

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



**Description of the
academic program
Plant Protection
Department**

2024

Academic Program Description Form

University Name: Al-Muthanna University.....

Faculty/Institute: Agriculture.....

Scientific Department: Plant Protection.....

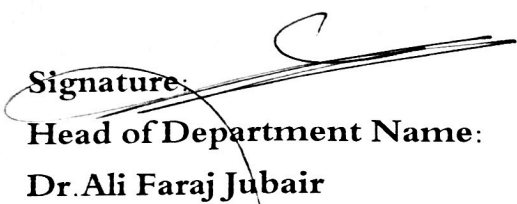
Academic or Professional Program Name: Bachelor's degree in plant protection.....

Final Certificate Name: Bachelor's degree in plant protection.....

Academic System: Semester

Description Preparation Date: 14/02/2024

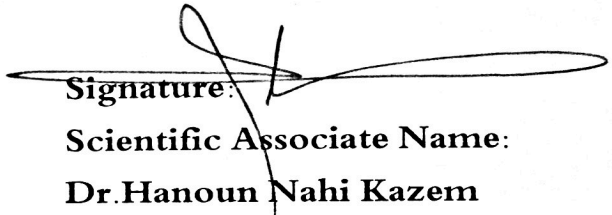
File Completion Date: 14/02/2024

Signature: 

Head of Department Name:

Dr. Ali Faraj Jubair

Date: 28- 02 - 2024

Signature: 

Scientific Associate Name:

Dr. Hanoun Nahi Kazem

Date: 29- 02 - 2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Dr. Saad Kazem Jabbar

Date: 03- 03 - 2024

Signature: 

Approval of the Dean

أ.م.د. حيدر عبد النبي

1. Program Vision

The Plant Protection Department aspires to be the best in learning and scientific research and to provide valuable scientific advice and consultations that contribute to raising agricultural crops to the highest levels and protecting crops from the danger of numerous pests that threaten them for the benefit of society.

2. Program Mission

The Plant Protection Department aspires to be the best in learning and scientific research and to provide valuable scientific advice and consultations that contribute to raising agricultural crops to the highest levels and protecting crops from the danger of numerous pests that threaten them for the benefit of society.

3. Program Objectives

1. Deepening faith in God and spiritual and moral values.
2. Promoting education on citizenship, belonging to the homeland, and preserving its institutions.
3. Providing students with appropriate experience in teaching methods, techniques, and skills.
4. Developing the performance and creative abilities of students in the linguistic, educational, cognitive, artistic and technical aspects.
5. Providing students with advanced academic knowledge to enable them to research and teach in the subject of their specialization.
6. Disseminating knowledge among the classes of society about the importance of the safety of agricultural products, such as their freedom from diseases, pesticide residues, insect infestations, etc.
7. Conducting scientific research that contributes to finding alternative solutions to the use of pesticides.

8. Developing agricultural awareness and workers in the agricultural field and disseminating modern information to obtain the best agricultural products.
9. Cooperation with other government agencies, such as the extension and research center and the agricultural directorates in Al-Muthanna Governorate, in order to exchange experiences and knowledge and learn about the latest developments in the field of agriculture and plant protection.

4. Program Accreditation

The department is in the process of obtaining programmatic accreditation through standards launched by the Ministry of Higher Education and Scientific Research.

5. Other external influences

Central admission

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	18	20	27.27	
College Requirements	11	30	11.67	
Department Requirements	37	99	56.06	
Summer Training	–	–	–	
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	Practical
First	0c24102	Mathematic 1	30	–

First	0c24101	Soil principles	30	45
First	0014101	Principles of general entomology 1	30	45
First	0024102	Principles of general entomology 2	30	45
First	U014103	Safety and biosecurity	15	–
First	U014101	Human rights and democracy	15	–
First	U024103	Baath system crimes	15	–
First	U024102	Arabic Language	30	–
First	0014102	Zoology	30	45
First	0C24103	organic chemistry	30	45
First	U014102	Computer fundamentals 1	30	–
First	0024101	General plant basics	30	45
First	0c14101	Basics of gardening and landscaping	30	45
First	U014104	English language	30	–
First	U024101	Computer fundamentals 2	30	–
Second	0C14203	Statistics	30	30
Second	0014201	Medical and veterinary entomology	30	30
Second	0014204	Agricultural machinery and equipment	30	30
Second	0014202	Plant physiology	30	30
Second	0024201	Insect taxonomy	30	30
Second	U024201	English	30	–
Second	0C24202	Basics of field crops	30	30
Second	0C24201	Principles of animal production	30	30
Second	0024203	analytical chemistry	30	30
Second	0014203	Plant nutrition	30	30
Second	U024202	Computer	30	–

		applications 2		
Second	0C14201	Microbiology	30	30
Second	0024202	Plant classification	30	30
Second	0C14202	Agricultural guidance	30	–
Second	U014201	Computer applications 1	30	–
Third	0024303	Biotechnology	30	30
Third	0014305	Insect physiology	30	30
Third	0024304	Nematodes	30	30
Third	0024307	Bees breeding	30	30
Third	0C14301	Design and analysis of experiments	30	30
Third	0024302	Mycology II	30	30
Third	0024301	Plant diseases (Plant pathology)	30	30
Third	0024306	Weed control	30	30
Third	0014301	Biochemistry	30	30
Third	0014303	Plant genetics	30	30
Third	U014301	English	30	–
Third	0024305	Plant Breeding and Improvement	30	30
Third	0014304	Ecology	30	30
Fourth	0024406	Integrated pests management	30	–
Fourth	U024401	Professional Ethics	15	–
Fourth	0014401	Biological Control	30	30
Fourth	0014403	Field crop diseases	30	30
Fourth	0014402	Pesticides	30	30
Fourth	0024403	Plant viruses	30	30
Fourth	U024402	English	30	–
Fourth	0024405	Insects Ecology	30	30
Fourth	U014402	sustainable development	30	–
Fourth	0014405	Store pests	30	30
Fourth	0024404	Orchard insects	30	30
Fourth	0014406	Crop Insects	30	30

Fourth	0014404	Vegetables diseases	30	30
Fourth	0024402	Acarology	30	30

8. Expected learning outcomes of the program

Knowledge	
A- Cognitive objectives	<p>A1- Learn about the concept of plant diseases and insect infections and methods of diagnosing them</p> <p>A2- Learn about ways to combat these diseases and other agricultural pests and methods of preventing them</p> <p>A3- Learn about the concept of integrated management to control the threat of agricultural pests</p> <p>A4- Identify the nature of the damage and losses in agricultural production caused by these pests</p> <p>A5- Identifying the reasons for the infestation of fields with these biotic or abiotic pathogens</p> <p>A6- Describe the life cycle of pathogens and insects that infect fields and identify the harmful source of infection</p>
Skills	
B - The program's skill objectives	<p>B1 - Thinking skills.</p> <p>B2 - Scientific research skills</p> <p>B3 - Teaching skills</p>
Ethics	
C- Evaluation	<p>C1 - Theoretical tests</p> <p>C 2 - Practical tests</p> <p>C3 - Weekly short tests</p> <p>C 4- Reports and studies</p>

9. Teaching and Learning Strategies

Explanation and clarification

self education

Giving lectures

10. Evaluation methods

Theoretical tests

Practical tests

Reports and studies

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Dr.Ali Faraj Jubair	Plant Protection	Plant diseases (mycotoxin)			✓	
Dr. Muhammad Khalil Ibrahim	plant production	Plant protection (insects)			✓	
Mahmoud Thamer Abd	Field crops	fodder crops			✓	
Dr. Khalid Jaber AbdelRazzaq	Plant Protection	insects			✓	
Dr.Ahmed Shamkhi Jabbar	Plant Protection	Insects			✓	
Dr.Ali Ajil Jassim	Plant Protection	Plant diseases			✓	
Dr.Alaa Hussein Abed	Plant Protection	Insects			✓	
Dr.Malik hasan karem	Plant Protection	Plant viruses			✓	
Dr.saad manea enad	Plant Protection	Plant diseases			✓	
Dr.Lafta Awad Atshan	Plant Protection	Insects			✓	

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc. Such as

- 1- Teamwork: Working within the group effectively and actively
- 2- Time management: Managing time effectively and setting priorities with the ability to work organized and within specified dates.
- 3- Leadership: The ability to direct and motivate others
- 4- Independence at work
- 5- Negotiation and persuasion, meaning the student's ability to persuade others and discuss to reach an agreement.

12. Acceptance Criterion

Central admission by the Ministry of Higher Education and Scientific Research.

13. The most important sources of information about the program

Guide books and other resources in the free education unit and the college and university library.

14. Program Development Plan

1. Developing skills for teachers.
2. Modern sources.
3. Specialized courses and seminars.
4. Agricultural scientific conferences.

