

Course Description Form

1. Course Name:	
Biochemistry	
2. Course Code:	
AGPP24_F3131	
3. Semester / Year:	
First semester (fall) 2025–2026	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Presence	
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)	
Name: Dr.Arkam Mohamad Alomary and Afkar Yahya Ahmed	
8. Course Objectives	
Theoretical - To enable students to know the importance of the basic principles of Biochemistry - The importance of the biochemistry program in everyday life and the economic and medical importance of this program _ Finding the best means to explain the proposed program and identify the characteristics of the devices accurately _ How to use modern technology and technologic machines to improve and develop the proposed program _ Enable the student to apply and employ this program and use it as one of the most important criteria for future employment in the communit _ Finding civil and governmental organizations or specializationsWho is interested in this program and how to connect or recruit students - By understanding the concepts of Life Technologie	Practical - Enable the student to get acquainted with the principles and methods recent developments in the study of life chemistry Sciences - Study of carbohydrate synthesis - Fats, proteins and all the tests that - Conducted and disclosed
9. Teaching and Learning Strategies	
Theoretical - Interactive lecture . -dialogue and discussion .	Practical - Interactive lecture . -dialogue and discussion .

Course Description Form

1. Course Name:
Fungi 2
2. Course Code:
MYCO320
3. Semester / Year:
Year:3end
4. Description Preparation Date:
1/2 /2026
5. Available Attendance Forms:
My presence
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)
Name: Ali HamoodThanoon Email: dr.alithanoon@uomosul.edu.iq
Name: Saleh Ahmed Esaa Email: saleh_ahmed@uomosul.edu.iq
8. Course Objectives
- So the student can understand and comprehend wh is related to fungi - The student used knowledge of the importance of fungi and their relationship to the environment. -Enabling the student to know the fungi that infect local and imported vegetables. - Especially the student to identify fungal groups for plant diseases. - Suddenly the student gets to know which groups of fungi are edible and poisonous.applications for outstanding attitudes
9. Teaching and learning strategies
- Interactive lecture -Brainstorming - Dialogue and discussion - Assigning tasks and reports Displays of models of plants infected with pathogenic fungi

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	oretical2	b4: The student masters the thinking skills to identify common fungi in the class of Agonomycetes	Agonomycetes fungi, their characteristics, and the most important orders to which they belong.	Auditory methods Writing style on the blackboard Direct dialogue style	Semester test 2 Final test Short practical test 2 Final test Practical report
	Practical3	a2: The student is familiar with the fungi that are widespread in the college fields	A field visit to the college's fields and submitting a report on the common fungi spread in the fields	Assigning tasks and reporting	
2	Theoretical2	b3: The student explains the characteristics of kingdom fungi and their most important divisions	kingdom of Fungi, its characteristics and divisions	Auditory Methods Writing on the board Direct dialogue	Semester exam 1, final exam
	3 practical	a1: The student learns about the shapes and sizes of the asci and fruiting bodies of the types of fungi that cause plant diseases	Describe pyrinomycetes / identify the shapes and sizes of the fruiting bodies	Assigning tasks and reporting	Short Practical test1 final exam
3	oretical2	b1: The student explains the features of kingdom Fungi section and the most important classes affiliated with it	Ascomycota	Auditory methods Writing style on the blackboard Direct dialogue style	Semester exam 1, final exam
	Practical3	b2: The student examines the reproductive parts (stone bodies) of different fungal species	Discomycetes fungi / section of discomycetes fruiting body / Shapes and sizes of the asci and fruiting body of the fungus <i>Monliniafructicola</i> with its life cycle / <i>Sclerotiniasclerotriorum</i> its life cycle	Assigning tasks and reporting	Short practical test 1 Final test Direct drawing, no penalty microscope

4	oretical2	b2: The student is familiar with the characteristics of the class of plectomycetes and the orders belonging to it	Plectomycetes Its characteristics and the most important ranks belonging to it	Auditory methods Writing style on the blackboard Direct dialogue style	Semester exam 1, final exam
	Practical3	b2: The student examines the Piziza fungi using a microscope	Aboveground discomycetes fungi / life cycle of the Piziza fungus / field visit	Assigning tasks and reporting	Short practical test 1 Final test
5	oretical2	b3: The student explains the characteristics of pyrinomycetes The most important ranks subordinate to it	Pyrinomycetes Its characteristics and the most important ranks belonging to it	Auditory methods Writing style on the blackboard Direct dialogue style	Semester test 1, final test
	Practical3	a4: The student compares the types of fungal bodies of the most important fungi	The Murchellaeeae family pictures and shapes / The Helveliaceae family pictures and shapes / Subterranean operculum disc fungi / The life cycle of truffles	Assigning tasks and reporting	Short practical test 1 Final test Life cycle drawing

6	oretical2	b4: The student masters the classification of Discomycetes and their most important orders	Discomycetes the most important ranks belonging to it	Auditory methods Writing style on the blackboard Direct dialogue style	Semester test 1, final test
	Practical3	b2: The student examines the types of spores according to the Skardo system	Discomycetes fungi Its characteristics and the most important ranks belonging to it	Assigning tasks and reporting	Short practical test 1 Final test
7	oretical2	a1: The student learns about the most important common fungi belonging to the class of Loculoascomycetes	discomycetesfungi Its characteristics and the most important ranks belonging to it	Auditory methods Writing style on the blackboard Direct dialogue style learning	Semester test 1 Final test
	Practical3	a3: The student distinguishes between the genus Alternaria and the genus Rhizoctonia	Descomycetesfungi / life cycle of apple scab / forms of spores according to the Skardo system	Assigning tasks and reporting	Short practical test 1 Final test Direct drawing And my homework

8	oretical2	a1: The student learns about the most important common fungi belonging to the basidiomycete	Basidiomycota	Auditory methods Writing method on the blackboard, direct dialogue method,	Semester test 1 Final test
	Practical3	a3: The student distinguishes the mechanism of formation of basidium and basidiospores	Basidiomyces / clampeConication / Mechanism of formation of Basidium and Basidiospores / Fruiting body, its structure and parts / Field visit	Assigning tasks and reporting	Short practical test 1 Final test
9	oretical2	a1: The student learns about the most important common fungi belonging to the class of Hymeinomycetes	Hymenomycetes Its characteristics	Auditory methods Writing style on the blackboard Direct dialogue style	Semester exam 2, final exam
	Practical3	a3: The student distinguishes the genera belonging to the class Hymenomycetes	basidiomycetes fungi, Hymenomycetes / shapes and pictures of a group of their fungi	Assigning tasks and reporting	Short practical test 2 Final test Direct drawing homework
10	oretical2	a1: The student learns about the most important orders of the class of basidiomycetes	The most important orders of the Basidiomycete class	Auditory methods Writing style on the blackboard Direct dialogue style	Semester exam 2, Finalexam
	Practical3	a3: The student distinguishes the shapes of asci in Ascomycetes	Basidiomycetesfung us Gastromycetes / shapes and pictures of a group of its fungi / structure of the stem (picture)	Assigning tasks and reporting	Short practical test 2 Final test Direct drawing homework
11	oretical2	a1: The student learns about the most important common fungi in the Gasteromycota	Gasteromycetes, their characteristics, and the most important orders to which they belong	Auditory methods Writing style on the blackboard Direct dialogue style	Semester test 2 Final test

	Practical3	b2: The student examines the stages of the life cycle Rust life cycle	Rust fungi / stages of the life cycle of the fungi (diagram) / life cycle of the fungus <i>Puccinagrainis</i>	Assigning tasks and reporting	Short practical test 2 Final test Direct drawing homework
12	oretical2	a2: The student is familiar with the most important common fungi in the smut fungi class	Smut fungi, their characteristics, and the most important orders to which they belong	Auditory methods Writing style on the blackboard, direct dialogue style	Semester test 2 Final test
	Practical3	b4: The student masters some scientific research on the types of fungi belonging to the smut fungi class	Smut fungus / Life cycle of the <i>Ustilagonudafungus</i>	Assigning tasks and reporting	Short practical test 2 Final test Direct drawing homework
13	oretical2	a7: The student explains the most important characteristics of common fungi from Rust fungi	Uridinomycetes fungi, their characteristics, and the most important orders belonging to them	Auditory methods Writing style on the blackboard Direct dialogue style	Semester test 2 Final test
	Practical3	a3: The student distinguishes the shapes of the fruiting bodies of the kingdom of Chromist / the division of oomycetes / an illustration of the phenomenon of internal emergence / the life cycle of the fungus Saprolegnia	The Second Kingdom / The Kingdom of protesta / The class of Oomycetes / An illustration of the phenomenon of internal emergence / The life cycle of the Saprolegnia fungus	Assigning tasks and reporting	Short practical test 2 Final test Direct drawing homework
14	oretical2	a4: The student compares the most common fungi belonging to the kingdom of Chromist	The kingdom of protesta, its characteristics and its divisions Class:oomycetes	Auditory methods Writing style on the blackboard Direct dialogue style	Semester test 2 Final test
	Practical3	b2: The student examines the shapes of Pythium / the life cycle of the fungus <i>Phytophthorainfestans</i> / the shapes of the genera of downy mildew / the life cycle of the fungus <i>Plasmoparaviticola</i> / the life cycle of the fungus <i>Albugocandida</i>	Order of Peronosporales / Life cycle of the fungus Pythium / Life cycle of the fungus <i>Phytophthorainfest</i>	Assigning tasks and reporting	Short practical test 2 Final test Direct drawing homework

			<i>ans / Forms of downy mildew genera / Life cycle of the fungus Plasmopara viticola / Life cycle of the fungus Albugo candida / Field visit</i>		
15	theoretical2	b4: The student masters thinking skills to identify the most important common fungi belonging to the protozoan kingdom Its attributes and its divisions Department of endoparasitic mold fungi Its characteristics and importance	Kingdom of protista Plasmodiophoromy mold fungi Its characteristics and importance	Auditory methods Writing style on the blackboard Direct dialogue style	Semester test 2 Final test
	Practical3	b2: The student examines the shapes of the plasmodium/the shapes of the fruiting bodies	Kingdom of Protista / Illustration of different types of tufts / Illustration of Plasmodium / Shapes of fruiting bodies (illustrations) / Shapes representing the paths of development of the fruiting body	Assigning tasks and reporting	Short practical test 2 Final test

11. Course Evaluation

	Calendar methods	Evaluation date (one week)	Grade	Relative weight %
1	Report 1	fourth week	2.5	2.5
2	Report 2	The fifth week	2.5	2.5
3	Short test (1) Quiz	the sixth week	2	2
4	Short test (2) Quiz	The fourteenth week	2	2
5	Short test (3) Quiz	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	Report 3	The fifteenth week	5	5
10	Homework	The third and fifth week	2	2
11	Practical short test (1) Quiz	The first week	1	1
12	Short practical test (2) Quiz	fourth week	0.5	0.5
13	Short practical test (3) Quiz	The fourteenth week	1	1

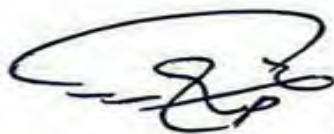
14	Live graphics	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5	5.5
15	Final practical test	Final semester exams	20	20
	the total		100	100%

12. Learning and Teaching Resources

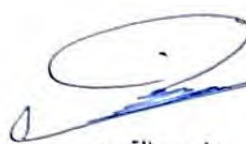
Required textbooks (curricular books, if any)	Principles of Mycology - Ali Karim Al-Taie)
Main references (sources)	Lectures prepared by the teacher
Recommended books and references (scientific journals, reports...)	Mycology, An International Journal on Fungal Biology
Electronic References, Websites	Scientific researcher and journals in Mycology



مدرس النظري: أ.م. د. علي حمود ذنون



مدرس العملي: م.د. صالح احمد عيسى



رئيس القسم
أ.م.د. فراس كاظم داؤد الجبوري




مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد



Course Description Form Plant diseases

1. Course Name:
Plant diseases
2. CourseCode:
PLDI319
3. Semester /Year:
First semester/third stage, plant protection/2025-2026
4. DescriptionPreparation Date:
1/2/2026
5. Available Attendance Forms:
Attendance+
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hour/ 3.5 units
7. Course administrator's name(mention all,if more than one name)
Name: Alaa Hamed Mohamed
8. Course Objectives
1. The learner will be able to understand the disease and the information that must be available in naming the pathogens 2. YRow illnesses Plant and identify the stages of disease development and the relationship of the parasite to the host 3. Distinguishing between types of plant pathogens 4. Full knowledge of the ways in which pathogens attack their plant hosts 5. Identify the defenses used by plants against pathogens 6. Recognizes the physiological functions that are affected by pathogen attacks 7. Choosing the suitability of environmental factors on the spread of pathogens 8. Enumerate Ways Epidemiological causes illnesses the plant 9. A comprehensive study of various typesBiological and chemical control And agricultural to pathogens the plant
9. Teaching and learning strategies
- Interactive lecture

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

Course Structure .10

We ek	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
1	2 theoretical	a2: The student is introduced to the concept of the history of plant diseases	History of plant diseases	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	a2: The student learns about the laboratory, equipment, tools, conditions that must be observed, and laboratory safety in the plant pathology laboratory	Plant pathology and laboratory safety laboratory	Assigning tasks and reporting	Short testQuiz
2	2 theoretical	b2: The student explains the importance of plant diseases	The importance of plant diseases	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b3: The student applies the sterilization process in the laboratory	Sterilization	Assigning tasks and reporting	Short testQuiz
3	2 theoretical	-a3: Gives examples of losses and damage caused by plant diseases	Losses and damage caused by plant diseases	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b4: The student experiences the nutritional environment that is	Food media for the development of pathogens	Assigning tasks and reporting	Short testQuiz

		most important for the development of pathogens			
4	2 theoretical	b3: The student explains the concept of disease in plants	The concept of disease in plants	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b4: The student distinguishes pathogenic causes through the laboratory diagnostic process	DiagnosisDiseases Vegetarianism	Assigning tasks and reporting	Short testQuiz
5	2 theoretical	a4: The student leads discussion panels on the development of plant disease and the relationship of the parasite to the host	The development of plant disease and the relationship of the parasite to the host	Auditory methods. Method of writing on the blackboard	Report and discuss
	3 practical	b4: The student examines pathogens by isolating them from plant parts	Isolation of pathogens from plant parts	Assigning tasks and reporting	writing a report
6	2 theoretical	a4: The student discusses the stages of disease development	Stages of plant disease development	For audio methods. Writing style on	Semester test1+a lecture
	3 practical	b4: The student examines pathogens by isolating them from seeds	Isolation of pathogens from seeds	Assigning tasks and reporting	Semester test1+ practical application
7	2 theoretical	b2: The student explainsHow to attack the pathogens of the diseaseaAsk the vegetarian	How to attack pathogensaLaoaAsk the vegetarian	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b4: The student examines pathogens by isolating them from soil	Isolation of pathogens from soil	Assigning tasks and reporting	Short testQuiz

