resist drought and salinity	Theoretical: Physiological Effects of ABA Practical: ABA Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
12	2Theoretical 3Practical	Theoretical(a12): Shows the impact of good and bad obstacles Practical(b10): Measures growth inhibitors	Theoretical: growth inhibitor and their agricultural importance. Practical: Experiences of Growth inhibitor	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
13	2Theoretical 3Practical	Theoretical(a13): A scientific debate justifies and governs the use of growth regulators in modern technologies Practical(e2): the properties of growth regulators decide how to use them in tissue culture	Theoretical: the use of growth regulators in modern technologies Practical: Tissue Culture Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
14	2Theoretical 3Practical	Theoretical(a14): Identifying the positive and negative role of growth regulators in bringing about genetic mutations Practical(c8): Identifies growth regulators that create the effect of genetic mutations	Theoretical: the use of growth regulators in modern technologies Practical: Experiments with Genetic Mutations	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions
15	2Theoretical 3Practical	Theoretical(a15): Explains the types and roles of growth regulators that are related to seed dormancy and germination Practical(b11): characterizes the effect	Theoretical: The Role of Growth Regulators in Dormancy and Post-Harvest Practical: Breaking seed dormancy Experiments	Theoretical: auditory styles, blackboard writing style, direct dialogue style Practical: assignment and report	Quizzes, assignments, discussions

		of growth regulators in post-harvest dormancy			
11. Course Evaluation					
No.	Evaluation methods	Calendar date (week)	Grade	Relative weight %	
1	Report 1	Fourth week	2.5	2.5	
2	Report 2	Fifth week	2.5	2.5	
3	Quiz (1)	Sixth week	2	2	
4	Quiz (2)	Fourteenth week	2	2	
5	Quiz (3)	Fifteenth week	1	1	
6	Semester Exam (1)	Sixth week	7.5	7.5	
7	Semester Exam (2)	The first week is difficult	7.5	7.5	
8	Final theoretical test	Final Semester Exams	40	40	
9	Practical field project	Fifteenth week	5	5	
10	Field Assessment	Third and fifth week	2	2	
11	Practical Quiz (1)	First week	1	1	
12	Practical Quiz (2) Quiz	Fourth week	0.5	0.5	
13	Practical Quiz (3) Quiz	Fourteenth week	1	1	
14	Homework and discussions	All weeks	5.5	5.5	
15	Final Practical Test	Final Semester Exams	20	20	
	Total	100	100%	100%	
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Lectures prepared by the subject teacher			
Main references (sources)		Rademacher, W. (2015). Plant growth regulators: backgrounds and uses in plant production. Journal of plant growth regulation, 34, 845-872. Davies, P. J. (Ed.). (2012). Plant hormones and their role in plant growth and development. Springer Science & Business Media.			

Recommended books and references (scientific journals, reports...)	Srivastava, L. M. (2002). Plant growth and development: hormones and environment. Elsevier. Plant hormones articles from across Nature Portfolio https://www.nature.com/subjects/plant-hormones
Electronic Websites	References, https://byjus.com/neet/plant-hormones/ https://www.sciencedirect.com/topics/neuroscience/plant-hormone https://organismalbio.biosci.gatech.edu/chemical-and-electrical-signals/plant-hormones-and-sensory-systems/

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