Program Skills Outline

				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First	0c24102	Mathematic 1	Basic				✓				✓				✓
	0c24101	Soil principles	Basic				✓				✓				✓
First	0014101	Principles of general entomology 1	Basic				✓				✓				✓
	0024102	Principles of general entomology 2	Basic				✓				✓				✓
First	U014103	Safety and biosecurity	Basic				✓				✓				✓
	U014101	Human rights and democracy	Basic				✓				✓				✓
First	U024103	Baath system crimes	Basic				✓				✓				✓

	U024102	Arabic Language	Basic				✓				✓				✓
First	0014102	Zoology	Basic				✓				✓				✓
First	0C24103	organic chemistry	Basic				✓				✓				✓
First	U014102	Computer fundamentals 1	Basic				✓				✓				✓
First	0024101	General plant basics	Basic				✓				✓				✓
First	0c14101	Basics of gardening and landscaping	Basic				✓				✓				✓
First	U014104	English language1	Basic				✓				✓				✓
First	U024101	Computer fundamentals 2	Basic				✓				✓				✓
Second	0C14203	Statistics	Basic				✓				✓				✓
Second	0014201	Medical and veterinary entomology	Basic				✓				✓				✓
Second	0014204	Agricultural machinery and equipment	Basic				✓				✓				✓

Second	0014202	Plant physiology	Basic				✓				✓				✓
Second	0024201	Insect taxonomy	Basic				✓				✓				✓
Second	U024201	English	Basic				✓				✓				✓
Second	0C24202	Basics of field crops	Basic				✓				✓				✓
Second	0C24201	Principles of animal production	Basic				✓				✓				✓
Second	0024203	analytical chemistry	Basic				✓				✓				✓
Second	0014203	Plant nutrition	Basic				✓				✓				✓
Second	U024202	Computer applications 2	Basic				✓				✓				✓
Second	0C14201	Microbiology	Basic				✓				✓				✓
Second	0024202	Plant classification	Basic				✓				✓				✓
Second	0C14202	Agricultural guidance	Basic				✓				✓				✓
Second	U014201	Computer applications 1	Basic				✓				✓				✓

Third	0024303	Biotechnology	Basic				✓				✓				✓
Third	0014305	Insect physiology	Basic				✓				✓				✓
Third	0024304	Nematodes	Basic				✓				✓				✓
Third	0024307	Bees breeding	Basic				✓				✓				✓
Third	0C14301	Design and analysis of experiments	Basic				✓				✓				✓
Third	0024302	Mycology II	Basic				✓				✓				✓
Third	0024301	Plant diseases (Plant pathology)	Basic				✓				✓				✓
Third	0024306	Weed control	Basic				✓				✓				✓
Third	0014301	Biochemistry	Basic				✓				✓				✓
Third	0014303	Plant genetics	Basic				✓				✓				✓
Third	U014301	English	Basic				✓				✓				✓
Third	0024305	Plant Breeding and Improvement	Basic				✓				✓				✓

Third	0014304	Ecology	Basic				✓				✓				✓
Fourth	0024406	Integrated pests management	Basic				✓				✓				✓
Fourth	U024401	Professional Ethics	Basic				✓				✓				✓
Fourth	0014401	Biological Control	Basic				✓				✓				✓
Fourth	0014403	Field crop diseases	Basic				✓				✓				✓
Fourth	0014402	Pesticides	Basic				✓				✓				✓
Fourth	0024403	Plant viruses	Basic				✓				✓				✓
Fourth	U024402	English	Basic				✓				✓				✓
Fourth	0024405	Insects Ecology	Basic				✓				✓				✓
Fourth	U014402	sustainable development	Basic				✓				✓				✓
Fourth	0014405	Store pests	Basic				✓				✓				✓
Fourth	0024404	Orchard insects	Basic				✓				✓				✓
Fourth	0014406	Crop Insects	Basic				✓				✓				✓

Fourth	0014404	Vegetables diseases	Basic				✓				✓				✓
Fourth	0024402	Acarology	Basic				✓				✓				✓

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name:					
Mathematic 1					
2. Course Code:					
0c24102					
3. Semester / Year:					
First Semester / First Year					
4. Description Preparation Date:					
28/2/2024					
5. Available Attendance Forms:					
Actual attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2 Theoretical / 2 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Lecturer. Anmar Hamoudi Kadhim Email: anmarjhayl@mu.edu.iq					
8. Course Objectives					
Course Objectives		1- Possessing the skill of thinking and having the ability to find solutions using the correct laws and mathematical operations. 2- Learn about methods of calculating matrices and functions and their types. 3- Identify applications related to matrices and types of functions. 4- Learn how to draw a function 5- Using new mathematical methods to perform solutions.			
9. Teaching and Learning Strategies					
Strategy		1. Explaining and clarifying the mathematical concept and stating the laws related to it. 2. Give some examples related to the topic. 3. Involve students during the lecture in solving examples and problems using mathematical laws. 4. Giving them homework and exercises related to the topic that was discussed in the lecture. 5. Conduct daily tests for students in addition to monthly tests.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	Matrix	Mathematic 1	Explanation and presentation Model and lecture	Examination
2nd	2	Types of Matrix	Mathematic 1	Explanation and presentation Model and lecture	Examination
3rd	2	Computational methods use In solving matrices	Mathematic 1	Explanation and presentation Model and lecture	Examination
4th	2	Applications in solving functions and finding matrix inverses	Mathematic 1	Explanation and presentation Model and lecture	Examination
5th	2	Mathematical functions	Mathematic 1	Explanation and presentation Model and lecture	Examination
6th	2	Function components	Mathematic 1	Explanation and presentation Model and lecture	Examination

7th	2	Types of Mathematical function	Mathematic 1	Explanation and presentation Model and lecture	Examination
8th	2	Differential relations used In the function	Mathematic 1	Explanation and presentation Model and lecture	Examination
9th	2	Higher ranks of Function	Mathematic 1	Explanation and presentation Model and lecture	Examination
10th	2	Partial derivatives	Mathematic 1	Explanation and presentation Model and lecture	Examination
11th	2	Function applications	Mathematic 1	Explanation and presentation Model and lecture	Examination
12 th	2	Increasing, decreasing, and endings Great and small	Mathematic 1	Explanation and presentation Model and lecture	Examination
13 th	2	Concavity and convexity curves in the function	Mathematic 1	Explanation and presentation Model and lecture	Examination
14 th	2	Drawing functions	Mathematic 1	Explanation and presentation Model and lecture	Examination
15th	2	Solved problems and examples of graphing the function	Mathematic 1	Explanation and presentation Model and lecture	Examination

11. Course Evaluation

- 1-Theoretical tests 30
- 2- Daily tests 10
- 3- Homework 10
- 4- Final exam 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- George B. Thomas, 2003. Calculus and Analytic Geometry.
Main references (sources)	1- Theories and problems in advanced calculus. 2008. Murray R. SPIEGEL. Eighth Arabic edition. International House for Cultural Investments. Egypt. 2- 3000 solved problems in calculus. Elliot Mendelsohn. International Academy. Beirut, Lebanon.
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic References, Websites	

Course Description Form

1. Course Name:					
Soil principles					
2. Course Code:					
0c24101					
Semester / Year:					
First Semester / First Year					
3. Description Preparation Date:					
28/2/2024					
4. Available Attendance Forms:					
Actual attendance					
5. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical 2 Practical 3 Units					
6. Course administrator's name (mention all, if more than one name)					
Name: Lecturer Dr.. Anmar Hamoudi Kadhim Email: anmarjhayl@mu.edu.iq					
7. Course Objectives					
The student gets to know soil science		<ul style="list-style-type: none"> • The student gets to know soil science • The student should classify the factors and processes of soil formation • The student should separate the various factors in the formation of soil • For the student to learn about how soil is formed and developed • For the student to evaluate the different types of soil 			
8. • The student should classify the factors and processes of soil formation					
Strategy		1- Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning metho			
9. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first	4	The student will be familiar with an introduction to soil science and the emergence and development of soil	Soil principles	Explanation, presentation of the model and lecture	the Exam
Second	4	The student gets to know the types of factors and soil formation processes	Soil principles	Explanation, presentation of the model and lecture	the Exam
Third	4	The student gets to know the physical	Soil principles	Explanation, presentation of the	the Exam

		properties of soil		model and lecture	
Fourth	4	The student gets to know the chemical properties of soil	Soil principles	Explanation, presentation of the model and lecture	the Exam
Fifth	4	The student gets to know the biological characteristics of soil	Soil principles	Explanation, presentation of the model and lecture	the Exam
Sixth	4	The student gets to know soil salinity	Soil principles	Explanation, presentation of the model and lecture	the Exam
Seventh	4	The student will be familiar with the reclamation of saline soils	Soil principles	Explanation, presentation of the model and lecture	the Exam
Eighth	4	The student gets to know the types of soil water	Soil principles	Explanation, presentation of the model and lecture	the Exam
Ninth	4	The student gets to know soil colloids	Soil principles	Explanation, presentation of the model and lecture	the Exam
Tenth	4	The student will learn about the effect of humidity on plants	Soil principles	Explanation, presentation of the model and lecture	the Exam
Eleventh	4	The student gets to know soil fertility For the student to recognize the most important reasons for low soil productivity	Soil principles	Explanation, presentation of the model and lecture	the Exam
Twelfth	4	For the student to recognize the most important reasons for low soil productivity	Soil principles	Explanation, presentation of the model and lecture	the Exam
Thirteenth	4	The student will know how to feed plants	Soil principles	Explanation, presentation of the model and lecture	the Exam
Fourteenth	4	The student gets to know the classification of soils	Soil principles	Explanation, presentation of the model and lecture	the Exam
Fifteenth	4	For the student to become familiar with educational administration	Sustainable development	Explanation, presentation of the model and lecture	the Exam
10. Course Evaluation					
Theoretical tests 40 2- Practical tests - 3- Reports and studies 10 4- Final exam 50					

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic References, Websites	Soil Science Society Of America Library Genesis

Course Description Form

1. Course Name:	
Principles of general entomology 1	
2. Course Code:	
0014101	
3. Semester / Year:	
First semester/2023–2024	
4. Description Preparation Date:	
14/2/2024	
5. Available Attendance Forms:	
Mandatory official working hours	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Theoretical 30 + practical 45 = 75 hours Number of Units = 3	
7. Course administrator's name (mention all, if more than one name)	
Name: MOHAMD KHALEL IBRAHIM MOHAMED	
Email: moh_kh15@mu.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> Introducing the student to the basic principles of insects. The student gets to know the different stages of insects Introducing the student to insect families and their importance. Introducing the student to the internal and external structure of insects.
9. Teaching and Learning Strategies	
Strategy	<p>A- Cognitive objectives</p> <p>A1- Learn about the concept of insects</p> <p>A2- Learn about methods for diagnosing insects and methods for determining their damage</p> <p>A3- Learn about the concept of entomology and controlling insect danger</p> <p>A4- Learn about the nature of the damage and losses caused by insects in the general environment and what these insects cause to human life and property.</p> <p>A5-Describe the life cycle of insects and identify the harmful phase</p> <p>B - The program's skill objectives</p> <p>B1 - Knowing the concept of insects, especially insects in hot environments</p> <p>B2 - Enabling students to diagnose infestations and the possibility of isolating and diagnosing insects</p> <p>B3 - The student's ability to estimate the limit that leads to reducing harm to humans animals</p> <p style="text-align: center;">Teaching and learning methods</p> <p>Method of giving lectures</p> <p>Explanation and clarification</p> <p>How to display insect models</p> <p>How to present scientific films about medical insects</p> <p>Self-learning method</p> <p>Method of collecting and diagnosing samples</p> <p style="text-align: center;">Evaluation methods</p> <p>Theoretical tests</p>