8	2 theoretical	a4: The student discusses how to enzymatically analyze plant cell contents	Enzymatic hydrolysis of plant cell contents	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b3: The student applies the process of how to purify pathogens from plants, seeds, and soil	Purification of pathogens from plants, seeds and soil	Assigning tasks and reporting	Short testQuiz+ Homework
9	2 theoretical	a2: The student learns about plant defenses against pathogen attacks	How plants defend themselves against pathogen attacks	a For audio methods, writing style on the blackboard	Short testQuiz+ Homework
	3 practical	a4: The student differentiates between symptoms and signs of illness	Disease symptoms and signs+Scientific visit	Assigning tasks and reporting	Short testQuiz+ Homework
10	2 theoretical	a2: Describes the studentThe effect of pathogens on physiological processes in plants	The effect of pathogens on physiological processes in plants	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b3: The student applies pathogenicity measurement	Measuring pathogenicity	Assigning tasks and reporting	Short testQuiz
11	2 theoretical	a2: The student gets to know onfactors Environmentalthat effect onDevelopment of plant diseases	The effect of environmental factors on the development of diseases the plant	Methods Audio. Style of writing on the blackboard	Short testQuiz
	3 practical	b4: The student distinguishesPhenoty pic and morphological characteristics of pathogens	Phenotypic and morphological characteristics of pathogens	Assigning tasks and reporting	Short testQuiz
12	2 theoretical	b3: The student writes a report on the	Epidemiology of plant	Auditory methods. Method of writing on	Short

		epidemiology of plant diseases	diseases	the blackboard	testQuiz
	3 practical	b3: The student applies how to prepare glass slides to diagnose pathogens	Preparing glass slides to diagnose the pathogen	Assigning tasks and reporting	Short testQuiz+ Homework
13	2 theoretical	a4: The student discusses MethodsControl of plant diseases	Control of plant diseases	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b4: How to calculate the severity and incidence rate in the field	How to calculate the severity and incidence rate in the field	Assigning tasks and reporting	Short testQuiz+ Homework
14	2 theoretical	a4: The student discusses MethodsControl of plant diseases	Control of plant diseases	Auditory methods. Method of writing on the blackboard	Semester test2+a lecture
	3 practical	b3: applicationLaboratory evaluation of fungicides	Laboratory evaluation of fungicides	Assigning tasks and reporting	Semester test2+ practical application
15	2 theoretical	a4: Inheritance of plant diseases	Inheritance of plant diseases	Auditory methods. Method of writing on the blackboard	Report and discuss
	3 practical	b3: applicationEvaluation of fungicidesFieldly	Evaluation of fungicides in the field	Assigning tasks and reporting	Report and discuss

11. Course Evaluation

Relative weight %	Class	Calendar date (week)	Calendar methods	T
2	2	the sixth week	Short test(1)Quiz	1
2	2	The fourteenth week	Short test(2)Quiz	2
10	10	The seventh week	Semester test (1)	3
10	10	The eleventh week	Semester test (2)	4
40	40	Final semester exams	Final theoretical test	5
5	5	The fifteenth week	Report and discuss	6
5	5	The third and fifth week	Report and discuss	7
2	2	The first week	Short practical test (1)Quiz	8
2	2	fourth week	Short practical test (2)Quiz	9
2	2	The fourteenth week	Short practical test (3)Quiz	10
20	20	Final semester exams	Final practical test	11
100%	100%	100	the total	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book (General Plant Diseases - Abdul Hamid Khaled Khudair)
Main references (sources)	The book (Plant Diseases - Facilitator Majeed Jarhis, Raqeeb Akef Al-Ani, and Iyad Abdel-Wahed Al-Hiti) Book (Plant Diseases - Jihad Muhammad Al-Habaa and Mahmoud Shaker Mustafa - Arab Republic of Egypt)
Recommended books and references (scientific journals, reports...)	Plant Diseases Book (written by Dr. George Agrios, University of Massachusetts, Boston United States of America - Translated by Dr. Mahmoud Musa Abu Arqoub)
Electronic References, Websites	Home Feed ResearchGate

Theoretical teacher. Dr. Alaa Hamed Muhammad



Practical teacher.





رئيس القسم
 أ.م.د. فراس كاظم داؤد الجبوري

مسؤول اللجنة العلمية
 أ.د. هيثم محي الدين محمد

Course Description Form

Plant Breeding

1.	Course Name:
	Plant breeding
2.	Course Code:
	PLBR314
3.	Semester / Year:
	Second semester/third stage/2025-2026
4.	Description Preparation Date:
	1-2-2026
5.	Available Attendance Forms:
	My presence + Electronic
6.	Number of Credit Hours (Total) / Number of Units (Total)
	2 theoretical hours / 3 practical hours (5 hours) / 3.5 units - 75 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 breeding • Realizing the relationship of this science to the possibility of developing horticultural plants by providing the student with theoretical and practical materials in the field of plant breeding. • Familiarity with how to exploit this science in developing horticultural crops • A comprehensive study of most plant breeding methods • Familiarity with the information that plant breeders need and what is available to them to master the hybridization process
9. Teaching and Learning Strategies	
Strategy	- Interactive lecture - Brainstorming - Dialogue and discussion - Field Training - Practical exercises - Field project - Self-education

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical	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

No.	Evaluation methods	Calendar (week)	Grade	Relative weight %
1	Theoretical final report + practical experience reports	Theoretical Week 15 Practical Week 1-15	7 Theoretical + 6 practical	13%
2	Quiz (1)	Weeks (3)	4 Theoretical + 2 practical	6%
3	Midterm Exam (theoretical and practical)	Weeks (9)	10 Theoretical + 5 practical	15%
4	Quiz (2)	Weeks (12)	4 Theoretical + 2 practical	6%
5	Final Practical Test	Practical exam week	20	20%
6	Final theoretical test	Theoretical exam week	40	40%
	Total		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



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



Practical Lecturer
Abdullah Khder Mohammad



Chairman of Scientific Committee
Prof.Dr. Haitham Mohi El-Din



Head of Department
Assistant Prof.Dr. Firas Kazem Daoud
Al-Jubouri

Description of the beekeeping course

1. Course name:
Beekeeping
2. Course code:
APIC312
3. Semester/Year: Annual
Spring semester/2025-2026
4. The date this description was prepared
1/2/2026
5. Available attendance forms:
In-person + online
6. Number of study hours (total)/number of units (total):
75 hours / 3.5 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 ,

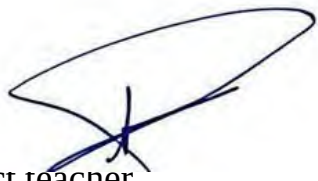
		specifications that must be available in a good . their impact on production bee strain and	the honey bee sect, their specifications, and the life cycle of each	-and discussion, self learning	final exam
	practical 3	c3 Uses the information the student needs : and what is available to him to master his 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 : Using smart beehives and what is available to	Types of beehives (municipal,	Interactive lecture, brainstorming, dialogue	Direct drawing

		him to perfect his work c58 The student should be able to master the : process of transferring the sect from the cell municipal cell to the modern	Lancaster, glass demonstration, smart hives)	and discussion, field training, practical -exercises, and self learning.	and homework
7	theoretical 1	a3 available capabilities to stop the Utilizes : 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 practical ,training exercises, field project, 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 / of eviction / Types 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 information the designer needs Uses 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 field ,and discussion training, practical -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	the Reasons for weakness of sects / 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 : available to him to perfect his and what is 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: Identify innovative and new methods in queen bee rearing and artificial insemination of queens.	Methods of raising queens and artificial insemination of queens	Interactive lecture, brainstorming, dialogue -and discussion, self learning	ter Semes test 2
	practical 3	c3 Uses the information the designer needs : and what is available to him to perfect his 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 conversion process and following up on the community's progress in the .following weeks	Interactive lecture, brainstorming, dialogue and discussion, field ining, practical tra -exercises, and self learning	Direct drawing and homework
11	theoretical 1	a2 Identifies the most important and useful : honey bee products c3 Uses different bee products In increasing : per capita income	Wax, royal jelly, bee propolis , ,venom 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 and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
12	theoretical 1	a2 diseases that Identify the most important : affect bees And the most dangerous for sects c3 Uses treatments that are safe for bees and : the environment to treat infected colonies	Identify the most important types of fungal, bacterial and viral diseases that affect honey bees / y the most Identif important insect and animal pests that affect honey bees	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	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, honey and its specifications, honey crystallization, honey adulteration	Interactive lecture, brainstorming, dialogue -and discussion, self glearnin	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 that from infection with pathogens and pests affect honeybees, specifying the mechanisms for managing these problems, and appreciating .the elements of potential risks	Identify the most important types of fungal, bacterial and viral diseases that affect honey bees / Identify the most nsect and important i animal pests that affect honey bees	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
14	theoretical 1	c3 Uses different nectar sources : c5 bee colonies after being exposed Balances : to pesticide poisoning a2 Identify signs of chemical pesticide : poisoning	Sources of nectar and pollen in Iraq, bee poisoning with chemical pesticides, plants toxic to honeybees, symptoms and signs, prevention gof poisonin	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, plants toxic to honeybees, symptoms and signs, prevention of poisoning	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	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	practical 3	c3 to prepare scientific research and Able : 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	The fifth week	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	practical test Final	Final semester exams	20	20
	the total	100	%100	%100

2. Learning and teaching resources	
(Required textbooks (methodology, if any	Naji-The book on beekeeping and silkworms / written by Dr. Louay Karim
(Main references (sources	- beekeeping and silkworms / written by Dr. Louay The book on Naji-Karim Al
Recommended supporting books and references (scientific journals, (...reports	The bees of the world /Charles D. Michener
Electronic references, Internet sites	https://www.google.com/search?q=%D9%83%D8%AA%D8%A7+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&oq=%D9%83%D8%AA%D8%A8+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&aqs=chrome..69j0l5j0i15i22i30l2.6551j0j15&sourceid=chrome&ie=UTF8



Theoretical subject teacher
Assistant Professor Dr. Mohammed Yousuf Sayed Ghani



Practical subject teacher
Assistant Lecturer. Ahmed Thamer



رئيس القسم
أ.م.د. فراس كاظم داود الجبوري

مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

-Assignment of tasks and report			-Assignment of tasks and report - Practical tests conducted in the laboratory.		
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	THEORETICAL b1 Shows the concept of water And its relation to properties Chemist and Physicist PRACTICAL b1 Applies rules Safety specifications in Laboratories	THEORETICAL Water PRACTICAL Safety in laboratories	THEORETICAL Lectures Audio media Reports and other methods PRACTICAL Follow Instructions Found in laborator	discussions
2	2Theoretical 3Practical	THEORETICAL c1 Shows the most important differences in composition Carbohydrate chemis PRACTICAL a1 Classify carbohydrates Types and type	THEORETICAL Carbohydrates PRACTICAL Carbohydrates and th types	THEORETICAL Lectures Audio media Reports and metho Other PRACTICAL Procedure Tests Operation	reports Quiz discussions
3	2Theoretical 3Practical	THEORETICAL b2 Familiar with the influencing factors For amino acids PRACTICAL b2 Solubility test is applied and the mulch test	THEORETICAL Amino acids: And peptides PRACTICAL The tests General principles of carbohydrates	THEORETICAL Lectures Audio media Reports and metho Other PRACTICAL Procedure Tests Operation	reports Quiz discussions
4	2Theoretical 3Practical	THEORETICAL a1 Recognizes the mechanics of the acti of proteins inside the body	THEORETICAL Protein PRACTICAL	THEORETICAL Lectures Audio media Reports and metho Other	Exams reports discussions

		PRACTICAL a2 Recognizes carbohydrate reductive tests	The test Carbohydrates	PRACTICAL Procedure Tests Operation	
5	2Theoretical 3Practical	THEORETICAL c2 It shows the changes that you get into Felts PRACTICAL b3 Tests types of carbohydrate description	Theoretical lipidis PRACTICAL Hydrolysis of sucrose and iodine testing and hydrolysis of starch with mineral acids	THEORETICAL Lectures Audio media Reports and methods Other PRACTICAL Procedure Tests Operation	reports Quiz discussions
6	2Theoretical 3Practical	THEORETICAL c3 Suggests a suitable method For the action of enzymes PRACTICAL b4 Performs lipid-specific tests	THEORETICAL Enzymes PRACTICAL Special tests With fat	THEORETICAL Lectures Audio media Reports and methods Other PRACTICAL Procedure Tests Operation	Exams reports Quiz discussions
7	2Theoretical 3Practical	THEORETICAL c4 Notice the changes That you get into the main article and his work with enzymes PRACTICAL a3 Selects fat constants	THEORETICAL Basic material PRACTICAL Basic material Acrolein testing For the detection of glycerol	THEORETICAL Lectures Audio media Reports and methods Other PRACTICAL Procedure Tests Operation	reports Quiz discussions
8	2Theoretical 3Practical	THEORETICAL a1 Recognize the most important Changes that enzymes PRACTICAL a2 Understands the pH	THEORETICAL Mechanical work Enzymes PRACTICAL PH is the pH value	THEORETICAL Lectures Audio media Reports and methods Other PRACTICAL Procedure Tests Operation	Exams reports Quiz discussions

9	2Theoretical 3Practical	THEORETICAL b2 Judging the efficiency of the work Nucleic acids Inside the body PRACTICAL a2 Specifies general and Descriptive Tests for amino acids	THEORETICAL Nucleic acids PRACTICAL General tests Description distribution of Acids Aminism	THEORETICAL Lectures Audio media Reports and methods Other PRACTICAL Procedure Tests Operation	Exams reports Quiz discussions
10	2Theoretical 3Practical	THEORETICAL a2 Identify the most important materials Chemical constituent of DNA PRACTICAL b2 Explains the methods of detection of sulfur-containing amino acids	THEORETICAL DNA PRACTICAL Acid detection Amino acids containing Sulfur	THEORETICAL Lectures Audio media Reports and methods Other PRACTICAL Procedure Tests Operation	reports Quiz discussions
11	2Theoretical 3Practical	THEORETICAL b4 Mastered the ingredients The main types of RNA nucleic acids and their types PRACTICAL a6 He tries the Mello test and the xanthoproteic test	THEORETICAL RNA PRACTICAL Tests Amino acids:	THEORETICAL Lectures Audio media Reports and methods Other PRACTICAL Procedure Tests Operation	reports Quiz discussions
12	2Theoretical 3Practical	THEORETICAL e1 Defines the components of Basic nucleosides PRACTICAL c1 Recall Descriptive Tests for proteins	THEORETICAL Nucleosides PRACTICAL The tests Description distribution of proteins	THEORETICAL Lectures Audio media Reports and methods Other PRACTICAL Procedure Tests Operation	Exams reports Quiz discussions
13	2Theoretical	THEORETICAL	THEORETICAL	THEORETICAL	Exams

	3Practical	a2 Recognize the most important Biological qualities For nucleic acids PRACTICAL a2 The puritanical test is called	Biological qualities For nucleic acids PRACTICAL The purite test	Lectures Audio media Reports and metho Other PRACTICAL Procedure Tests Operation	reports Quiz discussions
14	2Theoretical 3Practical	THEORETICAL b5 Familiar with the sources of composition and vitamin damage PRACTICAL a3 Characterizes the precipitation of prote with salts of heavy metals	THEORETICAL Vitamins PRACTICAL Precipitation of prote Salts of heavy metals	THEORETICAL Lectures Audio media Reports and metho Other PRACTICAL Procedure Tests Operation	Exams reports Quiz discussions
15	2Theoretical 3Practical	b5 Solves a problem	A scientific visit to one Life chemistry laboratories	Getting to know One-to-One devices and tools f laboratories Life chemistry	Write a report on devices and tests that were identified during scientific visit

11. Course Evaluation

t	Evaluation methods	Evaluation date (one week)	Grade	Relative weight %
1	Final theoretical report + theoretical practical reports	Theoretical 15 weeks Practical 1-15 weeks	7theoretical + 6 practical	13%
2	Short test 1 Quiz	3 weeks	4theoretical + 2practical	6%
3	- Semester exam 1 (theoretical and practical) - Semester exam 2 (theoretical and practical)	5 weeks 10 weeks	10theoretical + 5 practical	15%
4	Short test 2 Quiz	12 weeks	4 theoretical + 2 practical	6%
5	Final practical test	practical exams week	20	20%
6	Final theoretical exam	theoretical exams week	40	40%
			100	100

12. Learning and Teaching Resources

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Theoretical Required textbooks (curricular books, if any) Theoretical approach to the course of principles Biotechnology / counter: D. Faten Dhawi Al-Muhanna/ PhD in philosophy Biochemistry science Department of Molecular Biology and Biotechnology	Practical The basics of Biochemistry Basil Kamel Al-Dlaly
Main references (sources) A library , scientific sites on the internet, access lectures for other Iraqi universities.	Basics of biochemistry by Basil Kamel Al-Dlaly
Electronic References, Websites	The World Health Organization(WHO) , the US Food and drug organization (USFDA)

مدرس المادة العملي : م. م. افكار يحيى محمد	مدرس المادة النظري : أ.م.د. أرقم محمد العمري
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رئيس القسم
أ.م.د. فراس كاظم داؤد الجبوري

مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

1. Course name:					
Biological Control					
1. Course code:					
BICO421					
1. Semester/Year: Annual					
First semester/2025-2026					
1. The date this description was prepared					
1 / 9 / 2025					
1. Available attendance forms:					
Classroom					
1. Number of study hours (total)/number of units (total):					
75 hours / 3.5 units					
1. Name of the course administrator (if more than one name is mentioned)					
Dr. Juhina Idrees Mohammed dr.juhina_a.m@uomosul.edu.iq Ahmed thamer Hamadi : ahmed.thamer@uomosul.edu.iq					
1. Course objectives					
• Preparing students who have the ability to work in the field of crop protection according to scientific methods • Recent developments related to what is happening in the developed countries of the world in this field • Entering the agricultural sector with distinguished efficiency through participation in government projects • And the labor market • Directing students towards the desire to obtain better experiences when applying for postgraduate studies •					
2. Teaching and learning strateg					
- Interactive lecture - Brainstorming - Dialogue and discussion - Field Training - Practical exercises - Field project - Self-education					
3. Course structure					
the week	hours	learning outcomes Required	Name of the unit or topic	Learning method	Evaluation method

Course Description Form

1. Course Name:	
AGRICULTURAL MITES	
2. Course Code:	
AGM4700	
3. Semester / Year:	
Spring/ 4 th	
4. Description Preparation Date: quarterly	
1/2/2026	
5. Available Attendance Forms:	
In-person + Online	
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)	
Name: Dr.Reena Riadh Falih Email: reenna.reyadh@uomosul.edu.iq Asst. Lect. Hamad Mohammed Hamad	
8. Course Objectives	
- Description of mites from a morphological and anatomical point of view. - Identifying families that cause harm to humans, plants, and animals. - Know the damage caused by these organisms and distinguish them from other damage caused by different organisms or sources that may cause this damage. - Gaining knowledge about the use of beneficial species in pest control or other fields. - Learn how to collect these organisms from sources of infection. - Enabling students to learn about the most important laboratory methods for detecting these organisms and scientific experiments to diagnose the symptoms of infection with these organisms. - Knowledge of the methods and techniques used in control programs.	
9. Teaching and Learning Strategies	
Strategy	1. Use the lecture method to deliver information. 2. Students' participation in obtaining information by asking them to submit scientific reports. 3. Training students on the logical discussion method to reach results. 4. Learning through applied field practices.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical 3 Practical	Theoretical: a1: Definition and Historical Evolution of Acarology "The student will be able to define the science of Acarology and understand its historical development, while analyzing the key factors that have led to mites becoming major economic pests." Practical: a1: Identifying Factors for Mite Success and Dispersal "The student will be able to identify the biological and environmental factors that contribute to the successful establishment and spread of agricultural mites in open fields and greenhouses."	Theoretical: Definition of Acarology, Historical Development of the Field, Differences Between Mites and Insects, Reasons Why Mites Became Major Pests Practical: Introduction to Agricultural Mites, Factors Leading to the Success and Spread of Agricultural Mites	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
2	2 Theoretical 3 Practical	Theoretical: a2: The student reviews the factors leading to the success of agricultural mites. Practical: a2: The student reviews the damage of agricultural mites	Theoretical: Brief introduction to agricultural mites and the factors leading to their success. Practical: General damage of mites to plants.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.

		to plants.			
3	2 Theoretical 3 Practical	Theoretical: a3: The student discusses the habits of agricultural mites and their habitats. Practical: a3: The student discusses the factors affecting the activity of agricultural mites.	Theoretical: Habits and habitats of agricultural mites. Practical: The effect of some factors affecting the activity of plant mites.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
4	2 Theoretical 3 Practical	Theoretical: b1: The student discovers the economic importance of agricultural mites. Practical: b2: The student evaluates methods of surveying and counting agricultural mites.	Theoretical: Economic importance of agricultural mites (on plants, on humans, on animals, on stored materials), information on dust mites on palm trees. Hair-wristed mites and scabies mites (life cycle, control, and treatment). Practical: Methods used in surveying and counting Acari.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
5	2 Theoretical 3 Practical	Theoretical: b2: The student evaluates families of mites of economic importance. Practical: d1: The student classifies the method of taking field samples of mites.	Theoretical: Study of some families of economic damage: family (common red mite, false red mite). Practical: Methods of taking field samples.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
6	2 Theoretical 3 Practical	Theoretical: Field visit to infested fields and nurseries. Practical: Field visit to infested fields and	Theoretical: Field visit. Practical: Field visit.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical:	(Short quizzes, first and final midterms), homework assignments, discussions.

		nurseries.		Assignment of tasks and reports.	
7	2 Theoretical 3 Practical	Theoretical: c3: The student interacts with families of agricultural mites of economic damage. Practical: d2: The student collects samples of agricultural mites.	Theoretical: Study of some families of economic damage: family (eriophyid mites, hair-wristed mites). Practical: Methods of collecting and isolating soil-dwelling mites.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
8	2 Theoretical 3 Practical	Theoretical: c4: The student compares families of agricultural mites beneficial in agriculture. Practical: c3: The student classifies types of agricultural mites based on the environment.	Theoretical: Study of the most important families beneficial in agriculture: Laelapidae, Phytoseiidae. Practical: Methods of collecting and isolating mites from fresh and salt water.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
9	2 Theoretical 3 Practical	Theoretical: b3: The student distinguishes between economically important families of mites. Practical: b4: The student demonstrates skills in distinguishing between types of mites parasitic on animals.	Theoretical: Methods of spreading economically important families of mites. Practical: Methods of collecting mites parasitic on animals.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
10	2 Theoretical 3 Practical	Theoretical: b5: The student identifies the external morphology of mites. Practical: b3: The student	Theoretical: External morphology of mites. Practical: Laboratory breeding of agricultural	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of	(Short quizzes, first and final midterms), homework assignments, discussions.

		distinguishes between types of mites.	mites.	tasks and reports.	
11	2 Theoretical 3 Practical	Theoretical: Field visit to infested fields and nurseries. Practical: Field visit to infested fields and nurseries.	Theoretical: Field visit. Practical: Field visit.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
12	2 Theoretical 3 Practical	Theoretical: d3: The student classifies agricultural mites based on the method of reproduction. Practical: d2: The student collects the materials needed to make mite environments.	Theoretical: Reproduction in mites. Practical: Materials used in making loading environments and their specifications.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
13	2 Theoretical 3 Practical	Theoretical: d4: The student leads discussion groups on types of grain mites and stored food materials. Practical: d1: The student classifies the agricultural mites under study.	Theoretical: Grain mites and stored food materials. Practical: Preparing mites for study.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
14	2 Theoretical 3 Practical	Theoretical: b5: The student identifies chemical pesticides in the control of agricultural mites. Practical: e1: The student provides steps for preparing and making microscopic slides of Acari.	Theoretical: Pest resistance to chemical pesticides (definitions used in the field of resistance). Practical: Steps for making microscopic slides of Acari.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.

15	2 Theoretical 3 Practical	Theoretical: c1: The student explains the integrated management of agricultural mites. Practical: Field visit to infested fields and nurseries.	Theoretical: Integrated management of mites. Practical: Field observations.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
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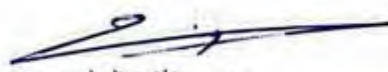
11. Course evaluation

11. Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, written exams, reports, etc.

12. Learning and teaching resources

Required Texts	1. Abu AL-Habb, Jali Karim. 1986. Translation of the book The Harmful Dream for Economic Plants, Part Two: The Quadrupedal Dream (Ariophyte). Written by Gibson, Kiefer, and Baker, Ministry of Higher Education and Scientific Research - University of Baghdad - College of Agriculture. 675 pages. 2. Al-Mallah, Nizar Mustafa 2009 Basic Mites, Economics and Control. University of Mosul, Ministry of Higher Education, Scientific research Iraq 780 pages.
Recommended Texts	Scientific journals, books, and research on the agricultural Mites.
Websites	All agricultural magazines and magazines related to Mites and ticks.


مدرس المادة العملي
م.م. حمد محمد حمد


مدرس المادة النظري
م.د. رنا رياض فالح


رئيس القسم
أ.م.د. فراس كاظم داود الجبوري




مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

1. Course name:
Field crop insects
1. Course code:
FICI424
1. Semester/Year: Annual
Spring semester/2025-2026
1. The date this description was prepared
1 / 2 / 2026
1. Available attendance forms:
Classroom
1. Number of study hours (total)/number of units (total):
75 hours / 3.5 units
1. Name of the course administrator (if more than one name is mentioned)
Dr. Khalid Omairy Mohammed mohammed_yousuf76@uomosul.edu.iq Esraa Mohammed Ali
1. Course objectives
• be able to define the concept of field crop insects and the information that must be should .available to know the types of insects • .Choosing the suitability of factors affecting insects that infect crops • between different planning systems and the appropriate ones Differentiating • .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 .infestation and identifying their shapes and damages the nature of their • 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 • factors affecting insects and their environment and how to The student's awareness of the .diagnose, combat and control them • Determine the appropriate type and the best way to diagnose the infestation and know the type .insect and how to deal with it • various types of insects, how to identify them, the nature of the A comprehensive study of the .infestation, and the percentage of damage they cause to the crop
2. Teaching and learning strateg
- Interactive lecture - Brainstorming - Dialogue and discussion - Field Training

- Practical exercises
- Field project
- education -Self

3. Course structure

the week	hours	Required learning outcomes	Name of the unit or topic	Learning method	Evaluation method
1	2 theoretical	a1 Identify the taxonomic position of insects in the : animal kingdom B1 knowledge and concepts of the Possesses : factors that helped the spread of insects	The phylum Arthropoda, its classes and characteristics. Describe insects, their general characteristics, and the factors that helped them spread.	Interactive lecture, dialogue ,brainstorming -and discussion, self learning	Semester exam 1 , final exam
	3 practical	a1 The student learns about the concept of : entomology and insect classification	Introduction to entomology and its classification. Parts and appendages of the external body of insects and their functions.	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	Short practical test 1
2	1 theoretical	a2 Determines the benefits and harms of insects : b1 concepts to know Possesses the knowledge and : the critical economic limit	Insect harms, benefits, critical economic limit of infestation and economic damage	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	3 practical	a2 student will be able to identify the mouth The : parts of insects, their types, the abdominal area, the chest area, and the parts associated with it	Insect mouth parts Chest area Abdominal area	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing
3	1 theoretical	a2 Determines the foundations of pest resistance : and control methods	pest resistance and control methods	Interactive lecture, brainstorming, dialogue -self ,and discussion learning	Semester exam 1 , final exam
	3 practical	a2 The student will be able to identify the types of : reproduction in insects and insect development	Types of reproduction in insects	Interactive lecture, brainstorming, dialogue field ,and discussion learning -training, self	Field evaluation
4	1 theoretical	a2 Determines methods of controlling insects that : infect the Poaceae family C4 Draws up plans and programs to combat it :	pest control methods Practical (grass insects, description of insect and form of the (damage	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam report ,
	3 practical	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 lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Practical short test 2 direct , drawing
5	1	a2 Determines methods of controlling insects that :	Wheat and barley	Interactive lecture,	Semester

	theoretical	infect the Poaceae family c4 Draws up plans and programs to combat it :	insects, their life and control cycles	brainstorming, dialogue -and discussion, self learning	exam 1 , final exam report ,
	3 practical	d4 The student should be able to develop his : cognitive and research abilities on insects that infect .family the Poaceae 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 lecture, brainstorming, dialogue and discussion, field training, practical -and self ,exercises learning	Field evaluation
6	1 theoretical	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, self learning	Short test, final test
	3 practical	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 and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
7	1 theoretical	a2 Determines methods of controlling insects that : infect the Poaceae family C4 Draws up plans and programs to combat it :	Rice insects , their life cycles, and control	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	3 practical	c2: should be able to diagnose insects The student that infect rice crops	Rice crop pests	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, learning-self	Field project
8	1 theoretical	a2 of controlling insects that Determines methods : infect the leguminous family C4 Draws up plans and programs to combat it :	Insects of leguminous crops, their life cycles and control	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester , exam 2 final exam
	3 practical	C2: The student should be able to diagnose insects that infect the leguminous family	Pests of leguminous crops	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
9	1 theoretical	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, dialogue ,brainstorming -and discussion, self learning	Semester exam 2 , final exam
	3 practical	c2 The student should be able to diagnose insects : that infect the cotton crop	Cotton insects	Interactive lecture, brainstorming, dialogue and discussion, field practical ,training -exercises, and self learning	Direct drawing and homework
10	1 theoretical	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 -and discussion, self learning	Semester test 2
	3 practical	c2 The student should be able to diagnose insects : that infect sugar beet crops	Beet insects	Interactive lecture, brainstorming, dialogue discussion, field and	Direct drawing and