	<p>Practical tests Reports and studies</p> <p>C- Emotional and value goals. C1- The ability to analyze results and diagnose insects C2- Acquiring skills about insects in public environments C3- The possibility of applying skills in identifying insect types C4- A skill to think according to the student's ability. This aims for the student to understand when and how to think about the processes of detecting and identifying insects and other types of arthropods. Teaching and learning methods</p> <p>1- How to display insect models and scientific films related to the subject 2- Explanation and clarification 3- Brainstorming 4- The appropriate thinking and decision-making skill strategy, meaning that the student makes a good decision when thinking about diagnosing a pest and the process of combating it and thinking about the consequences of this decision and its environmental effects.</p> <p>Evaluation methods</p> <p>Theoretical tests Practical tests Weekly short tests Reports and studies</p> <p>D - General and qualifying transferable skills (other skills related to employability and personal development). D1-Verbal communication, which includes: 1- The ability to express ideas clearly and confidently in speech 2- Teamwork 3- Work confidently within the group 4- Collect information systematically and scientifically to establish principles for solving the problem 5- Initiative: The motivation to work and the ability to take initiative D2- Written communication: 1- The ability to express oneself clearly in writing 2- Planning and organizing / planning, organizing and implementing activities 3- Flexibility and adaptation to changing situations and different environments 4- Effectively manage time, prioritize tasks, and be able to work within specified deadlines Teaching and learning methods Explanation and clarification self education Giving lectures</p> <p>Evaluation methods Theoretical tests Practical tests Reports and studies</p>
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Learn about an introduction to insects and the factors that helped them spread. theoretical Identify the types of	Practical lecture, discussion,	oral examinations

			some laboratory equipment. practical		
Second	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identify the benefits and harms of insects. theoretical Continue identifying other insects. practical	Practical lecture and discussion	oral examinations
Third	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identify some phenotypic characteristics of arthropods and insects. theoretical Learn about methods of killing insects. Practical	Practical lecture, discussion,	oral examinations
Fourth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Recognizing the external appearance of insects. theoretical Learn about methods of catching insects. Practical	Practical lecture and discussion	oral examinations
Fifth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	theoretical test 1. Practical test 1.	examination	writing examinations
Sixth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identify some insect body appendages. theoretical Anatomy of insects and identifying the main parts of the insect body. practical	Practical lecture, discussion,	oral examinations
Seventh	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identify the main insect body regions. theoretical Identifying the types of insect fishing nets. Practical	Practical lecture, discussion,	oral examinations
Eighth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identify the types of antennae in insects. theoretical Diagnosing the types of legs in insects. practical	Practical lecture and discussion	oral examinations
Ninth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identify the types of legs in insects. theoretical Students identify the types of wings in insects. practical	Practical lecture, discussion,	oral examinations
Tenth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identify the mechanics of flight in insects. theoretical Examining the roles of insects in different systems. Practical	Practical lecture and discussion	oral examinations
Eleventh	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identifying wing veining in insects. theoretical Making slides for different insect parts. practical	Practical lecture, discussion,	oral examinations
Twelfth	2theoretical	memorizing,	Identify wings in	Practical lecture	oral examinations

	+3 practical	understanding, analyzing, and applying	insects. theoretical How to use insect fishing nets. practical	and discussion	
Thirteenth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identifying the abdomen and its appendages in insects. theoretical Identify methods of preserving insect models. practical	Practical lecture, discussion,	oral examinations
Fourteenth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identify the types of transformation and morphology in insects. theoretical Learn how to upload insects to insect pins. Practical	Practical lecture and discussion	oral examinations
Fifteenth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	theoretical test2. Practical test 2.	examination	writing examinations

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest
The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book of principles of general entomology
Main references (sources)	1. Book of general insects
Recommended books and references (scientific journals, reports...)	1. Entomology book. 2. Insect basics book.
Electronic References, Websites	The free encyclopedia Some of the agricultural sites interested in the field of insects.

Course Description Form

1. Course Name:	
Principles of general entomology 2	
2. Course Code:	
0024102	
3. Semester / Year:	
First semester/2023–2024	
4. Description Preparation Date:	
2/14/2024	
5. Available Attendance Forms:	
Mandatory official working hours	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Theoretical 30 + practical 45 = 75 hours Number of Units=3	
7. Course administrator's name (mention all, if more than one name)	
Name: MOHAMD KHALEL IBRAHIM MOHAMED	
Email: moh_kh15@mu.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> Introducing the student to the basic principles of insects. The student gets to know the different stages of insects Introducing the student to insect families and their importance. Introducing the student to the internal and external structure of insects.
9. Teaching and Learning Strategies	
Strategy	<p>A- Cognitive objectives</p> <p>A1- Learn about the concept of insects</p> <p>A2- Learn about methods for diagnosing insects and methods for determining their damage</p> <p>A3- Learn about the concept of entomology and controlling insect danger</p> <p>A4- Learn about the nature of the damage and losses caused by insects in the general environment and what these insects cause to human life and property.</p> <p>A5-Describe the life cycle of insects and identify the harmful phase</p> <p>B - The program's skill objectives</p> <p>B1 - Knowing the concept of insects, especially insects in hot environments</p> <p>B2 - Enabling students to diagnose infestations and the possibility of isolating and diagnosing insects</p> <p>B3 - The student's ability to estimate the limit that leads to reducing harm to humans and animals</p> <p style="text-align: center;">Teaching and learning methods</p> <p>Method of giving lectures</p> <p>Explanation and clarification</p> <p>How to display insect models</p> <p>How to present scientific films about medical insects</p> <p>Self-learning method</p> <p>Method of collecting and diagnosing samples</p> <p style="text-align: center;">Evaluation methods</p> <p>Theoretical tests</p> <p>Practical tests</p> <p>Reports and studies</p> <p>C- Emotional and value goals.</p> <p>C1- The ability to analyze results and diagnose insects</p>

C2- Acquiring skills about insects in public environments
 C3- The possibility of applying skills in identifying insect types
 C4- A skill to think according to the student's ability. This aims for the student to understand when and how to think about the processes of detecting and identifying insects and other types of arthropods.
 Teaching and learning methods

- 1- How to display insect models and scientific films related to the subject
- 2- Explanation and clarification
- 3- Brainstorming
- 4- The appropriate thinking and decision-making skill strategy, meaning that the student makes a good decision when thinking about diagnosing a pest and the process of combating it and thinking about the consequences of this decision and its environmental effects.

Evaluation methods

Theoretical tests
 Practical tests
 Weekly short tests
 Reports and studies

D - General and qualifying transferable skills (other skills related to employability and personal development).
 D1-Verbal communication, which includes:

- 1- The ability to express ideas clearly and confidently in speech
- 2- Teamwork
- 3- Work confidently within the group
- 4- Collect information systematically and scientifically to establish principles for solving the problem
- 5- Initiative: The motivation to work and the ability to take initiative

D2- Written communication:

- 1- The ability to express oneself clearly in writing
- 2- Planning and organizing / planning, organizing and implementing activities
- 3- Flexibility and adaptation to changing situations and different environments
- 4- Effectively manage time, prioritize tasks, and be able to work within specified deadlines

Teaching and learning methods
 Explanation and clarification
 self education
 Giving lectures

Evaluation methods
 Theoretical tests
 Practical tests
 Reports and studies

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identifying the reproductive system in insects - types of reproduction. theoretical Using modern methods to identify all stages of insect species development. practical	Practical lecture, discussion	oral examinations
second	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Using modern scientific methods to identify and describe the stages of immature insects (egg, larva, pupa) - types of larvae, types of pupae... theoretical	Practical lecture and discussion	oral examinations

			Growth, transformation, and identifying types of development in insects. practical		
Third	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Identifying the types of metamorphosis, transformation, or evolution in insects. Theoretical Identifying and studying the most important types of larvae. Practical	Practical lecture, discussion ,	oral examinations
Fourth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Modern methods of classifying non-evolved insects - the most important sub-orders - (silverfish, jumping tail). theoretical Identifying and studying the most important types of pupal virgins. Practical	Practical lecture and discussion	oral examinations
Fifth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	theoretical test 1. Practical test 1.	examination	writing examinations
Sixth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Classification of insects with gradual development, with examples of their orders. theoretical The most important tools used in collecting insects. practical	Practical lecture, discussion ,	oral examinations
Seventh	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Classification of insects with and without development, with examples of their orders. theoretical A field tour to collect information about the different types of insect orders. Practical	Practical lecture, discussion ,	oral examinations
Eighth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Classification of fully developed insects and identifying some examples of their orders. theoretical Dividing the collected insects and placing them into groups according to their modern taxonomic key to enable the student to gain diagnostic skills. practical	Practical lecture and discussion	oral examinations
Ninth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	For complete development, the most important orders are the Coleoptera and the Hymenoptera. theoretical Breeding and propagating cockroaches using modern laboratory methods is practical	Practical lecture, discussion ,	oral examinations
Tenth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Complete evolution of the order Diptera and fleas. theoretical Examining the roles of insects in different systems. Practical	Practical lecture and discussion	oral examinations
Eleventh	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Detailed follow-up to predict the sudden increase in insect species, especially migratory ones. theoretical Making slides for various insect devices. practical	Practical lecture, discussion ,	oral examinations
Twelfth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Complete evolution of the order Lepidoptera and Lepidoptera. theoretical - Transformation and its types. practical	Practical lecture and discussion	oral examinations
Thirteenth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Environmental factors affecting insect life. theoretical Identifying the types of caterpillars. Practical	Practical lecture, discussion ,	oral examinations

Fourteenth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	Modern methods of pest control. theoretical Identify the types of virgins. practical	Practical lecture and discussion	oral examinations
Fifteenth	2theoretical +3 practical	memorizing, understanding, analyzing, and applying	theoretical test2. Practical test 2.	examinati on	writing examination s

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest
The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book of principles of general entomology
Main references (sources)	1. Book of general insects
Recommended books and references (scientific journals, reports...)	1. Entomology book. 2. Insect basics book.
Electronic References, Websites	The free encyclopedia Some of the agricultural sites interested in the field of insects.

Course Description Form

1. Course Name:					
Safety and biosecurity					
2. Course Code:					
U014103					
3. Semester / Year:					
The first stage/spring semester					
4. Description Preparation Date:					
26/2/2024					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
15 hours. Number of units: 1					
7. Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Jassim Kassim Menati					
Email: jasmirage@mu.edu.iq					
8. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • Teaching students about safety, biosecurity, biological risks, and risk management methodology, developing a biosafety program 		
9. Teaching and Learning Strategies					
Strategy	1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	General objectives of occupational safety and health	A lecture	Quiz
2	2	Theoretical lecture	Biosafety, its goals and biosecurity	A lecture	Quiz
3	2	Theoretical lecture	Biological hazards, diseases and biological risk control	A lecture	Quiz
4	2	Theoretical lecture	Methods of controlling biological risks:	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Hazardous and biological waste, treatment and disposal methods and decontamination process	A lecture	Quiz
7	2	Theoretical lecture	Dealing with laboratory waste, fires and their causes	A lecture	Quiz
8	2	Theoretical lecture	Biosecurity and the goal of biosecurity	A lecture	Quiz

9	2	Theoretical lecture	Biosecurity stakeholders, stakeholders at the international level	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Biosafety laboratory principles, safety and biosecurity	A lecture	Quiz
12	2	Theoretical lecture	Risk management methodology, development of a biosafety program	A lecture	Quiz
13	2	Theoretical lecture	Elements of a biosafety program	A lecture	Quiz
14	2	Theoretical lecture	Information security, transfer of biological materials	A lecture	Quiz
15	2	Theoretical lecture	Combating biological risks	A lecture	Quiz

11. Co2urse 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 any)	Occupational health and safety Khaled Ahmed Hazza
Main references (sources)	From methodological books, help books, the Internet, and scientific research
Recommended books and references (scientific journals, reports...)	Scientific journals in basic specializations
Electronic References, Websites	https://www.emro.who.int/ar/ihr-events/training-on-laboratory-biorisk-management.html

Course Description Form

1. Course Name:					
Human rights and democracy					
2. Course Code:					
U014101					
3. Semester / Year:					
First/ 2023–2024					
4. Description Preparation Date:					
19/2/2024					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
15hours / 2 units					
7. Course administrator's name (mention all, if more than one name)					
Name. omar irheem Email: omarirheem@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Highlighting the rights that the individual can acquire from the state, and what permeates • This is one of the obligations on it • Highlighting the concept of democracy, and the consequent application of its representation • By a group of members at all levels 			
9. Teaching and Learning Strategies					
Strategy		cooperative education strategy Education strategy Education strategy is one accurate paper Education strategy in real time Education Strategy Series notes			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	An idea of rights Human	The concept t of human rights	The blackboard the video, Port Po Laws, Picture	• Final Al -Amj Term Exam, Daily and Oral Examination
2	1	Humanrights statem	Human rights in ancie	=	=

		in ancient civilizations	civilizations		
3	1	Humanrights statementi the Holy Quran	Humanrights statem in the Holy Quran	=	=
4	1	Middle Ages HumanRights Statement	Middle Ages HumanRights Statement	=	=
5	1	Human Rights Statement In modern Thought	Statement of the role of organizations Non – governmental Field human rights	=	=
6	1	Human Rights Statement In the modern era At the level revolution and laws	Human rights in the era Talking at the level Revolution and laws	=	=
7	1	The statement contemporary recognition of hun rights	suThe statement contemporary recognition of hun rights	=	=
8	1	Exam	Exam	Exam	Exam
9	1	Statement of the international recognition of human rights yet World War II	International recognition of rights Man after Wk orld War II	=	=
10	1	The role of NGOs in the field of human rights	Statement of the role of organizations Non – governmental Field human rights	=	=
11	1	Statement of the role organizations Non -governmental Field human rights	Statement of the role of organizations Non – governmental Field human rights	=	=
12	1	Historical introductio to The idea of democra	Dul Historical introduction to The idea of democra	=	=
13	1	Concept statement Democracy	The concept of democracy	=	=

14	1	Types of Democracy	Types of democracy	=	=
15	1	Democratic difference and human rights	Democracand human rights	=	=

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)	Human Rights Writer, d. Hamid Hanoun Khaled
Main references (sources)	Democracy and human rights, d. Abdul Majeed Al -Hakim
Recommended books and references (scientific journals, reports...)	nothing
Electronic References, Websites	There is a set of research that deals with democracy And human rights

Course Description Form

1. Course Name:					
Baath system crimes					
2. Course Code:					
U024103					
3. Semester / Year:					
The first course/ for the year 2023–2024					
4. Description Preparation Date:					
19/2/2024					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
15 hours / 2 units					
7. Course administrator's name (mention all, if more than one name)					
Name: ph. omar irheem Email: : omarirheem@mu.edu.iq					
8. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • Highlighting the most important resurrection crimes in Iraq, from Psychological crimes, social crimes and environmental crimes. • Educating students on the effects of the crimes of the system Resurrection..... 		
9. Teaching and Learning Strategies					
Strategy		Cooperative learning strategy Learning strategy brainstorming Learning strategy is one accurate paper Learning strategy in real time Learning strategy notes chain			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Statement of the most important crimes committed	Introduction to system crimes Resurrection	The blackboard the video, Port Point Laws, Pictures	Final exam, Term Exam, Daily and Oral Examination

		by the Baath regime			
2	1	Definition of crimes	The concept of crimes	=	=
3	1	Explanation of the sections of crime	Crime sections	=	=
4	1	Explain the types of crimes International	Types of international crimes	=	=
5	1	Statement issued by the Supreme Criminal Court	Decisions issued by the Supreme Criminal Court	=	=
6	1	Psychological crime statement	Psychological crime statement	=	=
7	1	Statement of social crimes	Social crimes	=	=
8	1	Exam Extend			
9	1	A statement of violation of laws Iraqi	A statement of violation of laws Iraqi	=	=
10	1	Pictures of violation of rights Human and power crimes	Pictures of violation of rights Human and power crimes	=	=
11	1	Explain the decisions on violations Political and military	Violations decisions Political and military For the Baath system	=	=
12	1	Military pollution statement And radiation and an explosion Mine	Military pollution statement And radiation and an explosion Mine	=	=
13	1	Statement of the destruction of cities and villages (Earth policy Burned)	Statement of the destruction of cities and villages (Earth policy Burned)	=	=
14	1	Justice bulldozing statement And the marshes and trees	Grading orchards And the marshes and trees	=	=
15	1	Explanation of the events of the genocide The collective committed from The Baathist regime in Iraq	The events of the genocide of extermination The collective committed from The Baathist regime in Iraq	=	=

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)	The Book of the Crime of the Baath System
Main references (sources)	Ayman Abdel Aziz Salama, the state's responsibility for committing genocide
Recommended books and references (scientific journals, reports...)	Dr.. Ali Hanoush, the problems of the present and the future options, a study in environmental pollution.
Electronic References, Websites	There are many electronic sources on a network The Internet, on the subject of crimes in general And Baath crimes in particular

Course Description Form

1. Course Name:					
Arabic Language					
2. Course Code:					
U024102					
3. Semester / Year:					
The first stage/spring semester					
4. Description Preparation Date:					
26/2/2024					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours Number of units: 2					
7. Course administrator's name (mention all, if more than one name)					
Name: Ass. Lecturer Amer Mousa Kadhum					
Email: amermousak@mu.edu.iq					
8. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • Teaching the student grammar and parsing, as well as rhetoric in the Holy Quran. 		
9. Teaching and Learning Strategies					
Strategy		1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Rhetoric in the Holy Quran	A lecture	Quiz
2	2	Theoretical lecture	Interpretation of twenty verses	A lecture	Quiz
3	2	Theoretical lecture	Arabic / Grammar and parsing	A lecture	Quiz
4	2	Theoretical lecture	The subject and the predicate	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Copiers	A lecture	Quiz
7	2	Theoretical	Imperfect verbs	A lecture	Quiz

		lecture			
8	2	Theoretical lecture	Effects	A lecture	Quiz
9	2	Theoretical lecture	preparation	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Hamza and dictates	A lecture	Quiz
12	2	Theoretical lecture	Rules for writing ta'	A lecture	Quiz
13	2	Theoretical lecture	Ages of Arabic literature	A lecture	Quiz
14	2	Theoretical lecture	Old poetry	A lecture	Quiz
15	2	Theoretical lecture	Writing common mistakes	A lecture	Quiz

11. Co2urse 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 any)	Arabic language Rafid Sabbah
Main references (sources)	From methodological books, help books, the Internet, and scientific research
Recommended books and references (scientific journals, reports...)	Scientific journals in basic specializations
Electronic References, Websites	https://www.wuduh1.com/2023/10/books-arabic.html