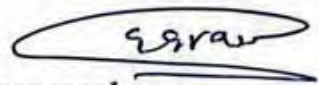
				training, practical -exercises, and self learning	homework
11	1 theoret ical	a2 Determines methods of controlling insects that : infect tobacco C4 Draws up plans and programs to combat it :	Sugar tobacco crop their life , insects cycles and control	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	3 practic al	c2: The student should be able to diagnose insects that infect the tobacco crop	Tobacco insects	,Interactive lecture brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
12	1 theoret ical	a2 Determines methods of controlling insects that : infect the sunflower C4 it Draws up plans and programs to combat :	Sunflower crop insects , their life cycles and control	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	3 practic al	c2 The student should be able to diagnose the : insects that infect the sunflower crop	insects Sunflower	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
13	1 theoret ical	a2 Determines methods of controlling insects that : infect castor beans C4 plans and programs to combat it Draws up :	Castor bugs , their life cycles and control	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	3 practic al	c2 The student should be able to diagnose the : crop insects that infect the castor	Castor bugs	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
14	1 theoret ical	a2 Determines methods of controlling insects that : infect safflower c4 Draws up plans and programs to combat it :	Safflower insects , their life cycles, and control	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	3 practic al	c2 The student should be able to diagnose insects : that infect the safflower crop	Safflower insects	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Short practical test 3
15	1 theoret ical	Second semester exam	Second semester exam	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	3 practic al	Semester exam 2	Semester exam 2	Interactive lecture, brainstorming, dialogue and discussion, field training, practical ,exercises, field project learning-self	Field project
4. Course evaluation					
T	Calendar methods	(Calendar date (week	Class	Relative % weight	

1	Report 1	fourth week	2.5	2.5
2	Report 2	The fifth week	2.5	2.5
3	(Short test (1Quiz	sixth week	2	2
4	(Short test (2Quiz	week The fourteenth	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	week The fifteenth	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

5. Learning and teaching resources

(Required textbooks (methodology, if any	Salem Jamil Girgis, .The theoretical book on field crop insects / written by Dr. Hamza Kazem Abbas, and Dr. Muhammad Abdel Karim Muhammad
(Main references (sources	- The theoretical book on field crop insects / written by Dr. Salem Jamil Girgis, Dr. Hamza Kazem Abbas, and Dr. Muhammad Abdel Karim Muhammad
Recommended supporting books and references (scientific journals, (...reports	Pests of Field Crops and Pastures [OP]: Identification and Control / PT Bailey (Editor
Electronic references, Internet sites	https://www.amazon.com/Pests-Field-Crops-Pastures-Identification/dp/0643067582


Theoretical subject teacher
Dr. Khalid Omairy Mohammed


Practical subject teacher
Esraa Mohammed Ali


رئيس القسم
أ.م.د. فراس كاظم داؤد الجبوري


مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

Course Description Form

1. Course Name: Fruit tree diseases
2. Course Code: FRPA422
3. Semester / Year: Second semester/fourth stage
4. Description Preparation Date: 1/2/2026
5. Available Attendance Forms: Attendance-online
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)
Assistant Professor Dr.. Bassam Yahya Ibrahim Assistant lecturer . Rayan Salem Mahmoud Email: bassamy1966@uomosul.edu.iq
8. Course Objectives
1. To provide students with comprehensive knowledge of the most common fruit tree diseases, including their symptoms, disease cycles, modes of spread, and impacts on fruit tree health and sustainable crop production. 2. To enable students to understand the interaction between biological and environmental factors influencing the development of fruit diseases, with particular emphasis on pathogenic fungi and bacteria, as well as the effects of climatic conditions and environmental change. 3. To develop students' skills in accurate diagnosis of fruit diseases through the application of appropriate field and laboratory techniques, supporting early detection and reduction of economic and environmental losses. 4. To introduce students to integrated and sustainable disease management strategies, emphasizing biological control methods, rational use of chemical pesticides, and environmentally safe agricultural practices. 5. To analyze the economic and environmental impacts of fruit diseases and their management, promoting sustainable agricultural practices that balance productivity, environmental protection, and human health. 6. To strengthen students' research and innovation capacities by training them to design and conduct field and experimental studies, critically evaluate recent scientific literature, and contribute to the development of sustainable solutions for fruit disease management and food security.
9. Teaching and Learning Strategies
Brainstorming Teamwork Discussion Discovery learning Problem solving or problem-based learning

E-Learning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical	A1 Definition of fruit tree diseases, its economic role of fruit tree diseases. Causes of fruit tree diseases	Fruit tree diseases, its definition, aspects of the importance of studying it for protection specialists	Interactive lecture, brains dialogue and discussion, self-le	Semester exam 1, final exam
	3 practical	b1 Isolation from fruit tree leaves, fruits and roots Use precautions when pathogenic microorganisms	Causes of fruit tree diseases	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
2	2 Theoretical	A1: Fungal and bacterial causes, and viral causes, and non-living causes	Identify the most important disease causes	Interactive lecture, brains dialogue and discussion, self-le	Semester exam 1, final exam
	3 practical	b2 Examining samples of leaves, fruits and roots of plants and identifying the best means of control	symptoms, life cycle, and methods of controlling citrus disease causes	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
3	2 Theoretical	B2: Diseases caused by fungi, bacteria, viruses, and nutrient deficiency diseases. Enhancing students' ability to use computers and the Internet	Citrus tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Semester exam 1, final exam
	3 practical	b2 Identifying the most important symptoms and the life cycle, methods of controlling citrus disease pathogens, examining samples of the leaves, fruits and roots of the plant, and identifying the best means of control	Citrus tree diseases	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
4	2 Theoretical	B2: Diseases caused by fungi, bacteria, viruses, and nutrient deficiency diseases	Diseases of pistachio trees	Interactive lecture, brains dialogue and discussion, self-le	Semester test 1, final test, report
	3 practical	b2 Identify the most important symptoms and the life cycle, methods of controlling pistachio disease pathogens, examining samples of the leaves, fruits and roots of the plant, and learn about the best means of control.	Diseases of pistachio trees	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
5	2 Theoretical	B2: Diseases caused by fungi, bacteria, viruses, and nutrient deficiency diseases of peach and apricot trees.	stone-stone tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Semester test 1, final test, report
	3 practical	b2 Identifying the most important symptoms and the life cycle, methods of controlling pathogens of stone-stone tree diseases, examining samples of the leaves, fruits and roots of the plant, and identifying the best means of control.	stone-stone tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Semester test 1, final test, report
6	2 Theoretical	B2: Diseases caused by fungi, bacteria, viruses, and nutrient deficiency diseases	Apple tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Short test, final test
	3 practical	b2 Identifying the most important symptoms and the life cycle, methods of controlling apple disease pathogens, examining samples of the leaves, fruits and roots of the plant, and identifying the best means of control, viruses, and nutrient deficiency diseases	Apple tree diseases	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
7	2 Theoretical	b2 Identifying the most important symptoms and the life cycle, methods of controlling disease pathogens, examining samples of the leaves, fruits and roots of the plant, and identifying the best means of control	Grape tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Semester exam 2, final exam
	3 practical	B2: Diseases caused by fungi, bacteria, viruses, and element deficiency diseases. Identifying the most important symptoms and the life cycle, methods of controlling pomegranate disease pathogens, examining samples of the leaves, fruits and roots of the plant, and identifying the best means of control.	Grape tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Semester exam 2, final exam

8	2 Theoretical	B2: Diseases caused by fungi, ca viruses, and nutrient deficiency disea	Olive tree tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Semester exam 2, final exam
	3 practical	b2 Identifying the most important s nd the life cycle, methods of co live disease pathogens, examining f the leaves, fruits and roots of the p identifying the best means of control.	Olive tree tree diseases	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
9	2 Theoretical	B2: Diseases caused by fungi, ca viruses, and nutrient deficiency disea	Fig tree tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Semester exam 2, final exam
	3 practical	b2 Identifying the most important s and the life cycle, methods of contro disease pathogens, examining sampl leaves, fruits and roots of the pl identifying the best means of control.	Fig tree tree diseases	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
10	2 Theoretical	B2: Diseases caused by fungi, ca viruses, and nutrient deficiency disea	Diseases of pomegranate trees	Interactive lecture, brains dialogue and discussion, self-le	Semester test2
	3 practical	b2 Identifying the most important s and the life cycle, methods of co pomegranate disease pathogens, ex samples of the leaves, fruits and roo plant, and identifying the best m control.	Diseases of pomegranate trees	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
11	2 Theoretical	B2: Diseases caused by fungi, ca viruses, and nutrient deficiency disea	Palm tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Final test
	3 practical	b2 Identifying the most important s and the life cycle, methods of co Palm disease pathogens, examining of the leaves, fruits and roots of t and identifying the best means of co	Palm tree diseases	Interactive lecture, brains dialogue and discussion, self-le	Direct drawing and homework
12	2 Theoretical	B2: Diseases caused by fungi, ca viruses, and nutrient deficiency disea	ases of fruit tree nurseries	Interactive lecture, brains dialogue and discussion, self-le	Final test
	3 practical	B2: Identifying the most i symptoms and life cycle, met controlling pathogens of nursery examining samples of leaves, fruits a of plants, and identifying the best r control.	ases of fruit tree nurseries	Interactive lecture, brains dialogue and discussion, self-le	A short practical test
14	2 Theoretical	d2: Training on management ske presentation of topics related to t diseases	report and discussion	Interactive lecture, brains dialogue and discussion, self-le	a report
	3 practical	d2 runs discussion panels on the e importance of post-ablative diseases	report and discussion	Interactive lecture, brains dialogue and discussion, self-le	a report
15	2 Theoretical	cC1 Field visit to fruit tree nurseries	olve the problem	Interactive lecture, brains dialogue and discussion, self-le	a report
	3 practical	e1 Practical applications of controlling fruit tree diseases	olve the problem	Interactive lecture, brains dialogue and discussion, self-le	Short practical test3

11.Course Evaluation

	Calendar methods	date	mark	wight
	Short test (1) Quiz	the sixth week	2	2
	Short test (2) Quiz	The fourteenth week	2	2
	Semester test (1)	the sixth week	10	10
	Semester test (2)	The eleventh week is difficult	10	10

Final theoretical test	Final semester exams	40	40
Report and discussion	The fifteenth week	5	5
Report and discussion	The third and fifth week	5	5
Short practical test (1) Quiz	The first week	2	2
Short practical test (2) Quiz	fourth week	2	2
Short practical test (3) Quiz	The fourteenth week	2	2
Final practical test	Final semester exams	20	20
the total	100	100	100

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Plant Diseases, George Agrios, translated by Mahmoud Musa Abu Ar Academic library.
Recommended books and references (scientific journals, reports...)	S.A.M.H. Naqvi (2006) Diseases of Fruits and Vegetables Diagnosis and Management Volume I Randy C. Ploetz (2003) Diseases of Tropical Fruit Crops
Electronic References, Websites	1 https://www.apsnet.org/Pages/default.aspx 2- https://www.google.com/?hl=ar

theoretical subject teacher

Assistant Professor Dr.. Bassam Yahya Ibrahim

practical subject teacher

Assistant lecturer Ammar Manaf

رئيس القسم
أ.م.د. فراس كاظم داود الجبوري



مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

Course Description Form

1. Course Name:	
Horticultural plant insects	
2. Course Code:	
HOIN426	
3. Semester / Year:	
Spring/ 4 th	
4. Description Preparation Date: quarterly	
1/2/2026	
5. Available Attendance Forms:	
In-person + Online	
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)	
Name: dr.Juhina Idrees Mohammed Ali Email: dr.juhina_a.m@uomosul.edu.iq Asst. Lect. Ahmad Thameer Hamady	
8. Course Objectives	
1- Asking students deductive questions 2-Developing training programs 3- Finding solutions to the problems and obstacles that students encounter in the practical part 4- Enabling students to find solutions and applications for crises	The course aims to prepare graduates in plant protection sciences who are familiar with the basic principles of entomology, in terms of their harm to the agricultural environment and their benefits, on the other hand, as well as their forms and how to distinguish them from other organisms close to them. The course also aims to become familiar with the structures of these external living organisms and to know their internal bodily systems. in detail
9. Teaching and Learning Strategies	
Strategy	1- Providing students with the basics and additional topics related to insect classification 2 - Asking students to ask a set of thinking questions during the lecture 3- Giving students homework that requires self-explanation in causal ways.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical 3 Practical	Theoretical: a1: The student recalls an introduction to entomology and the factors that contributed to the spread of insects. Practical: a1: The student recalls the characteristics of the insect class, the body sections of an insect, the head, and its appendages.	Theoretical: Introduction to entomology, factors that contributed to the spread of insects, pests, their types and damages, benefits and damages of insects. Practical: Characteristics of the insect class, body sections of an insect, the head, and its appendages.	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
2	2 Theoretical 3 Practical	Theoretical: a2: Life History of Insects: Study of different insect life cycles, with a focus on metamorphosis. Description and explanation of growth stages: Egg, Nymph (in hemimetabolous insects), Larva (in holometabolous insects), Pupa, and Adult. Analysis of the differences in each stage in terms of form, function, and behavior. Practical: a2 Dissection of the thorax and its appendages	Theoretical: a2 Insect Mating: Review of complex insect mating behaviors, including mate attraction, courtship, and copulation. Study of the role of pheromones and visual and auditory signals in mating. Analysis of morphological and behavioral adaptations related to mating. Reproduction Methods: Explanation of the types of sexual and asexual reproduction in insects. Study of variations in oviposition, incubation, and parental care. Analysis of different reproductive strategies and their relationship to the environment. Insect Dormancy Types: Study of the	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.