Course Description Form

1. Course Name:					
Zoology					
2. Course Code:					
0014102					
3. Semester / Year:					
The first stage/spring semester					
4. Description Preparation Date:					
26/2/2024					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
75 hours. Number of units: 3					
7. Course administrator's name (mention all, if more than one name)					
Name: Abbas shanshool Abd-alnabi					
Email: Abbas.shanshol@mu.edu.iq					
8. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • Teaching the student about zoology and its relationship to other sciences. 		
9. Teaching and Learning Strategies					
Strategy		1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Zoology and its relationship to other sciences	A lecture	Quiz
2	2	Theoretical lecture	The importance of studying zoology	A lecture	Quiz
3	2	Theoretical lecture	Animal cell, its features and components	A lecture	Quiz
4	2	Theoretical lecture	Cellular division	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Protoplasm and its chemical and physical properties	A lecture	Quiz
7	2	Theoretical	Classification and scientific	A lecture	Quiz

		lecture	nomenclature		
8	2	Theoretical lecture	Digestion, assimilation and absorption	A lecture	Quiz
9	2	Theoretical lecture	Elementary Division	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Intestinal coelom division	A lecture	Quiz
12	2	Theoretical lecture	Porosity Division	A lecture	Quiz
13	2	Theoretical lecture	Division of flatworms	A lecture	Quiz
14	2	Theoretical lecture	Phylum Bagworms	A lecture	Quiz
15	2	Theoretical lecture	Division of annelids	A lecture	Quiz

11. Co2urse 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 any)	Zoology George Haddad
Main references (sources)	From methodological books, help books, the Internet, and scientific research
Recommended books and references (scientific journals, reports...)	Scientific journals in basic specializations
Electronic References, Websites	https://angelo.libguides.com/biology/zoology/websites

Course Description Form

1. Course Name: organic chemistry					
2. Course Code: 0C24103					
3. Semester / Year: First					
4. Description Preparation Date: 2023-2024					
5. Available Attendance Forms: In person + electronic					
6. Number of Credit Hours (Total) / Number of Units (Total) Number of Credit Hours (Total) 75 hours					
7. Course administrator's name (mention all, if more than one name) Name: Prof. Dr.Mohammed Radwan Mohmoud Email: modrn@mu.edu.iq					
8. Course Objectives					
Course Objectives		1- Providing students with general information about analytical chemistry 2- Introducing students to ways to express concentrations and their types 3- Introducing students to strong and weak acids and bases 4- Explaining to students what Buffer's solutions are and their types, with examples 5- Introducing students to the definition of salts and their types, with theoretical examples			
9. Teaching and Learning Strategies					
Strategy		Strategic teaching and learning methods Audio methods (teaching explanation of the topic) Style of writing on the blackboard The method of direct dialogue between the teacher and the student, with the student evaluation in class participation Conduct experiments.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first week	2Theoretical 3 Practical		1 Introduction to organic chemistry and its importance, chemical bonds, bases and acids. Experiment No. 1. Preparation of alkylcyclo		Exams , reports, discussions Quizzes
second week	2Theoretical 3 Practical		2 Effective groups, saturated hydrocarbons, introduction, general law, nomenclature according to the IupAc system, physical properties. Their reactions Experiment No. 2 Preparation of alkyl halide		Exams , reports, discussions
the third week	2Theoretical 3 Practical		3 Unsaturated hydrocarbons (alkenes, introduction, general law, nomenclature		Exams , reports,

			according to the IupAc system, physical properties. Their reactions Experiment No. 3 Preparation of alcohols		discussions
fourth week	2Theoretical 3 Practical		4 Unsaturated hydrocarbons, alkynes, introduction, general law, nomenclature according to the IupAc system, physical properties. Their reactions Experiment No. 4 Preparation of acetone		Exams , reports, discussions
The fifth week	2Theoretical 3 Practical		5 First month exam, Experiment No. 5, studying the properties of acetone		Exams , reports, discussions
the sixth week	2Theoretical 3 Practical		6 Alcohols, introduction, general law, nomenclature according to the IupAc system, physical properties. Their interactions Experiment No. 6 Study of the properties of aldehydes		Exams , reports, discussions
Seventh week	2Theoretical 3 Practical		7 Ethers, introduction, general law, nomenclature according to the IupAc system, physical properties. Their interactions Experiment No. 7 Study of the properties of ketones		Exams , reports, discussions
The eighth week	2Theoretical 3 Practical		8 Aldehydes, introduction, nomenclature according to the IupAc system, physical properties. Their reactions Experiment No. 8 Preparation of carboxylic acid		
Week nine	2Theoretical 3 Practical		9 Ketones, introduction, nomenclature according to the IupAc system, physical properties. Their interactions Experiment No. 9 Preparing aspirin		Exams , reports, discussions
The tenth week	2Theoretical 3 Practical		10 Distinguishing between aldehydes and ketones Experiment No. 10 Detecting carbon		Exams , reports, discussions
Week eleven	2Theoretical 3 Practical		11 Carboxylic acids and their derivatives, their interactions, Experiment No. 11, Classification of oils and fats		Exams , reports, discussions
The twelfth week	2Theoretical 3 Practical		12 Second month exam Experiment No. 12 Calculating oils and fats		Exams , reports, discussions
The thirteenth week	2Theoretical 3 Practical		13 Al-Muhaddith: Knowing the importance of organic fertilizers and preparing organic plant fertilizers		Exams , reports, discussions
The fourteenth week	2Theoretical 3 Practical		14 Updated: Linking organic materials to improving crop productivity. Preparing organic animal fertilizers		Exams , reports, discussions
The fifteenth week			15 Al-Muhaddith Decomposition of organic matter Decomposition of plant and animal organic fertilizers		

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)	Pasto,D.; Johnson,C. and Miller, M. (1992). <i>Experiments and Techniques in Organic Chemistry</i> ; Prentice Hall, Englewood Cliffs, New Jersey 07632, USA
Main references (sources)	From methodological books, help books, the Internet, scientific research
Recommended books and references (scientific journals, reports...)	Iraqi Scientific journals in basic specializations

Electronic References, Websites

Al-Muthanna University e-learning website

<https://agr.mu.edu.iq/>

Course Description Form

1. Course Name:					
Computer fundamentals 1					
2. Course Code:					
U014102					
3. Semester / Year:					
First / First Semester					
4. Description Preparation Date:					
29\2\2024					
5. Available Attendance Forms:					
Actual presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 Hours Number of Units 2					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Karrar Hameed Abdulkareem Email: khak9784@mu.edu.iq					
8. Course Objectives					
Course Objecti		<ul style="list-style-type: none"> • The student gets to know computer fundamentals in details. • The student should know advantages of using computer device and main parts of this de in real life. • The student should apply many commends and processes on windows 7. 			
9. Teaching and Learning Strategies					
Strategy		1-Explanation and clarification. 2- Practical lessons. 3- Self-learning method.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
First	2	Introduction to Computer Fundamentals and computer generations	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
second	2	Abilities and uses of computer device	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
third	2	Computer parts	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
fourth	2	Computer parts	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Fifth	2	Computer parts	Computer Fundamentals	Explanation, presentation of model and lecture	the exam

Sixth	2	Practical Example	Computer Fundamentals	Practical session	the exam
Seventh	2	Practical Example	Computer Fundamentals	Practical session	the exam
Eighth	2	Introduction to windows 7	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Ninth	2	User interface and relative processes	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Tenth	2	Computer components (partitions, folders, and files)	Computer Fundamentals	Practical session	the exam
Eleventh	2	Practical Example	Computer Fundamentals	Practical session	the exam
Twelfth	2	Start menu and taskbar	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Thirteenth	2	Control panel	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
fourteenth	2	Practical Example	Computer Fundamentals	Practical session	the exam
Fifteenth	2	Practical Example	Computer Fundamentals	Practical session	the exam

11. Course Evaluation

1-Theoretical tests	25
2- Practical tests	15
3- Reports and studies	10
4- Final exam	50

12. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	
Main references (sources)	1- Basic Computer course book (Free University of Bolzano Bozen – Dr. Paolo Coletti – Edition 8.0 (1 March 2016)).
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
General plant basics					
2. Course Code:					
0024101					
3. Semester / Year:					
2024					
4. Description Preparation Date:					
01/09/2024					
5. Available Attendance Forms:					
Attend					
6. Number of Credit Hours (Total) / Number of Units (Total)					
75 Hours Number of Units 3					
7. Course administrator's name (mention all, if more than one name)					
Name: Hazim Sultan Safana Email: Hazim-agr-70@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> Researches general botany on the principles adopted in plant styling and the applied fields of botany and the relationships between plants It includes knowledge of the different plant organs through which the general plant be developed Knowing the vegetative and reproductive characteristics and their importance in general plants Methods used in general plants Study the evolutionary importance of reproductive organs Study of monocotyledonous and dicotyledonous plants 			
9. Teaching and Learning Strategies					
Strategies		Ask students inferential questions Establishing training programs Finding solutions to the problems and obstacles that students encounter in the practical part Enabling students to find solutions and applications for crisis situations			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	5	Required educational outcomes	Explanations, presentation of the model and lecture	Attend	a daily test
the second	5	A historical overview botany, its study, and importance of plants humans	Explanations, presentation of the model and lecture	Attend	a daily test
the third	5	Departments of botany	Explanations,		

		plant characteristics - type plants	presentation of model and lecture	Attend	a daily test
the fourth	5	Inorganic chemical compounds in plants and their types	Explanations, presentation of model and lecture	Attend	a daily test
Fifth	5	Organic chemical compounds in plants and their types	Explanations, presentation of model and lecture	Attend	a daily test
VI	5	Organic compounds in plants and their types	Explanations, presentation of the model and lecture	Attend	a daily test
Seventh	5	Plant physiology, photosynthesis, respiration, transpiration, absorption	Explanations, presentation of the model and lecture	Attend	a daily test
VIII	5	Plant anatomy, cell, tissue, plant organs	Explanations, presentation of the model and lecture	Attend	a daily test
Ninth	5	Plant classification methods, plant composition, plant agriculture use of plant families, and method of cultivation	Explanations, presentation of the model and lecture	Attend	a daily test
The tenth	5	Factors affecting plant growth, gases, nutrients, growth regulators	Explanations, presentation of the model and lecture	Attend	a daily test
Eleventh	5	Plant aggregates, bacteria, echinoderms, fungi	Explanations, presentation of the model and lecture	Attend	a daily test
Twelveth	5	Plant groups: monocots, gymnosperms	Explanations, presentation of model and lecture	Attend	a daily test
Thirteenth	5	Plant aggregates covered with seeds	Explanations, presentation of the model and lecture	Attend	a daily test
fourteenth	5	Genetics in plants	Explanations, presentation of the model and lecture	Attend	a daily test
Fifteenth	5	Genetics in plants	Explanations, presentation of the model and lecture	Attend	a daily test