			phenomenon of dormancy as a survival mechanism in adverse environmental conditions. Description of different types of dormancy (Diapause, Quiescence) and their stages. Analysis of environmental and hormonal factors that regulate dormancy. Practical: a2 Identification and description of the main parts of the insect thorax (Pro-, Meso-, and Metathorax). Study of different leg types and their adaptations for various functions (walking, running, jumping, digging, swimming, gathering). Analysis of wing structure and function, including their types, venation, and flight mechanisms. Examination of other thoracic appendages, such as glands and sensory structures.		
3	2 Theoretical 3 Practical	Theoretical: a3: The student discusses the principles of pest control. Practical: a3: The student discusses the abdominal region and its appendages, and the types of metamorphosis in insects.	Theoretical: Principles of pest control, methods of pest control. Practical: Abdomen and its appendages, metamorphosis (development in insects and its types).	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
4	2 Theoretical 3 Practical	Theoretical: b1 Fruit Tree Insects: A comprehensive study of the insect diversity that	Theoretical: Insects of Apple Trees (Case Study): Detailed study of primary and secondary insects	Theoretical: Auditory methods, whiteboard writing, direct	(Short quizzes, first and final midterms), homework assignments,

		infests different fruit trees. Classification of economically important insects on fruit trees according to plant families (e.g., pome fruits, citrus fruits, grapes, stone fruits). Analysis of the life cycles of major insects infesting fruit trees, with a focus on synchronization with tree growth stages. Study of the impact of environmental factors on the activity and distribution of fruit tree insects. Practical: b2 Assessment of Pome Fruit Insects: Application of field and laboratory methods for insect collection and classification. Identification of important insects infesting pome fruits using taxonomic keys and reference resources. Study of insect external morphology (Morphology) using magnifying lenses and microscopes.	infesting apple trees. Identification and classification of apple pests according to the affected part of the tree (leaves, fruits, branches, roots). Analysis of the economic damage caused by different apple pests. Study of integrated pest management strategies for apple pests, including biological control, chemical control, and agricultural practices. Practical: Observation of Infestation Symptoms and Damage: Examination of symptoms and distinctive signs of insect infestation on different parts of pome fruit trees. Identification of types of damage caused by insects (e.g., leaf feeding, fruit boring, gall formation). Assessment of the severity of insect infestation and its impact on tree productivity and fruit quality. Insect Description: Recording morphological characteristics of the insect (size, shape, color, mouthparts, wings, legs). Drawing or photographing insects and describing their distinctive features. Documenting observations about insect behavior and its relationship with the host plant.	dialogue. Practical: Assignment of tasks and reports.	discussions.
5	2 Theoretical 3 Practical	Theoretical: b2: The student evaluates olive	Theoretical: Olive tree insects, pistachio tree	Theoretical: Auditory methods,	(Short quizzes, first and final midterms),

		tree insects, pistachio tree insects and green kernels. Practical: d1: The student classifies olive tree insects, pistachio tree insects and green kernels in terms of the appearance of infestation and damage, and insect description.	insects and green kernels. Practical: Appearance of infestation and damage, and insect description (olive insects, pistachio insects and green kernel insects).	whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	homework assignments, discussions.
6	2 Theoretical 3 Practical	Theoretical: c1: The student explains grape insects. Practical: c2: The student classifies grape insects based on the appearance of infestation and damage, and insect description.	Theoretical: Grape insects. Practical: Appearance of infestation and damage, and insect description (grape insects)	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
7	2 Theoretical 3 Practical	Theoretical: c3: The student interacts with stone fruit tree insects. Practical: d2: The student collects stone fruit tree insects and distinguishes between the appearance of infestation and damage resulting from the insect, and insect description.	Theoretical: Stone fruit tree insects. Practical: Appearance of infestation and damage, and insect description (stone fruit tree insects).	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
8	2 Theoretical 3 Practical	Theoretical: c4: The student compares pomegranate insects and fig	Theoretical: Pomegranate insects, fig insects. Practical:	Theoretical: Auditory methods, whiteboard writing, direct	(Short quizzes, first and final midterms), homework assignments,

		insects. Practical: c3: The student classifies pomegranate insects and fig insects based on the appearance of infestation and damage, and insect description.	Appearance of infestation and damage, and insect description (pomegranate insects and fig insects).	dialogue. Practical: Assignment of tasks and reports.	discussions.
9	2 Theoretical 3 Practical	Theoretical: b3: The student distinguishes between citrus insects and palm insects. Practical: b4: The student demonstrates skills in distinguishing between the appearance of infestation and damage, and insect description for citrus insects and palm insects.	Theoretical: Citrus insects, palm insects. Practical: Appearance of infestation and damage, and insect description (citrus insects and palm insects).	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
10	2 Theoretical 3 Practical	Theoretical: b5: The student identifies vegetable insects, legume family insects. Practical: b3: The student distinguishes between legume family insects in terms of the appearance of infestation and damage, and insect description.	Theoretical: Vegetable insects, legume family insects. Practical: Appearance of infestation and damage, and insect description (legume family insects)	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
11	2 Theoretical 3 Practical	Theoretical: c3: The student classifies cucurbit family insects and	Theoretical: Cucurbit family insects, cruciferous family insects.	Theoretical: Auditory methods, whiteboard writing, direct	(Short quizzes, first and final midterms), homework assignments,

		cruciferous family insects. Practical: b3: The student distinguishes between the appearance of infestation and damage, and insect description for cucurbit family insects and cruciferous family insects.	Practical: Appearance of infestation and damage, and insect description (cucurbit family insects and cruciferous family insects).	dialogue. Practical: Assignment of tasks and reports.	discussions.
12	2 Theoretical 3 Practical	Theoretical: d3: The student classifies nightshade family insects. Practical: d2: The student collects nightshade family insects based on the appearance of infestation and damage, and insect description.	Theoretical: Nightshade family insects. Practical: Appearance of infestation and damage, and insect description (nightshade family insects)	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
13	2 Theoretical 3 Practical	Theoretical: d4: The student leads discussions on mallow family, amaranth family, and lily family insects. Practical: d1: The student classifies insects from the mallow family, amaranth family, and lily family based on the appearance of infestation and damage, and insect description.	Theoretical: Insects of the mallow family, amaranth family, and lily family. Practical: Appearance of infestation and damage, and insect description (insects of the mallow family, amaranth family, and lily family).	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.
14	2 Theoretical 3 Practical	Theoretical: b5: The student identifies	Theoretical: Ornamental plant insects,	Theoretical: Auditory methods,	(Short quizzes, first and final midterms),

		ornamental plant insects and horticultural plant insects. Practical: e1: The student provides a clear description of ornamental plant insects and horticultural plant insects through the appearance of infestation and damage, and insect description.	horticultural plant insects. Practical: Appearance of infestation and damage, and insect description (ornamental plant insects and horticultural plant insects).	whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	homework assignments, discussions.
15	2 Theoretical 3 Practical	Theoretical: Field visit to fruit orchards, vegetable crop fields, and nurseries. Practical: Field visit to fruit orchards, vegetable crop fields, and nurseries.	Theoretical: Field visit to fruit orchards, vegetable crop fields, and nurseries. Practical: Field visit to fruit	Theoretical: Auditory methods, whiteboard writing, direct dialogue. Practical: Assignment of tasks and reports.	(Short quizzes, first and final midterms), homework assignments, discussions.

11. Course evaluation

11. Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, written exams, reports, etc.

12. Learning and teaching resources

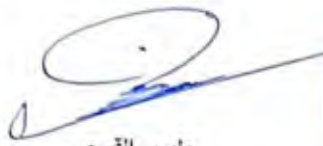
Required Texts	- Orchard Insects Book - Book of Economic Insects in Northern Iraq - Book of field crop insects
Recommended Texts	Recommended books and references (scientific journals, reports...)
Websites	Electronic References, Websites



مدرس المادة العملي
م.م. احمد ثامر حمادي



مدرس المادة النظري
م.د. جهينه ادريس مجذعلي



رئيس القسم
أ.م.د. فراس كافلم داؤد الجبوري



مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

Course Description Form

1. Course Name:	
Integrated pest management	
2. Course Code:	
INPM427	
3. Semester / Year:	
Secend semester/FOURTH stage/2025-2026	
4. Description Preparation Date:	
1-2-2026	
5. Available Attendance Forms:	
Classroom+online	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours theory / 3 hours practical (5 hours) / 3 units	
7. Course administrator's name (mention all, if more than one name)	
Name: 1- Dr. SADDAM MOWAFK HASSAN Email: DR.SADDAM_HASSAN@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	- Introducing students to the common types of Nematode and their effect on crops, and explaining their transmiss methods and infection mechanisms. - Provide an understanding of the basic biology and ecology Nematode, with an emphasis on the impact of environmer factors on their spread and development. - Students learned the skills of diagnosing caecilian infectio and analyzing the factors affecting them, using laboratory te and field observation. - Study means and methods of prevention and control Nematode, including the use of pesticides and advanc agricultural techniques such as biological control. - Analyze the economic and environmental impacts ofpest, and study sustainable and preventive management methods reduce their impact on crops and the environment. - Enhancing students' skills in planning and implementing fi experiments and scientific studies to effectively treat and control caecilian infestations. - Encouraging students to research and interact with mod literature and research in the field ofpest, and to contribute developing innovative solutions to meet current challenges

		this field.			
9. Teaching and Learning Strategies					
Strategy		• Brainstorming • Teamwork • Discussion • Discovery learning • Problem solving or problem-based learning • E-Learning • Practical field training • Think, discuss, share			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical	A1 Knows the pest, its divisions, and its harms	Definition of the pest - classification of pests according to economic importance and feeding behavior - damage caused by pests	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
2	2 Theoretical	A1 knows a historical overview of agricultural pests	Theoretical: A historical overview of agricultural pest management - the concept or definition of integrated pest management - the reasons leading to the adoption of a pest management system - the objectives of the pest management system - the main elements of integrated pest management	interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test

3	2 Theoretical	b 1 Number of survey methods and factors affecting the samples	Theoretical: methods of field survey and sampling - factors affecting the field sample - sampling and observer methods	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
4	2Theoretical	b2 Write a report on injury estimation methods	Theoretical: Methods for estimating infestation and how to calculate pest density on different crops	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
5	2Theoretical	b2Write a report on agricultural pest infections	Theoretical: How to prepare reports on infestations and estimate pest density - Sampling methods for pests that live below the surface of the soil and aquatic insects	, interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test, report.
6	2Theoretical	Theoretica b2Write a report on agricultural pest infections	Theoretical: How to prepare reports on infestation and estimate pest density - Sampling methods for pests that live and feed on plants.	interactive lecture, brainstorming, dialogue and discussion, self-learning	short test, final test

7	2Theoretical	Theoretical a3 Understand the critical economic limit and the factors affecting it	Theorecal Theoretical: The critical economic limit - The history of the critical economic limit. Population density levels of pests according to economic importance - Methods of estimating it and the factors determining the use of the critical limits - Examples of expressing the values of the critical economic limit.	interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 2, final test
8	2Theorecal	Theoretical: a4Knows the factors that must be taken into account when determining the critical economic limit	Theory: Factors that must be taken into consideration when estimating the critical economic limit of a pest - the benefits of applying the economic critical limit	interactive lecture, brainstorming, dialogue and discussion	self-learning, semester test 2, final test
9	2Theoretical	a4 is familiar with applied control methods	Theoretical: Applied control methods - the role of agricultural operations and their applications in integrated pest management programs	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 2, final test.
10	2Theoretical	Theoical A4 is familiar with physical and chemical control methods	Theoretical: Physical and mechanical means used in integrated pest control management programs	interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 2, final test.

11	2Theoretical	Theoretical: A4 is familiar with physical and chemical control methods	Theoretical: Physical and mechanical means used in integrated pest control management programs	interactive lecture, brainstorming, dialogue and discussion, self-learning	final exam
12	2Theoretical	Theoretical: a3 Understands legislative control and its means	Theoretical: Regulatory and legislative control in integrated pest control management programs - Legislative methods and agricultural quarantine - Objectives of agricultural quarantine	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning.	final exam
				Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test.
13	2Theoretical	Theoretical: A2 Explains the role of biological control in pest control	Theoretical: The role of biological control in the pest management system - insect parasites - predators - characteristics that must be present in successful biological enemies - benefits or benefits of using biological control strategies - methods used in biological control programs - bacterial control (pathogens) of insects - characteristics Must be present in the successful pathogen	Dialogue and discussion, self-learning	Report

14	2Theoretical	T b2 Writes a report on the features and benefits of bacterial control heoretical:	Theoretical: Advantages and benefits of bacterial control - disadvantages and difficulties of bacterial control - bacteria - fungi - viruses - snakeworms (nematodes) - insect-pathogenic protozoa	Interactive lecture, brainstorming, dialogue and discussion, self-learning	report.
15	2Theoretical	Theoreticab2 Writes a report on agricultural pesticides and their role in pest controll:	Theoretical: Insecticides in the insect pest management system - the relationship between dose, concentration, and toxicity - the toxic effect of pesticides - the principles adopted in dividing pesticides - the general principles in selecting pesticides - the principles adopted in dividing insecticides.	Brainstorming, dialogue and discussion, self-learning	Report

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

The theoretical subject teacher



Dr.saddam mowafak hassan

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أ.م.د. فراس كاظم داؤد الجبوري



مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

Course Description Form Plant Virology Advance

1. Course Name:
Plant Virology
2. CourseCode:
PVIR423
3. Semester /Year:
Second semester/ 4th, plant protection/2025–2026
4. DescriptionPreparation Date:
1/2/2026
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hour/ 3.5 units
7. Course administrator's name(mention all,if more than one name)
Name: Assit. Prof. D. Hameed Hamoud Ali Noor salah ahmed
8. Course Objectives
- The learner should be able to identify and understand what is related to plant viruses and their relationship to plants and the extent of the damage resulting from them. - Identify the most important methods of diagnosis and detection of these causes - Distinguish between signs and symptoms of viral diseases in the field from symptoms resulting from other pathogens - Identify and know the most important methods of diagnosis and detection of viral causes - Familiarity with the most important sources of plant viruses in nature - Understand what is related to plant viruses, their relationship with plants, and the extent of the damage resulting from them - A comprehensive study of the most important mechanisms for controlling diseases resulting from viral causes
9. Teaching and learning strategies
- Interactive lecture - Brainstorming - Dialogue and discussion

- Field Training
- Practical exercises
- Field project
- Self-education

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical	a2: The student is introduced to the concept of the history of plant virology	History of plant Virology	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	a2: The student learns about the laboratory, equipment, tools, conditions that must be observed, and laboratory safety in the plant pathology laboratory	Practical concepts for sterilization and avoiding viral contamination in the laboratory and greenhouses	Assigning tasks and reporting	Short testQuiz
2	2 theoretical	a2 : Determines the origin of viruses, their ancestors, and the most important evolutionary hypotheses b1: He possesses practical and intellectual knowledge and concepts that help him understand the hypotheses of evolution	Hypotheses on the origin and development of plant viruses	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b3: The student applies the sterilization process in the laboratory	Sterilization	Assigning tasks and reporting	Short testQuiz
3	2 theoretical	-a3 : Determines the chemistry of the virus in terms of structure and function	Chemical structure of the viral particle	Auditory methods. Method of writing on the blackboard	Short testQuiz