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)	Basics of general plants, Muhammad Abdel Wahab A Naghi, Wafaa Mahrous, Amer, Adel Ahmed Fathi
Main references (sources)	Recent articles from the Internet and from specialized scientific journals, the Iraqi Agricultural Sciences Journal, and the virtual library
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic References, Websites	General plant

Course Description Form

1. Course Name:					
Basics of gardening and landscaping					
2. Course Code:					
0c14101					
3. Semester / Year:					
First / First Semester					
4. Description Preparation Date:					
01/09/2024					
5. Available Attendance Forms:					
Attend					
6. Number of Credit Hours (Total) / Number of Units (Total)					
75 Hours Number of Units 3					
7. Course administrator's name (mention all, if more than one name)					
Name: Hazim.S.Safana Email: Hazim-agr-70@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Introducing the student to the various horticultural crops, their economic, nutritional, medical and aesthetic importance, methods of cultivation production, and identifying various horticultural facilities and methods establishing orchards. • Knowledge of horticulture departments • Know the difference between horticultural crops and field crops • Identify the factors affecting the success of growing horticultural crops • Identify the factors determining the establishment of orchards <ul style="list-style-type: none"> ▪ Learn how to create public and private parks and plant trees in cities and central islands 			
9. Teaching and Learning Strategies					
Strategies		Introducing the student to the various horticultural crops, their economic, nutritional, medical and aesthetic importance, methods of cultivation production, and identifying various horticultural facilities and methods establishing orchards.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	5	Learn about horticulture, the history of the development of horticulture, its economic and nutritional importance	horticulture, the history of the development of horticulture, its economic and nutritional importance	Attend	a daily test
the second	5	Learn how to divide horticultural plants	divide horticultural plants	Attend	a daily test
the third	5	Identify environmental	environmental factors		

		factors and their impact on the production of horticultural crops	their impact on production of horticultural crops	Attend	a daily test
the fourth	5	Identify the methods of reproduction of horticultural plants (sexual, asexual)	the methods of reproduction of horticultural plants (sexual, asexual)	Attend	a daily test
Fifth	5	Identifying nurseries and field farming patterns	nurseries and field farming patterns	Attend	a daily test
VI	5	Learn about agricultural and horticultural processes	agricultural and horticultural processes	Attend	a daily test
Seventh	5	Learn about agriculture under air-conditioned environments	agriculture under air-conditioned environments	Attend	a daily test
VIII	5	Getting to know the general marketing	the general, marketing	Attend	a daily test
Ninth	5	Learn about care and storage	care and storage	Attend	a daily test
The tenth	5	Learn about breeding and improving horticultural plants	breeding and improving horticultural plants	Attend	a daily test
Eleventh	5	Learn about garden architecture and design	garden architecture and design	Attend	a daily test
Twelveth	5	Learn about ways to exploit spaces and roofs of buildings by growing horticultural plants	a ways to exploit spaces and roofs of buildings by growing horticultural plants	Attend	a daily test
Thirteenth	5	Identify windbreaks and their role in reducing desertification conditions	windbreaks and their role in reducing desertification conditions	Attend	a daily test
Fourteenth	5	Learn how to use modern mechanization to serve horticultural plants	how to use modern mechanization to serve horticultural plants	Attend	a daily test
Fifteenth	5	Identifying (medicinal, aromatic plants, fruit trees, vegetable plants, ornamental plants)	(medicinal and aromatic plants, fruit trees, vegetable plants, ornamental plants)	Attend	a daily test

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)	Horticulture Dr. Jabbar Ihsan Saloumi, Mr. Hossam Hussein Ali Ghalib
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
English language					
2. Course Code:					
U014104					
3. Semester / Year:					
The first stage/ first semester					
4. Description Preparation Date:					
26/2/2024					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours. Number of units: 2					
7. Course administrator's name (mention all, if more than one name)					
Name: Lafta Awad Atshan					
Email: lafta.awad@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Teaching the student the basics of the English language 			
9. Teaching and Learning Strategies					
Strategy	1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Basics of the English language	A lecture	Quiz
2	2	Theoretical lecture	Pronouns	A lecture	Quiz
3	2	Theoretical lecture	Pronouns	A lecture	Quiz
4	2	Theoretical lecture	auxiliary verbs	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Verb rules	A lecture	Quiz
7	2	Theoretical lecture	Verb rules	A lecture	Quiz
8	2	Theoretical	Noun rules	A lecture	Quiz

		lecture			
9	2	Theoretical lecture	Noun rules	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Adjective rules	A lecture	Quiz
12	2	Theoretical lecture	Adjective rules	A lecture	Quiz
13	2	Theoretical lecture	auxiliary verbs	A lecture	Quiz
14	2	Theoretical lecture	auxiliary verbs	A lecture	Quiz
15	2	Theoretical lecture	auxiliary verbs	A lecture	Quiz

11. Co2urse 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 (curriculum books, if any)	Writing Academic English, Level 1 by Alice Oshima
Main references (sources)	From methodological books, help books, the Internet, and scientific research
Recommended books and references (scientific journals, reports...)	Scientific journals in basic specializations
Electronic References, Websites	https://www.ef.com/wwar/blog/language/dystopian-books-to-learn-english/

Course Description Form

1. Course Name:					
Computer fundamentals 2					
2. Course Code:					
U024101					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
3\7\2024					
5. Available Attendance Forms:					
Actual presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 Hours Number of Units 3					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Karrar Hameed Abdulkareem Email: khak9784@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> The student gets to know Microsoft access in details. The student should know advantages of using Microsoft access in real life. The student should apply many commends and processes on Microsoft access. 			
9. Teaching and Learning Strategies					
Strategy		1-Explanation and clarification. 2- Practical lessons. 3- Self-learning method.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Introduction to Microsoft access	Microsoft access	Explanation, presentation of model and lecture	Exam
second	2	Access main interface	Microsoft access	Explanation, presentation of model and lecture	Exam
third	2	Tabs and groups	Microsoft access	Explanation, presentation of model and lecture	Exam
fourth	2	Tabs and groups	Microsoft access	Explanation, presentation of model and lecture	Exam
Fifth	2	Tabs and groups	Microsoft access	Explanation, presentation of model and lecture	Exam
Sixth	2	Practical Example	Microsoft access	Practical session	Exam
Seventh	2	Practical Example	Microsoft	Practical session	Exam

			access		
Eighth	2	Tables	Microsoft access	Explanation, presentation of model and lecture	Exam
Ninth	2	Practical Example	Microsoft	Practical Example	Exam
Tenth	2	Queries	Microsoft access	Explanation, presentation of model and lecture	Exam
Eleventh	2	Practical Example	Microsoft access	Practical session	Exam
Twelfth	2	Reports	Microsoft access	Explanation, presentation of model and lecture	Exam
Thirteenth	2	Control panel	Microsoft access	Explanation, presentation of model and lecture	Exam
fourteenth	2	Practical Example	Microsoft access	Practical session	Exam
Fifteenth	2	Practical Example	Microsoft access	Practical session	Exam

11. Course Evaluation

1-Theoretical tests	25
2- Practical tests	15
3- Reports and studies	10
4- Final exam	50

12. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	
Main references (sources)	<p>1- Microsoft Access 2010 book (UNIVERSITY OF VIRGINIA HEALTH SYSTEM).</p> <p>2- Lectures of Microsoft Access 2010 prepared by Eng.M.Abou Elale.</p>
Recommended books and references (scientific journals, reports...)	
Electronic References, Website	<p>https://support.microsoft.com/ar-sa/office/%D8%A7%D9%84%D9%85%D9%87%D8%A7%D9%85-%D8%A7%D9%84%D8%A3%D8%B3%D8%A7%D8%B3%D9%8A%D8A9-%D9%81%D9%8A-access-2010-268acfed-2484-4822-acb3-c30e58045588</p>

Course Description Form

1. Course Name:					
Statistics					
2. Course Code:					
0C14203					
3. Semester / Year:					
Spring Semester / secondary					
4. Description Preparation Date:					
12 / 2 / 2024					
5. Available Attendance Forms:					
In a present way					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: sadeq Hadi Hussein					
Email: Sadeq.hadi@mu.edu.iq					
8. Course Objectives					
Course Objectives			The skills objectives of the course. 1- Graduation research. 2- Scientific reports 6- Linking information to engineering reality		
9. Teaching and Learning Strategies					
Strategy		1. Mathematical exercises and problems. Assigning the student to some group activities and duties. 2. Allocate a percentage of the grade to daily assignments and tests. 3. Information on the Internet. 4 Practical experiences in research stations affiliated with the College of Agriculture.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	Memorize, understand, analyze, apply	1- A historical overview, definition, importance and applications of statistics	Presence	Daily tests
2	4	Memorize, understand, analyze, apply	2- Introducing statistical terminology and methods for obtaining random samples	presence	Daily tests
3	4	Memorize, understand, analyze, apply	3- Tabular and graphical presentation	presence	Daily tests
4	4	Memorize, understand, analyze, apply	4- Concentration metrics	presence	Daily tests
5	4	Memorize, understand, analyze, apply	5- How to make a frequency distribution table	presence	Daily tests
6	4	Memorize, understand, analyze, apply	6- Measures of relative dispersion	presence	Daily tests
7	4	Memorize, understand, analyze, apply	7- The relationship between the arithmetic mean, median, and mode	presence	Daily tests
8	4	Memorize, understand, analyze, apply	8- T-test and F-test	presence	Daily tests
9	4	Memorize, understand, analyze, apply	9- Simple regression	presence	Daily tests
10	4	Memorize, understand, analyze, apply	10- Correlation	presence	Daily tests
11	4	Memorize, understand, analyze, apply	11- Probability distributions	presence	Daily tests
12	4	Memorize, understand, analyze, apply	12- Normal distribution	presence	Daily tests
13	4	Memorize, understand, analyze, apply	13- Analysis of variance	presence	Daily tests
14	4	Memorize, understand, analyze, apply		presence	Daily tests
15	4	Memorize, understand, analyze, apply		presence	Daily tests

11. Course Evaluation

Attendance 5 + daily exams and assignments 2 + reports 3 + practical exam 15 + monthly exam 25 = 50 pursuit, final exam 20 practical + 30 theoretical .