	3 practical	b4: The student experiences the nutritional environment that is most important for the development of pathogens	Preparing buffer solutions, auxiliary materials and tools for the mechanical inoculation	Assigning tasks and reporting	Short testQuiz
4	2 theoretical	b3: The student explains the concept of disease in plants	The concept of disease in plants	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	c : He uses what he needs to prepare buffer solutions and their main components	DiagnosisDiseases Vegetarianism	Assigning tasks and reporting	Short testQuiz
5	2 theoretical	a4: The student leads discussion panels on the development of plant disease and the relationship of the virus to the host	The development of plant disease and the relationship of the virus to the host	Auditory methods. Method of writing on the blackboard	Report and discuss
	3 practical	b4: The student examines pathogens by isolating them from plant parts	Isolation of virus pathogens from plant parts	Assigning tasks and reporting	writing a report
6	2 theoretical	a4: The student discusses the stages of viral disease development	Stages of viral disease development	For audio methods. Writing style on	Semester test 1
	3 practical	b4: The student examines to transmit viruses by vegetative methods	How to transmit viruses by vegetative methods	Assigning tasks and reporting	Semester test 1
7	2 theoretical	b4 : Proficient in methods of spreading viral infections in the field	Methods of transmission and spread of plant viruses	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b4: The student examines pathogens	Isolation of pathogens from soil	Assigning tasks and reporting	

		by isolating them from soil			Short testQuiz
8	2 theoretical	a4 : The student discusses the relationships between plant viruses and their vectors	Biological relationships between plant viruses and their vectors	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b3 :The student applies the process of how to purify virus from plants	Purification of viruses from plants,	Assigning tasks and reporting	Short testQuiz+ Homework
9	2 theoretical	a2 :The student learns about plant defenses against pathogen attacks	How plants defend themselves against pathogen virus attacks	a For audio methods, writing style on the blackboard	Short testQuiz+ Homework
	3 practical	a4 :The student differentiates between symptoms and signs of illness	Disease symptoms and signs+Scientific visit	Assigning tasks and reporting	Short testQuiz+ Homework
10	2 theoretical	a2 : It identifies the most important causes of mutations and the emergence of new viral strains	Heterogeneity of plant viruses	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b3 :The student applies pathogenicity measurement	Measuring pathogenicity	Assigning tasks and reporting	
11	2 theoretical	a2 : It identifies the classical methods used in diagnosing plant viruses, as well as modern methods that rely on the viral gene	Diagnosis of plant viruses	Methods Audio. Style of writing on the blackboard	Semester test2
	3 practical	c : It uses what it needs to get the antibodies	Practical steps for making antisera from rabbits and mice	Assigning tasks and reporting	Semester test2
12	2 theoretical	b3 :The student writes a report on the epidemiology of plant	Epidemiology of plant viral disease	Auditory methods. Method of writing on the blackboard	Short testQuiz

		viral disease			
	3 practical	c: He uses what he needs to perform serological tests, such as the ELISA test and double diffusion in agar	Serological tests to detect plant viruses	Assigning tasks and reporting	Short testQuiz+ Homework
13	2 theoretical	a4: The student discusses MethodsControl of plant diseases	Control of plant viral diseases	Auditory methods. Method of writing on the blackboard	Short testQuiz
	3 practical	b4: The student experiments the molecular diagnosis of plant viruses	Molecular diagnosis of plant viruses	Assigning tasks and reporting	Short testQuiz+ Homework
14	2 theoretical	b3: Successfully identifies modern molecular methods for viral genome	Molecular characterization of plant viruses using Next Generation Sequencing technology (NGS).	Auditory methods. Method of writing on the blackboard	Semester test2
	3 practical	b3: application Laboratory evaluation of Biological methods to control viral vectors	Biological methods to control viral vectors	Assigning tasks and reporting	Semester test2
15	2 theoretical	a4: The student discusses Methods Control of viral plant diseases	Control of plant viral diseases	Auditory methods. Method of writing on the blackboard	Report and discuss
	3 practical	b3: application the computer to learn the viral genomic structure	Using the computer to learn the viral genomic structure	Assigning tasks and reporting	Report and discuss

11. Course Evaluation

Relative weight %	Class	Calendar date (week)	Calendar methods	T
2	2	the sixth week	Short test(1)Quiz	1
2	2	The fourteenth week	Short test(2)Quiz	2
10	10	The seventh week	Semester test (1)	3
10	10	The eleventh week	Semester test (1)	4
40	40	Final semester exams	Final theoretical test	5
5	5	The fifteenth week	Report and discuss	6
5	5	The third and fifth week	Report and discuss	7
2	2	The first week	Short practical test (1)Quiz	8
2	2	fourth week	Short practical test (2)Quiz	9
2	2	The fourteenth week	Short practical test (3)Quiz	10
20	20	Final semester exams		11
100%	100%	100	the total	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book (Plant Virology- Nabil A. Qasim)
Main references (sources)	actical of plant viruses , Nabil A.Qasim and Hameed H. Ali) Book (Plant Virology- Nabil A. Qasim)
Recommended books and references (scientific journals, reports...)	Plant virology (Mathews, 1990)
Electronic References, Websites	Home Feed ResearchGate

Lecturer : assit. Prof. Dr. Hameed Hamoud Ali



Noor salah ahmed



رئيس القسم
أ.م.د. فراس كاظم داود الجبوري



مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

Course description of crop diseases

: Course Name	.1
crop diseases	
: Course Code	.2
CRDI363	
Annual : Year / Semester	.3
/First semter_four stage	
Date this description was prepared	.4
1/9/2025–2026	
: Available forms of attendance	.5
In Class-InElectronic	
:(Number of study hours (total)/number of units (total	.6
unit 3.5 / hours75	
(Name of the course administrator (if more than one name is mentioned	.7
Dr. Raghad Nayef Mahidi M. M. Saleh Ahmed Issa	
Course objectives	.8
concept of disease and the information that must be available to The learner should be able to define the know the medical history Choosing the appropriateness of the factors affecting the disease and determining its ability to spread lassificationsDifferentiate between types of pathogens and know all their c Understanding the basics of modern planning to develop a program that explains the forms and patterns of plant diseases class Distinguishing between classes and sections of fungi according to the type of each the teacher needs and what is available to him to master his work Familiarity with the information Identify plant diseases, symptoms and signs, and what must be taken into account when distinguishing between them disease, and determine the controls A comprehensive study of the various types of control, how to diagnose each .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 - and discussion Dialogue - Training Field - Practical exercises - Field project -	

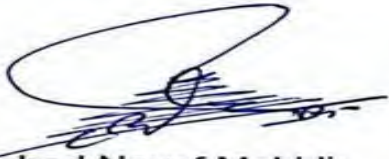
Course structure .10

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 plant concept of disease	Identify diseases that spread in agricultural fields :a1	1 theoretical	1
Short practical test1	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	Laboratory and equipment	Gets acquainted with the laboratory and all :c3 laboratory equipment	3 practical	
Semester exam 1, final exam	Interactive lecture, brainstorming, dialogue -and discussion, self learning	The importance of field crops	Recognizes the economic importance of field crops and their relationship to diseases :a2	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 :C 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 learning -training, self	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	Explains the difference between pathological symptoms and pathological signs :A	1 theoretical	5
Field evaluation	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self	Pathological causes their relationship and to girls	explains the most common pathogens that lead B to losses	3 practical	

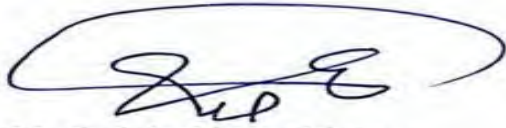
	learning				
Short test, final test	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Environmental Health	Explains the concept of plant pathology and its b1 environmental health relationship to	1 theoretical	6
Direct drawing and homework	Interactive lecture, dialogue ,brainstorming and discussion, field training, practical -exercises, and self learning	Agricultural food media	prepares different food mediaA	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	7
Field project	Interactive lecture, dialogue ,brainstorming and discussion, field training, practical exercises, field project, learning-self	Laboratory diagnosis of diseases	Identify the mechanism of laboratory diagnosis :a2 of pathogens	3 practical	
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	8
Direct drawing and homework	Interactive lecture, brainstorming, dialogue discussion, field and training, practical -exercises, and self learning	Symptoms, signs, and life cycles	describes the most common symptoms of plant c2 diseases	3 practical	
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	9
Direct drawing and homework	Interactive lecture, dialogue ,brainstorming and discussion, field training, practical -exercises, and self learning	Taking samples from plant parts and soil	Proficient in the process of taking samples from C plant parts and soil	3 practical	
Semester test2	,Interactive lecture brainstorming, dialogue -and discussion, self learning	Modern diagnostic methods	Masters the importance of diagnosing plant B diseases by all modern means	1 theoretical	10
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field practical ,training -exercises, and self learning	Preparing laboratory slides	Purification of pathogens and preparation of c1 laboratory slides	3 practical	

Final test	Interactive lecture, dialogue ,brainstorming -and discussion, self learning	Some electronic programs and applications for monitoring the health of field crops	Monitoring field crop health and soil healthc1	1 theoretical	11
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Field visits	conducts a field visitD	3 practical	
Final test	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Linking disease to organic farming	c2 Study of insect vectors and pathogens and their relationship to organic farming	1 theoretical	12
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Sterilization methods	effectiveness of some sterilization Evaluating the :C methods	3 practical	
Final test	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Integrated control	control program and suggests Explains an ideal :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 C 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 learning-self	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	week The fourteenth	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	week The fifteenth	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				
Ani Demisermjidjergis-Dr. Raqeeb Akef Al - Field crop diseases			Required textbooks (methodology, if any	
Hamid -Dasmir Mikhail Daabd al -Diseases of orchards and vegetables - University of Mosul -Zarari -Jawad al-Tarabiyah Dr. Abd al -Dr. Muhammad Amer Fayyad and Muhammad Hamza -Plant diseases - University of Basra written by George Akrios and translated by Damahmoud Musa - Plant Diseases - Abba Arqoub University of Basra -written by Abdulaziz Majeed Nakhilan -Practical plant diseases -			(Main references (sources	
			Recommended supporting books and references (scientific journals, (...reports	
Google scholar Google chrome Google research Researchgate Journal of plant pathology			references, Internet sites Electronic	



Raghad Nayef Mahidi



M. Saleh Ahmed Issa



رئيس القسم
أ.م.د. فراس كاظم داؤد الجبوري



مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

Describe the environment of insects

1.	Course Name
	Insect ecology
2.	: Course Code
	NEC418
3.	Semester / Year : Annual
	Fall semester/2025-2026
4.	Date this description was prepared
	2025 / 9 / 1
5.	Available forms of attendance:
	In-person + online
6.	:(study hours (total)/number of units (total Number of
	75 hours / 3.5 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. Esraa mohamed ali Esraa.mohamed@uomosul.edu.iq
8.	Course objectives
	• should be able to define the concept of insect environment and the information that must be available to know the types of insects • .Choosing the suitability of factors affecting the insect environment • Differentiating between different planning systems and the appropriate ones • .Understand the basics of planning and use them in establishing an insect laboratory • ng between types of insects according to the information acquired during the study of their Distinguishi environment and learning about the nature of their livelihood and reproduction • o him to master his work in dealing Familiarity with the information the trainee needs and what is available t with insects and their environments • .The student's awareness of the factors affecting insects and their environment and how to deal with them • be taken into account when catching them in catching tools, what should-Determine the appropriate type of ins the field, and identifying their types • A comprehensive study of various types of insects and determining the controls and conditions that must be environment laboratory met in the insect
9.	Teaching and learning strategies
	- Interactive lecture - Brainstorming - Dialogue and discussion - Field Training - Practical exercises - Field project - education -Self -

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 insect ecology : .and the origin of insects b1 He possesses the practical and mental : in the knowledge and concepts that help him .units of insect formation	Insect ecology and modern ecological divisions of population units	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	practical 3	C : The student masters the concepts related to the sections of ecology, types of oceans, and basic concepts in insect ecology.	Introduction to divisions of ,ecology ecology, types of oceans, types of migrations	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	Short practical test 1
2	theoretical 1	a2 Determines systems for the distribution : of insect and spread of insects and types habitats b1 He possesses the practical and mental : identify knowledge and concepts that help him .the population spread of insects C in Balances the process of insect spread : .different environments	Environmental factors determining insect growth Population spread	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	practical 3	C : The student applies the correct practical steps in surviving insects .	Insect trapping process Important matters in the inventory process, types of inventory	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and my A homework
3	theoretical 1	a2 Determines the regulations and laws of : environmental factors and insect inventory	Laws of specific environmental factors Insect inventory	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	practical 3	C : Applies methods of inventorying and estimating the size of insects practically in the agricultural field .	Modern techniques in insect control	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	My laboratory work
4	theoretical 1	a2 Determines the methods of insect : reproduction c4 Draws methods for using samples in : insects	Insect reproduction ability Methods of counting how to use -insects samples	lecture, Interactive brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam report ,
	practical 3	C : Applies various methods to separate insects from plant parts .	Methods of separating insects from plant parts , ,repellent chemicals brushes, washing, and .imprinting	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Practical short test 2 direct , drawing
5	theoretical 1	a2 Determines methods for studying insect : ecology c4 Draws methods for using samples in : insects In plant residues, above the soil surface, and inside plant tissues	Methods of studying ecology associated -Plant insects -Plant waste insects above the soil surface plant tissues -	lecture, Interactive brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam report ,
	practical 3	d1 Acquiring the communication skills : necessary for methods of counting and	A field visit for students to see the	Interactive lecture, brainstorming, dialogue	Field evaluation

		estimating the size of insects	insects spread in the fields inside the university	and discussion, field training, practical -exercises, and self learning	
6	theoretical 1	a2 ecological succession in Determines : insects C4 Draw plans for the natural balance of : insects in their environments d1 Acquire skills to estimate insect numbers :	Ecological succession natural selection and - natural equilibrium Estimate numbers Insects in the terrestrial and aquatic environment	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	practical 3	C : Master the concepts and methods of enumerating insects associated with animals (living and dead).	-Estimation of animal associated insects , enumeration of insects from living hosts I	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
7	theoretical 1	C4 Draw plans for the natural balance of : insects in their environments + first exam	nsect counts from dead hosts .Codification + first exam	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	practical 3	C2: He diagnoses the causes of the Myiasis process in animals and practices good therapeutic measures to recover the affected animals.	Myaisis process + Semester test1	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, learning-self	Semester test1
8	theoretical 1	a3 Employs appropriate tools and skills for : methods of estimating insect numbers c4 Draws plans and programs for host : selection and how to estimate the number of terrestrial environments insects in	Host selection and specialization Proportional enumeration method Methods for estimating the number of insects in the terrestrial environment	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester , 2 exam final exam
	practical 3	C : Implement various practical methods to estimate the number of insects in the aquatic environment.	Estimating the number of insects in the aquatic environment , the living -number of free insects in the water aquatic Preparation of plant insects Number of benthic .insects	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
9	theoretical 1	a4 to management system is used pest A : .control them C Use what the researcher needs to choose : floating traps for insects	Integrated pest management and control system The forgetful census methods of -method fishing in traps Baits Traps	Interactive lecture, brainstorming, dialogue -discussion, self and learning	Semester exam 2 , final exam
	practical 3	C : Master the concepts of the relative census methods .	Methods used in proportional enumeration	Interactive lecture, brainstorming, dialogue and discussion, field	Direct drawing and

				training, practical -exercises, and self learning	homework
10	theoretical 1	a2 Defines garden systems, types of gardens, : various design principles and elements, and their urban and environmental importance C Successfully balances the investment and : of ornamental plants and employs them in use a way that suits the coordination processes of .different types and styles of gardens	Types of public gardens and their foundations	Interactive lecture, brainstorming, dialogue -and discussion, self learning	r Semeste test 2
	practical 3	C: The student uses the necessary tools he needs and what is available to him to master the use of various types of insect traps.	Insect traps , division of traps in general	Interactive lecture, brainstorming, dialogue discussion, field and training, practical -exercises, and self learning	Direct drawing and homework
11	theoretical 1	a2 Determines the systems and laws for pest : control C Balances the methods of using traps and : insects light traps to estimate the number of	Biocontrol of insects Traps Optical	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	practical 3	C : Types of pheromone traps are used to predict the outbreak of insect pests .	Pheromone traps , light traps pheromone traps .Types of light traps	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
12	theoretical 1	a2 Determines the effect of environmental : such as temperature and humidity on factors insects C Balances and determines the method for : of injury estimating the manifestations	Effect of temperature and humidity Manifestation of injury	Interactive lecture, brainstorming, dialogue -self ,and discussion learning	Final test
	practical 3	C : Master the basics of the process of estimating insect pests and using them to evaluate the health and safety of crops.	Estimating insects by the appearance of infestation , on leaves, stems, fruits, .and waste	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
13	theoretical 1	a2 Determines the effect of light factor on : insects C field Uses what the researcher needs in : and laboratory work for environmental studies of insects	Light effect Field and laboratory work for environmental studies	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	practical 3	D : Dealing with modern methods efficiently that enable him to accomplish his scientific and practical tasks. In transmitting the different stages of insect pests.	Field and laboratory work for environmental studies ,	Interactive lecture, brainstorming, dialogue field ,and discussion training, practical -exercises, and self learning	Direct drawing and homework
14	theoretical 1	C Uses what the researcher needs to : critical economic limit of the calculate the damage C Balances the insect feeding process and : factors on it the effect of these	Effect of food on insects Calculate the critical economic limit of damage	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	practical 3	d2: Dealing with modern methods efficiently that enables him to accomplish his scientific and practical tasks related to various environmental studies.	Field and laboratory work for environmental studies transmission of ,	Interactive lecture, brainstorming, dialogue n, field and discussio training, practical	Homework

			parasites and predators	-exercises, and self learning	
15	theoretical 1	C Balances the insect feeding process and : the effect of these factors on it + Second exam	insect transportation static and mobile) (stages	,Interactive lecture brainstorming, dialogue -and discussion, self learning	Short test, final test
	practical 3	C : Develops practical methods for breeding parasites and predators to resist insect pests	Transmission of parasites and predators + Semester test2	lecture, Interactive brainstorming, dialogue and discussion, field training, practical exercises, field project, learning-self	Semester test 2 Final test