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to Statistics - Khashi Muhammad Al-Rawi
Main references (sources)	Principles of Statistics - Ahmed Abdel Samie 2008
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Medical and veterinary entomology	
2. Course Code:	
0014201	
3. Semester / Year:	
First semester/second year	
4. Description Preparation Date:	
14/2/2024	
5. Available Attendance Forms:	
present way	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours / 3 units	
7. Course administrator's name (mention all, if more than one name)	
Name: MOHAMD KHALEL IBRAHIM MOHAMED	
Email: moh_kh15@mu.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • The student will acquire cognitive skills about the concepts of the relationship insects to human and animal health, an introduction to the science of medical entomology, methods of transmitting pathogens, the medical importance of the orders of cockroaches, lice, dipteras, spiders, bedbugs and fleas and methods combating them, toxic pests and their relationship to environmental health. . • Also know the classification of medicinal insects according to their importance humans and animals and according to the type of host on which they feed • • Knowing the Arabic name of medical insect pests, scientific name, family, and economic importance, and life cycle <ul style="list-style-type: none"> • • In addition to studying all insects that infect humans and animals • • Identify the harmful phase and symptoms and signs of infection
9. Teaching and Learning Strategies	
Strategy	<p style="text-align: center;">Strategy A - Cognitive objectives</p> <p>A1- Learn about the concept of medical insects and methods diagnosing them</p> <p>A2- Learn about ways to combat these insects and methods preventing them</p> <p>A3- Learn about the concept of medical entomology and controlling the danger of these insects to public health</p> <p>A4- Learn about the nature of the damage and losses caused by medical insects in the general environment and what these insects cause to public health</p>

A5- Identify the reasons for the infestation of humans and animals with these insects
 A6-Describe the life cycle of insects that infect humans and animals and identify the harmful phase
 B - The program's skill objectives
 B1 - Knowing the concept of medical insects, especially insects in hot environments
 B2 - Enabling students to diagnose infections and the possibility of isolating and diagnosing disease-causing insects
 B3 - The student's ability to estimate the extent that leads to harm to humans and animals

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	identification of medical insects and a historical overview of the development of medical insects and the stages they went through. theoretical Introduction to medical and veterinary insects.	Practical lecture, discussion,	oral examinations
second	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	the medical importance of insects, methods of transporting them, and their medical harm. theoretical Mouth parts in medical and veterinary insects (1).	Practical lecture and discussion	oral examinations
Third	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	epidemiology and its relationship to medical insects. Theoretical Mouth parts in medical and veterinary insects (2).	Practical lecture, discussion,	oral examinations
Fourth	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	the Hemipteran order, the Diptera order (division of the order). Cockroaches, types of lice. sand flies and black flies (their types and harms).	Practical lecture and discussion	oral examinations
Fifth	2theoretical +2 practical	memorizing, understanding,	Diagnosing the most important	Practical lecture, discussion,	oral examinations

		analyzing, and applying	phenotypic characteristics by which bedbugs, sandflies, and blackflies are distinguished.		
Sixth	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	theoretical test 1. Practical test 1.	examination	writing examinations
Seventh	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	Types Mosquitoes of mosquitoes with an attempt to collect mosquitoes from the field and raise them	Practical lecture, discussion,	oral examinations
Eighth	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	the apprehension fly, horse fly, house fly, stable fly Trying to differentiate between a stable fly and a house fly.	Practical lecture and discussion	oral examinations
Ninth	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	colored flies, myiasis, and codification. Study of external characteristics to differentiate between colored flies and myiasis	Practical lecture, discussion,	oral examinations
Tenth	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	fleas, fleas. Flea cheats and fleas with learning how to collect fleas.	Practical lecture and discussion	oral examinations
Eleventh	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	some small orders with their medical and veterinary importance such as Lepidoptera, Coleoptera, and Hymenoptera. Making slides for parts of some types of medical insects.	Practical lecture, discussion,	oral examinations
Twelfth	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	the sect and arachnids, scorpions, spiders, and dreams. Identifying the types of spiders and their modern types that cause medical and veterinary diseases, especially hard and soft ticks and mites.	Practical lecture and discussion	oral examinations
Thirteenth	2theoretical +2 practical	memorizing, understanding, analyzing, and	the life cycle of some pathogens transmitted by	Practical lecture, discussion,	oral examinations

		applying	arthropods, leishmaniasis, malaria, and elephantiasis. Learn how to breed mosquitoes and flies.		
Fourteenth	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	, the second part of the lecture on the life cycle of pathogens. Survey and diagnosis of medical insects present in the area.	Practical lecture and discussion	oral examinations
Fifteenth	2theoretical +2 practical	memorizing, understanding, analyzing, and applying	theoretical test2. Practical test 2.	examination	writing examinations

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books any)	Abo-Al Hab. , Jalil.1980. Book of medical and veterina insects, theoretical and practical part
Main references (sources)	1- Al-Tayeb Ali Al-Hajj (Medical and Veterinary Insects) 2- the guide to medical entomology, Dr. Ali Salit et a
Recommended books and references (scientific journals, reports...)	1- Arthropods of medical and veterinary importance in the Kingdom of Saudi Arabia Dr. Ali Ibrahim Badawi 2- Disease-carrying insects, written by Jalil Abu Al-Hab
Electronic References, Websites	The free scientific encyclopedia www.emedicine.com/ped/topic/1292.htm www.ext.colostate.edu/pubs/insect/05502.html www.kennedypest.com/roach2.html www.medicine.cmu.ac.th/dept/parasite

Course Description Form

1. Course Name: Agricultural machinery and equipment					
2. Course Code: 0014204					
3. Semester / Year: 2023-2024					
4. Description Preparation Date:12-4-2024					
5. Available Attendance Forms: present way					
6. Number of Credit Hours (60) / Number of Units (3)					
7. Course administrator's name (mention all, if more than one name) Name: JAWAD KADHIM AL ARIDHEE Email: jawadaridhee@mu.edu.iq					
8. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • Identify the types and parts of pullers • Types of combustion engines and methods mechanical transmission • Types of methods of operating and connecting equipment and how to maintain and maintain it 		
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> • Explaining the importance of using mechanization in providing and achieving high levels of production • Explaining the modern and advanced method of agriculture through agricultural machinery 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	memorizing, understanding, analyzing, and applying	Classification of tractors , Mechanical transmission methods	Theoretical + practical lecture	test
2	4	memorizing, understanding, analyzing, and applying	Internal combustion engine parts	Theoretical + practical lecture	test

3	4	memorizing, understanding, analyzing, and applying	Four – stroke cycle & Two – stroke cycle	Theoretical + practical lecture	test
4	4	memorizing, understanding, analyzing, and applying	Timer devices	Theoretical + practical lecture	test
5	4	memorizing, understanding, analyzing, and applying	Clutch Device	Theoretical + practical lecture	test
6	4	memorizing, understanding, analyzing, and applying	Gearbox and Transmission devices	Theoretical + practical lecture	test
7	4	memorizing, understanding, analyzing, and applying	Fuel System	Theoretical + practical lecture	test
8	4	memorizing, understanding, analyzing, and applying	Cooling System	Theoretical + practical lecture	test
9	4	memorizing, understanding, analyzing, and applying	Lubrication System	Theoretical + practical lecture	test
10	4	memorizing, understanding, analyzing, and applying	Hydraulic devices. Power take - off shaft	Theoretical + practical lecture	test
11	4	memorizing, understanding, analyzing, and applying	Soil preparation equipment	Theoretical + practical lecture	test
12	4	memorizing, understanding, analyzing, and applying	Control equipment - Spraying equipment	Theoretical + practical lecture	test
13	4	memorizing, understanding, analyzing, and applying	Fogging equipment	Theoretical + practical lecture	test
14	4	memorizing, understanding, analyzing, and applying	Sprinkler calibration	Theoretical + practical lecture	test
15	4	memorizing, understanding, analyzing, and applying	Maintenance of control equipment	Theoretical + practical lecture	test