11. Course evaluation

T	Calendar methods	(Calendar date (week	Class	Relative % weight
1	Report 1	fourth week	2.5	2.5
2	Report 2	The fifth week	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	difficult The eleventh week is	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

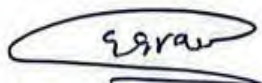
12. resources Learning and teaching

(Required textbooks (methodology, if any	Insect Ecology book by Dr. Muhammad Abdel Karim
(Main references (sources	- Insect Ecology book by Dr. Muhammad Abdel Karim
Recommended supporting books and references (scientific journals, (...reports	Insect Ecology: An Ecosystem Approach /Timothy D. Schowalter
Electronic references, Internet sites	https://www.amazon.com/s?i=stripbooks&rh=p_27%3ATimothy+D.+Schowalter&s=relevancerank&text=Timothy+D.+Schowalter&ref=dp_byline_sr_bk_1

Dr.Mohammed Yousuf Sayed Ghani



Esraa mohamed ali



رئيس القسم
أ.م.د. فراس كاظم داؤد الجبوري



مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

Course Description Form

1. Course Name:	
PESTCIDIES	
2. Course Code:	
PEST417	
3. 1Semester / 4Year:	
FIRSTsemester/FOURTH stage/2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms:	
Classroom+	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours theory / 3 hours practical (5 hours) / 3 units	
7. Course administrator's name (mention all, if more than one name)	
Name: 1- Dr. SADDAM MOWAFAK HASSAN 2- M.M.HAMED MOHAMED HAMED Email: DR.SADDAM_HASSAN@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	- Introducing students to the common types of Nematode and their effect on crops, and explaining their transmission methods and infection mechanisms. - Provide an understanding of the basic biology and ecology of Nematode, with an emphasis on the impact of environmental factors on their spread and development. - Students learned the skills of diagnosing caecilian infections and analyzing the factors affecting them, using laboratory tests and field observation. - Study means and methods of prevention and control of Nematode, including the use of pesticides and advanced agricultural techniques such as biological control. - Analyze the economic and environmental impacts of Nematode, and study sustainable and preventive management methods to reduce their impact on crops and the environment. - Enhancing students' skills in planning and implementing field experiments and scientific studies to effectively treat and control caecilian infestations. - Encouraging students to research and interact with modern literature and research in the field of Nematode, and

	contribute to developing innovative solutions to meet current challenges in this field.
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9. Teaching and Learning Strategies

Strategy	• Brainstorming • Teamwork • Discussion • Discovery learning • Problem solving or problem-based learning • E-Learning • Practical field training • Think, discuss, share
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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	Theoretical: A1 knows the concept of pest and pest damage Practical: b1 Enumerate the groups of pesticides and their classifications	Theoretical: Pests, their types and harms Practical: Definition of pesticides, their types and classifications	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
				Interactive lecture, brainstorming, dialogue and discussion, field training, self-learning	Short practical test
2	2 Theoretical 3 Practical	heoretical: A2 explains methods of pest control Practical: b2 Writes a report on the types of pesticides	Theoretical: Methods of pest control Practical: Viewing different types of pesticides	interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
				Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test
3	2 Theoretical 3 Practical	Theoretical A2 is familiar with different pesticides Practical: B2 tests pesticide additives	heoretical: Pesticides Practical: Exploring the importance of additives in pesticide preparation	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
				Interactive lecture, brainstorming, dialogue and discussion, field training	self-learning Short practical test
4	1 Theoretical 3 Practical	Theoretical: A2 understands pesticides Practical: B2 tests pesticide additives	Theoretical: Insecticides Practical: Knowing the importance of additives in pesticide preparation	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester test 1, final test, report.
				Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test

5	1 Theoretical 3 Practical	Theoretical: A2 understands pesticides	Theoretical: Insecticides Practical: Conduct laboratory experiments	, interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test, report.
		Practical: E1 tests for pesticides		Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Semester test 1, final test, report.
6	1 Theoretical 3 Practical	Theoretical A2 Understands the chemicals that inhibit insect reproduction	Theoretical: Chemicals that inhibit insect reproduction Practical: Views different models of these stickers	interactive lecture, brainstorming, dialogue and discussion, self-learning	short test, final test
		Practical: B2 writes a report on some pesticide labels		interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test
7	1 Theoretical 3 Practical	Theoretical A2 Understands the chemicals that inhibit insect reproduction	Theoretical: Fungicides Practical: Conducting experiments based on these studies	interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 2, final test
		Practical: E2 tests some fungicides		interactive lecture, brainstorming, dialogue and discussion	semester test 2, final test
8	1 Theoretical 3 Practical	Theoretical: A2 Understands fungicides and their modes of action	Theoretical: Fungicides Practical: Conducting experiments based on these studies	interactive lecture, brainstorming, dialogue and discussion	self-learning, semester test 2, final test
		Practical: B2 tests some fungicides		Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises	self-learning Short practical test
9	1 Theoretical 3 Practical	Theoretical: A2 understands pest resistance Practical: B2 tests some pesticides on a number of collected insects	Theoretical: Pest resistance to pesticide action practical : Collecting insect samples and conducting experiments on them	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 2, final test.
				Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test
10	1 Theoretical	Theoretical: A2 understands pest resistance Practical E2 tests some pesticides on a number of collected insects	Theoretical: Pest resistance to pesticide action Practical: Collecting insect samples and conducting experiments on them	interactive lecture, brainstorming, dialogue and discussion, self-learning	quarterly test 2
	3 Practical			Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Short practical test

11	1 Theoretical 3 Practical	Theoretical: A2 Understands fungicides and their modes of action Practical: B1 enumerates the effects and harms of pollution	Theoretical: Pesticides and environmental pollution Practical: Test animals for pesticides and various chemicals	interactive lecture, brainstorming, dialogue and discussion, self-learning	final exam
				Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning.	
12	1 Theoretical 3 Practical	Theoretical: A2 Understands fungicides and their modes of action Practical: B1 enumerates the effects and harms of pollution	Theoretical: Pesticides and environmental pollution Highlighting practical: Conducting experiments specific to the topic	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning.	final exam
				Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test.
13	1 Theoretical 3 Practical	Theoretical: A2 Understands weedicides and their modes of action Practical: B1 enumerates the effects and harms of pollution	Theoretical: Pesticides and environmental pollution Practical: Conduct experiments on the topic	Dialogue and discussion, self-learning	Report
				Dialogue and discussion, field training, practical exercises, self-learning	Report
14	1 Theoretical 3 Practical	Theoretical: A2 understands pollution Practical: B1 enumerates the effects and harms of pollution	Theoretical: Pesticides and environmental pollution Practical: Practical application of these analyses	Interactive lecture, brainstorming, dialogue and discussion, self-learning	report.
				Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Short practical test 3
15	1 Theoretical 3 Practical	Theoretical: A2 understands pollution Practical: B1 enumerates the effects and harms of pollution	Theoretical: Pesticides and environmental pollution The skeleton and the rest of the themes practical : Practical application of these examples	Brainstorming, dialogue and discussion, self-learning	Report
				Brainstorming, dialogue and discussion, field training, practical exercises	Report

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

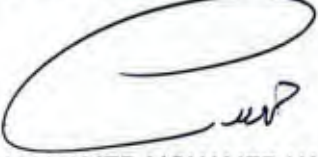
12. Learning and Teaching Resources

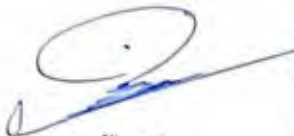
Required textbooks (curricular books, if any)

1- Pesticides: Awad Shaaban and Ni

	Mustafa Al-Mallah, 1993
Main references (sources)	
Recommended books and references (scientific journals, reports...)	-Theoretical foundations of pesticides, Nizar Mustafa Al-Mallah and Abdul-Razzaq Al-Jubouri 3-The practical foundations of pesticides and their applications, Nizar Mustafa Al-Mallah and Abdul-Razzaq Al-Jubouri
Electronic References, Websites	


Dr. SADDAM MOWAFK HASSAN


M.M.HAMED MOHAMED HAMED


رئيس القسم
أ.م.د. فراس كاظم داود الجبوري




مسؤول اللجنة العلمية
أ.د. هيثم محي الدين محمد

Course Description Form

1. Course Name:	
Stored Products Pests	
2. Course Code:	
STPP419	
3. Semester / Year:	
2th 2025– 2026	
4. Description Preparation Date: quarterly	
1/9/2025	
5. Available Attendance Forms: groups	
Groups	
6. Number of Credit Hours (Total) / Number of Units (Total)75	
75	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Emad Q. Mohammed Alebady Email: emad_alebady@uomosul.edu.iq Ekhlas Ziyad Mohammed Email: ekhlas.1977@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	- Objectives of the course 1. A - questions of conclusiveness at all - Development of training programme - Finding solutions to stude - problems and constraints in the un 4. Enabling students to find solutio - and applications for outstand - attitudes
9. Teaching and Learning Strategies	
Strategy	- Provide students with additional basics and topics related biological resistance - Students asked a range of questions during the course - Giving students home duties requires self-explanations ways of cause
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Theoretical : A1: Introduction - The importance of grains Practical : C1: Introduction to cereals, nutritional value of cereals and associated deterioration and spoilage for stored grains	Introduction - The importance of grains Introduction to cereals, nutritional value of cereals and associated deterioration and spoilage for stored grain	Display data on grain storage and traditional methods of grain storage	
2	5	Theoretical A1: Storage and methods of storing grains, grain spoilage phenomena Practical: C1: Insect groups to which store pests belong	Storage and methods of storing grains, grain spoilage phenomena Insect groups to which store pests belong	Show photos and video	
3	5	Theoretical: D3: Estimation of moisture in grains and their products, insect damage to stored materials, methods of estimating moisture content Practical: C1: Functional and structural adaptation of store house insects to the most important sources of infestation	Estimation of moisture in grains and their products, insect damage to stored materials, methods of estimating moisture content Functional and structural adaptation of store house insects to the most important sources of infestation	methods for estimating moisture content	
4	5	Theoretical: A1: Losses resulting from insect pests of grains and their products. Pictures and diagrams of insect damage in warehouses	Losses resulting from insect pests of grains and their products. Pictures and diagrams of insect damage in warehouses Seasonal examination	Pictures and diagrams of insect damage in warehouses	

		Practical: C1 : Seasonal exam			
5	5	Theoretical: A1: Groups of insects of stored materials, examples of groups of warehouse insects and their types Practical: C1: Methods used in the laboratory to detect infections that from inside the grains	Groups of insects of stored materials, examples of groups of warehouse insects and their types Methods used in the laboratory to detect infections that from inside the grains	examples of groups of warehouse insects and their types	
6	5	Theoretical A1: The life of grain insects economically important stored materials in Iraq, environment of grain insects and their costs, displaying cycles of warehouse insects via the Dacho projector Practical: C1: Biology of some warehouse pests (penetration of small grain and khabra)	The life of grain insects economically important stored materials in Iraq, environment of grain insects and their costs, displaying cycles of warehouse insects via the Dacho projector. Biology of some warehouse pests (penetration of small grain and khabra)	The life of grain insects and economically important stored materials in Iraq, environment of grain insects and their costs displaying the cycles of warehouse insects the Dacho projector.	
7	5	Theoretical A1: Environmental factors and their relationship insects of stored materials, insects population in Practical: C1: Rusty and similar flour beetles (saw grain beetle)	Environmental factors and their relationship to insects stored materials, insects population in Rusty and similar flour beetles (saw grain beetle)	warehouses, a detailed explanation of environmental factors that affect the lives of warehouse insects.	
8	5	Theoretical A1: Sources of warehouse	Sources of warehouse insect infestation,	warehouses, a detailed explanation of environmental factors	

		insect infestation, Practical: C1: Cheese fly and small fruit	Cheese fly and small fruit	that affect the lives of warehouse insects.	
9	5	Theoretical: A1: Selecting stored grain insects for their preferred hosts Practical: C1: Indian flour moth and spider beetle	Selecting stored grain insects for their preferred hosts Indian flour moth and spider beetle	warehouses, a detailed explanation of environmental factors that affect the lives of warehouse insects.	
10	5	Theoretical: A1: Methods of controlling insects in grains and stored materials Practical: C1: Book louse cigarette or tobacco beetle	Methods of controlling insects in grains and stored materials Book louse cigarette or tobacco beetle	warehouses, a detailed explanation of environmental factors that affect the lives of warehouse insects.	
11	5	Theoretical: A1: Traditional methods of pest control Practical: C1: Leather and cheese crushed grain beetle	Traditional methods of pest control Leather and cheese crushed grain beetle	warehouses, a detailed explanation of environmental factors that affect the lives of warehouse insects.	
12	5	Theoretical: D3: Modern methods of control include Practical: C1: The difference between true weevil and grain weevil (rice weevil, grain weevil)	Modern methods of control include: Using ozone gas (O₃) to control stored insects The difference between true weevil and grain weevil (rice weevil, grain weevil)	warehouses, a detailed explanation of environmental factors that affect the lives of warehouse insects.	

13	5	Theoretical: A1: Chemical control: pesticides – fumes Practical: C1: Dry fruit beetle , legume beetle	Chemical control: pesticides – fumes Dry fruit beetle , legume beetle	warehouses, a detailed explanation of environmental factors that affect the lives of warehouse insects.	
14	5	Theoretical: A1: An overview of non-insect pests that infect warehouses Practical: C1: Arachnids (dread flour)	An overview of non-insect pests that infect warehouses Arachnids (dread flour)	warehouses, a detailed explanation of environmental factors that affect the lives of warehouse insects.	
15	5	Theoretical: D3: A brief idea about rodents and ways to combat them Practical: C1: Rodents and their harm	A brief idea about rodents and ways to combat them Rodents and their harm	warehouses, a detailed explanation of environmental factors that affect the lives of warehouse insects.	

11. Course Evaluation

	Evaluation methods	Evaluation date (one week)	Grade	Relative weight %
1	1 final theoretical report + theoretical/practical experience reports	My theory is week 15 My work week is 1-15	7Theoretical + 6Practical	13 %
2	Short test 1	Week 3	4Theoretical + 2Practical	6%
3	Midterm test (theoretical and practical)	Week 9	10 theoretical +5 practical	15%
4	Short test 2	Week 12	4 Theoretical + 2Practical	6 %
5	Final practical test	Practical exams week	20	20%
6	Final theoretical test	The week of theoretical exams	40	40%
	the total		100	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Book of warehouse insects and methods of combating them, Prof. Dr. Riyad Al-Iraqi. 2010 A book on warehouse insects, their importance and ways to combat them Mr. Dr. Iyad Ismail 2014
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Dr. Emad Q. Mohammed Alebady



Ekhlas Ziyad Mohammed




رئيس القسم

أ.م.د. فراس كاظم داؤد الجبوري




مسؤول اللجنة العلمية

أ.د. هيثم محي الدين محمد

Vegetables and protected agriculture description course Pathology

: Course Name .1	
Vegetable diseases and protected agriculture	
: Course Code .2	
VEPA420	
Annual : Year / Semester .3	
/First semter_four stage	
Date this description was prepared .4	
2026–2025 /9/1	
: Available forms of attendance .5	
In electronic -In Class	
:(Number of study hours (total)/number of units (total .6	
unit 3.5 /hours75	
(Name of the course administrator (if more than one name is mentioned .7	
Dr.Raghad Naif Mheedi .M,M. Rayan Salem Mahmoud.	
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 - class ng to the type of eachDistinguishing between classes and sections of fungi accordi - 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 .nd conditions that must be observed when carrying out all instructions to carry out the control in the proper mannera	
Teaching and learning strategies .9	
- Interactive lecture - - Brainstorming - - and discussion Dialogue - - Field Training - - Practical exercises - - project Field - - education -Self -	

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	Seed rot, downy mildew and some other diseases	Learn about common diseases in Iraq caused by :a1 .fungi and fungus-like organisms	1 theoretical	1
Short practical test1	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self		Learn about the installation of a greenhouse and ,a1 the mechanism of cultivation inside it	3 practical	
Semester exam 1, final exam	Interactive lecture, brainstorming, dialogue and discussion, self learning	The number and type of greenhouses and glass houses operating simultaneously, and the types and varieties of plants grown in the .greenhouses	Production economics in protected agriculture compared to open agriculture :a2	1 theoretical	2
discussion	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning		out the factors that help spread Field trips to finda2 diseases inside greenhouses	3 practical	
Semester exam 1, final exam	Interactive lecture, brainstorming, dialogue and discussion, self learning	Key factors for the success and development of protected agriculture	Studying the obstacles to protected agriculture :a3 in Iraq and finding ways to develop it and factors for .its success	1 theoretical	3
Laboratory evaluation	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self		Explains the most common pathogens that lead a3 to economic losses	3 practical	
Semester test 1, final , test report	Interactive lecture, brainstorming, dialogue and discussion, self learning	The importance of organisms causing plant diseases	diseases Identify the organisms that cause planta4: 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		most important agricultural He is familiar with thea4 methods used inside greenhouses to prevent disease infections	3 practical	
Semester test 1, final , test report	Interactive lecture, brainstorming, dialogue and discussion, self learning	Disease symptoms and signs	Explains the difference between pathological a5: symptoms and pathological signs	1 theoretical	5
Field evaluation	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning		common symptoms on plants grown in The mostb1 greenhouses are described	3 practical	

Short test, final test	Interactive lecture, brainstorming, dialogue -and discussion, self learning	The relationship of diseases to environmental health	pathology and its relationship to environmental health Explains the concept of plant :b1	1 theoretical	6
discussion and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning		means that help Explaining the most importantb2 spread diseases that affect plants in greenhouses	3 practical	
Semester m 2, exam final exam	Interactive lecture, brainstorming, dialogue -and discussion, self learning	The spread of diseases in greenhouses	the most important Familiarize yourself with :b2 factors affecting the epidemiology of diseases and their relationship to the spread of diseases in .greenhouses	1 theoretical	7
Field project	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, learning-self		Proficient in the process of taking samples from b3 plant parts to the laboratory	3 practical	
Semester exam 2, final exam	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Types of pathogens and their relationship to plant health	Master the importance of pathogens and their :b3 relationship to plant health and environmental health	1 theoretical	8
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning		Proficient in the process of taking soil samples for b4 the laboratory	3 practical	
Semester exam 2, final exam	Interactive lecture, brainstorming, dialogue -and discussion, self learning	The spread of diseases in greenhouses	Understand the importance of the spread of :b4 pathogens in agricultural fields and greenhouses	1 theoretical	9
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning		Familiar with the process of isolating pathogens in a1 the laboratory	3 practical	
Semester test2	Interactive lecture, brainstorming, dialogue -and discussion, self learning	The latest technologies in diagnosing diseases and pathogens	Masters the importance of diagnosing plant :b5 diseases by all modern means	1 theoretical	10
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Practical steps	mechanism of laboratory Learn about theb2 diagnosis of pathogens	3 practical	
Final test	Interactive lecture, brainstorming, dialogue	Identifying diseases through smart	Learn about smart systems in managing c1 vegetable diseases and protected agriculture	1 theoretical	11

	-and discussion, self learning	systems and diseases of ornamental and fruit plants		tical	
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning		about the mechanism of laboratory diagnosis of pathogens	3 practical	
Final test	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Control the carrier and how to transport and infect	to control the Suggests an appropriate method :c2 vector of diseases and how to transmit and infect them	1 theoretical	
Direct drawing and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Practical steps for	preparing laboratory Purifying pathogens andb4 slides for examination	3 practical	12
Final test	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Ideal control in disease management	program and suggests Explains an ideal control :c3 an optimal method for disease management and control	1 theoretical	
discussion and homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Practical steps	effectiveness of Laboratory evaluation of thec3 some pesticides	3 practical	13
,Short test final test	Interactive lecture, brainstorming, dialogue -and discussion, self learning	The importance of the spread of pathogens in greenhouses	Leads discussion panels on the critical :d1 importance of the spread of plant diseases and how to control them	1 theoretical	
Short practical test3	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning		pesticides is applied in practice Spraying chemicalc2 inside chemical houses	3 practical	14
,Short test final test	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Identifying health risks and their impact on human health	impact on Identifying health risks and their :e1 human health Negligence in public health	1 theoretical	
Field project	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, learning-self		important biological control Learn about the mostb4 agents, their abundance and use	3 practical	15

Course evaluation .11

Relative weight	Class	(week) Calendar date	Calendar methods	T
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%				
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	sixth week the	(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	test Final practical	15
%100	%100	100	the total	

Learning and teaching resources .12

mid-Diseases of orchards and vegetables, written by Dr. Samir Mikhail and Daabd Al Zarri-Jawad Al-Tarabiya Dr. Abdel	(Required textbooks (methodology, if any
Diseases of orchards and vegetables/University of Aleppo Dr. Muhammad Amer Fayyad And thank you Mohamed - Plant diseases Albasrah university - Hamza Written by George Agrios and translated by Dr. - Plant diseases Arqoub Mahmoud Musa Abu	(Main references (sources
Google research	Recommended supporting books and references (scientific journals, (....reports
Google scholar Google chrome Google research Researchgate Journal of plant pathology	Electronic references, Internet sites

dr.Raghad Naif Mheedi

M. Rayan Salem Mahmoud .

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1	2 theoretical	a1 : Learn about the concept of biological resistance b1: He possesses practical and mental knowledge and concepts that help him understand the vital enemy c1: Community members participate and work to educate them about the danger of agricultural pests and their impact on agricultural crops	Chemical pesticides and their negative impact on the ecosystem, insects and their relationship with the environment, factors that helped the spread of insects, natural selection, sexual selection, natural balance.	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	3 practical	b2: Shows the most important methods for identifying biological enemies	An overview of biological control	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	Short practical test 1
2	1 theoretical	a2: Defines the origins of the concept of biological resistance b1: Possesses practical and intellectual knowledge and concepts that help him understand the hypotheses of evolution	INatural control, biological control to insect pests, the emergence and development of biological resistance, methods used in biological control programs, characteristics that must be present in mature biological enemies, benefits and drawbacks of biological control.	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	3 practical	c1: Uses what is needed to identify the most important insect orders and biological enemies	c1: Uses what is needed to identify the most important insect orders and biological enemies	,Interactive lecture brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing
3	1 theoretical	a2: Identifies the most important methods of introducing natural enemies	Methods used to introduce natural enemies, procedures used to introduce natural enemies, final evaluation of natural enemies.	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	3 practical	c1: Uses what it needs to identify local biological enemies	Local natural enemies	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	Field evaluation
4	1 theoretical	a2 : Determines the methods and steps of intrusion c1: Draws the most important morphological forms of parasites	Insects that feed on insects: 1/ Insect parasitoids, forms of parasitism, division of parasitoids according to the nature of their development on the host, division of parasitoids according	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam report ,

			to the place where eggs are laid and the individuals live, division of parasitoids according to the stage of the targeted host.		
	3 practical	c1: Uses what it needs to identify parasitoids	Orders of parasitoids	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Practical short test 2 direct , drawing
5	1 theoretical	b3: Uses the skills necessary to interpret the behavior of parasitoids in reproduction and finding hosts	Methods of parasitoids reproduction, biological characteristics of adult parasitoids, behavior of adults in selecting hosts, method and position of laying eggs by females.	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam report ,
	3 practical	c1: Uses what it needs to identify parasitoids	Orders of Parasitoids	Interactive lecture, brainstorming, dialogue discussion, field and training, practical -exercises, and self learning	Field evaluation
6	1 theoretical	a2: Determines the most important strategies of predatory insects c2: Community members participate and work to educate them about the importance of these predators and their impact on the environment	Insects that feed on insects: predators, biological characteristics of adult insect predators, strategies of predatory insects, orders of predatory insects.	Interactive lecture, brainstorming, dialogue -ussion, selfand disc learning	Semester 1,exam Short test, final test
	3 practical	c1: Uses what it needs to identify the orders of predatory insects	Orders of predators	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
7	1 theoretical	Theoretical: b4: Masters methods for identifying bacterial resistance to pests Practical: b 4: Analyzes the most important symptoms of insect pests C1: Expresses skills through which he can distinguish between the most important symptoms About other symptoms resulting from other causes	Microbial control of insect pests, characteristics that must be present in a successful pathogen, benefits of microbial control, types of pathogens	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	3 practical	Theoretical: Bacterial resistance to insect pests and the most important characteristics of virulence And the severity of the injury Practical: How to obtain samples of infected insects	Symptoms of microbial diseases that appear on insect pests	Interactive lecture, brainstorming, dialogue and discussion, field training, practical field project, ,exercises	Field project

		and distinguish the most important diseases		learning-self	
8	1 theoret ical	a3: Employs the most important biological and biological relationships between pathogens and insect pests	Classification of pathogenic bacteria of insects, bacterial diseases (milk diseases, diseases caused by crystalline bacteria).	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	3 practic al	C1: He uses what he needs to prepare cultures of insects infected with pathogens	Bacteria pathogenic of insects	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
9	1 theoret ical	a4: It uses the main methods to name and classify viruses a2: Identifies the most important organizations interested in nomenclature and classification systems for insect viruses	Families of insect viruses, viral diseases (polyhydrosis, granulosis, aneutrophils). Classification of insect-pathogenic nematodes and their use in biological control.	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	3 practic al	c1: Uses what it needs to identify insects infected with viruses	Insect pathogenic viruses	lecture, Interactive brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
10	1 theoret ical	a2: Identify the most important local biological enemies in the fields	A scientific trip to some infested fields and orchards with the aim of identifying agricultural pests and their biological enemies.	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester test 2
	3 practic al	c1: Uses what it needs to obtain the different phases of local enemies	Ways to collect natural enemies	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
11	1 theoret ical	a2: Determines the methods used by insects to defend themselves	Defense mechanisms in insects (direct and indirect external defense), cellular internal defense (inflammation, encapsulation, nodule formation, detoxification).	Interactive lecture, brainstorming, dialogue -and discussion, self learning	inal testF
	3 practic al	c1: Uses what it needs to learn about defense mechanisms in insects	Defense mechanisms in insects	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self	Direct drawing and homework

				learning	
12	1 theoret ical	a2: Determines the systems of parasitoids resistance mechanisms to the host's defense mechanisms	Resistance of parasitoids to host defense methods (protective encapsulation, exhaustion of the host, temporary occupation of some body organs).	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	3 practic al	c1: Uses what is needed to identify the mechanisms of parasitoids resistance to host defenses	Mechanisms of parasitoids resistance to host defense methods	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
13	1 theoret ical	a2: Determines the systems of parasitoids resistance mechanisms to the host's defense mechanisms	Resistance of parasitoids to host defense methods (membranous cyst, resistance according to the phase of the attacking host, active resistance to the parasitoids).	Interactive lecture, brainstorming, dialogue -and discussion, self learnin	Final test
	3 practic al	c1: Uses what is needed to identify the mechanisms of parasite resistance to host defenses	Mechanisms of parasitoids resistance to host defense methods	Interactive lecture, brainstorming, dialogue and discussion, field practical ,training -exercises, and self learning	Direct drawing and homework
14	1 theoret ical	a2: Identify the most important methods of other biological resistance	Some other methods of biological control (genetic, pheromones and hormones) The use of insects in biological control of bushes.	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	3 practic al	b2: Dealing with modern technology efficiently enables him to learn about other methods of biological resistance	Other biological control methods	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Short practical test 3
15	1 theoret ical	c1: Put up plans and programs to develop methods for obtaining and using insects in biological control of pushes	Second semester exam The use of insects in biological control of bushes	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test
	3 practic al	c1: Uses the most important biological methods to control the pushes	2Semester exam Biological control of bushes	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, learning-self	Field project

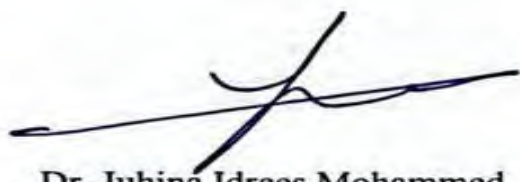
4. evaluation Course

T	Calendar methods	(Calendar date (week	Class	Relative
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				% weight
1	Report 1	fourth week	2.5	2.5
2	Report 2	The fifth week	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	fifteenth week The	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	and fifth week The third	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

5. Learning and teaching resources

(Required textbooks (methodology, if any)	Biological control\ Hamza Kazhim Al-zubaidi
(Main references (sources	Predators and Parasitoids\ Opende Koul
Recommended supporting books and references (scientific journals, (...reports	
Electronic references, Internet sites	



Dr. Juhina Idrees Mohammed



Ahmed thamer Hamadi

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