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Agricultural machinery
Main references (sources)	<ul style="list-style-type: none"> • Field crop mechanization equipment. Written by Lotfi Hussein and Dr. Abdel Salam Mahmoud • For pullers and protective equipment. Written

	by Lotfi Hussein Basic Farm Machinery .J.M.shippen,C.R.Ellin and C.H.Clover
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Plant physiology					
2. Course Code:					
0014202					
3. Semester / Year:					
the first Semester / second year					
4. Description Preparation Date:					
20 / 2 / 2024					
5. Available Attendance Forms:					
Present way					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: mahmood thamer abed Email: Mohmoodth999@mu.edu.iq					
8. Course Objectives					
Course Objectives			-Learn about plant physiology -Knowledge of the principles of this plant science - The importance of plant physiology		
9. Teaching and Learning Strategies					
Strategy	1 - Presentation of PowerPoint via the Data show screen 2-Electronic presentation via communication platforms 3 - Direct delivery method and detailed explanation				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understand practical application	A historical overview of the emergence and development of physiological science	Lecture and discussion	Oral exams
2	4	Memorization, understand practical application	Water relations	Lecture and discussion	Quick exam
3	4	Memorization, understand practical application	Plant Cell	Lecture and discussion	Oral exams
4	4	Memorization, understand practical application	Anatomy of phloem tissue	Lecture and discussion	
5	4	Memorization, understand practical application	Photosynthesis	Written exam	Oral exams

6	4	Memorization, understand practical application	Breathing	Lecture and discuss	Quick exam
7	4	Memorization, understand practical application	Growth and development plants	Lecture and discuss	Oral exams
8	4	Memorization, understand practical application	Enzymes	Lecture and discuss	Quick exam
9	4	Memorization, understand practical application	Nutrients and plant nutriti	Lecture and discuss	Oral exams
10	4	Memorization, understand practical application	Transport	Lecture and discuss	Oral exams
11	4	Memorization, understand practical application	Root growth	Lecture and discuss	Oral exams
12	4	Memorization, understand practical application	For plant hormones	Lecture and discuss	Oral exams
13	4	Memorization, understand practical application	Flowering	Written exam	Oral exams

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	. Crop physiology / Dr. Abdul Hameed
Main references (sources)	1. Plant Physiology / Dr. Medhat
Recommended books and references (scientific journals, reports...)	- Iraqi Agriculture Journal
Electronic References, Websites	All agricultural and plant disease magazine sites

Course Description Form

1. Course Name:					
Insect taxonomy					
2. Course Code:					
0024201					
3. Semester / Year:					
2 \ 2					
4. Description Preparation Date:					
27\ 2\ 2024					
5. Available Attendance Forms:					
: present way					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours/3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Khalid Jaber AbdelRazzaq Email: khadry.ahmed@mu.edu.iq					
8. Course Objectives					
Course Objectives		1–The student gets to know the most important insect order 2–The student learns about the position of insects within the taxonomic ranks 3– The student knows the types of taxonomic keys used to differentiate between insect types 4–The student learns about the types of specimens preserved museums			
9. Teaching and Learning Strategies					
Strategy	1-Sudden daily and continuous weekly tests 2-Exercises and activities in the classroom 3- Directing students to some websites				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	Memorize, understand, analysis	Taxonomy, its definition, history, relationship with other sciences, and stages of its development.	Lecture and discussion	Written tests
2	4	Memorize, understand, analysis	Modern taxonomy and its comparison with ancient taxonomy, taxonomic ranks, and the formation of life types with examples	Lecture and discussion	Written tests
3	4	Memorize, understand, analysis	Division of insects, taxonomic stratification. The class system with examples.	Lecture and discussion	Written tests
4	4	Memorize, understand, analysis	Introduction to the origin of the arthropod phylum (a historical overview), theories of formation and evolution, a table of the geological history of the Earth	Lecture and discussion	Written tests
5	4	Memorize, understand, analysis	Describe insects, their division and sub-order with examples.	Lecture and discussion	Written tests
6	4	Memorize, understand, analysis	Types of museum collections, styles (types of models) with examples	Lecture and discussion	Written tests
7	4	Memorize, understand, analysis	Individual variation, their types, and the reason for their appearance, with examples.	Lecture and discussion	Written tests
8	4	Memorize, understand, analysis	Scientific nomenclature, its terms, writing the scientific name, taxonomic keys, with examples	Lecture and discussion	Written tests
9	4	Memorize, understand, analysis	Diagnosis of typology and taxonomic differentiation with examples	Lecture and discussion	Written tests
10	4	Memorize, understand, analysis	Taxonomic characteristics and geographical distribution of living organisms according to geographical region with examples.	Lecture and discussion	Written tests
11	4	Memorize, understand, analysis	Taxonomic keys to insect orders	Lecture and discussion	Written tests

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Structure and classification of insects\D Jalil Abu Al-Hab
Main references (sources)	Classification of insects\D. Mohammad Radwan
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
English					
2. Course Code:					
U024201					
3. Semester / Year: Semester					
1 \ 2					
4. Description Preparation Date:					
27 \ 2 \ 2024					
5. Available Attendance Forms:					
Present way					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours \ 2 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Lafta Awad Atshan Email: lafta.awad@mu.edu.iq					
8. Course Objectives					
Course Objectives			Teaching students English language skills		
			<ul style="list-style-type: none"> • Trying to employ the English language to serve the school curriculum • Teaching students skills that help them pass international language tests • Motivating students to research foreign sources 		
9. Teaching and Learning Strategies					
Strategy	Students are taught English language skills such as listening, reading, writing, and grammar through available learning methods such as projectors in classrooms, homework, direct discussion methods, quick tests, oral and written exams, and various means.				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Identify types of sentence	Sentences structures	The presence	Daily tests
2	2	Identify parts of speech	Past tense	The presence	Daily tests
3	2	Recognizing names	Past simple	The presence	Daily tests
4	2	Identify the functions of nouns	Past continuous	The presence	Daily tests
5	2	Identify pronouns	Present tenses	The presence	Daily tests
6	2	Identify traits	Present Simple	The presence	Daily tests

7	2	Recognize the situation	Present continuous	The present	Daily tests
8	2	Recognizing the passive voice	Future tense	The present	Daily tests
9	2	Learn about the simple present	Future simple	The present	Daily tests
10	2	present perfect	Paragraphs writing	The present	Daily tests
11	2	Learn about the present continuous tense	Paragraphs writing	The present	Daily tests
12	2		Paragraphs writing	The present	Daily tests

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Monthly exam 40 = 50 , The final exam is 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Cambridge English: Preliminary
Recommended books and references (scientific journals, reports...)	Cambridge English: Preliminary
Electronic References, Websites	An English videos

Course Description Form

1. Course Name: Basics of field crops

2. Course Code:

0C24202

3. Semester / Year: first semester / second year

4. Description Preparation Date: 14 / 2/ 2024

5. Available Attendance Forms: present way

6. Number of Credit Hours (Total) / Number of Units (Total)

60 hours / 3 Units

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Shaimaa Ibrahim Mahmood AL Refai

Email: Shaimaaibrahim@mu.edu.iq

8. Course Objectives

Course Objectives

- Strengthening efforts aimed at using and properly managing water resources.
- Develop a future vision for developing water harvesting technologies to support water resources.
- Increasing the volume of irrigation water available for agricultural use, by adding dams, tanks, irrigation canals, and drilling wells, in addition to development projects in this field and water supply projects.

- 1- The course examines the identification of the most important grain crops in Iraq and the world
- 2-It includes studying the scientific methods used in growing grain crops
- 3 -Study the appropriate environmental conditions for growing each important field crop
- 4- Defining the most important ways to increase productivity for each field crop
- 5-Study the problems related to pests and diseases of each field crop

9. Teaching and Learning Strategies

Strategy

- 1- Explanation and clarification
- 2- Lecture method
- 3- Student groups
- 4- Practical lessons in agricultural fields
- 5- Scientific trips to learn about field crops in Iraq

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	Field crops: their definition, Its development, its creators	Practical lecture and discussion	Exams , reports, discussions Quizzes
second week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	Environmental factors in Iraq and in The world and its relationship to crop growth Field, location and surface, climate Soil, water resources	Practical lecture and discussion	Exams , reports, discussions
the third week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	division of field crops, According to the life cycle	Practical lecture and discussion	Exams , reports, discussions
fourth week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	Temperature, factors affecting Heat, temperature relationship With crops, crop adaptation To reduce the effect of temperatures And temperature damage	Practical lecture and discussion	Exams , reports, discussions
The fifth week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	For light, the importance of light for plants, Adaptation of plants to light, importance Light in seed germination	Practical lecture and discussion	Exams , reports, discussions
the sixth week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	First monthly exam	Practical lecture and discussion	Exams , reports, discussions
Seventh week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	Water, water in the soil and its extent Crops benefit from it, balance internal water of the plant, Water consumption, efficient Water use, effect of water deficiency On crops, drought damage	Practical lecture and discussion	Exams , reports, discussions
The eighth week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	Soil, soil texture, composition Soil, soil components, matter Soil organics, soil water, Soil air, harmful effect Soil salts on crops	Practical lecture and discussion	
Week nine	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	Air, air pollution, wind effect Crops, soil erosion by Crop winds	Practical lecture and discussion	Exams , reports, discussions
The tenth week	2Theoretical 2Practical	memorizing, understanding	Mutual benefit, competition, opposition	Practical lecture and	Exams , reports,

		, analyzing, and applying		discussion	discussions
Week eleven	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	Seeds and their importance, composition and maturity Seed dormancy, diagnosis Seed grading screening, storage Seeds, marketing	Practical lecture and discussion	Exams , reports, discussions
The twelfth week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	Weeds and ways to combat them	Practical lecture and discussion	Exams , reports, discussions
The thirteenth week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	The updated one Agricultural courses	Practical lecture and discussion	Exams , reports, discussions
The fourteenth week	2Theoretical 2Practical	memorizing, understanding , analyzing, and applying	The updated one Breeding and improving field crops Major crops in the world And Iraq	Practical lecture and discussion	Exams , reports, discussions
The fifteenth week			The second monthly exam		
11. Course Evaluation					
Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Principles of field crops Dr.. Majeed Mohsen A Ansari Dr. Abdel Hamid Ahmed Al-Younis Dr.. Ghanem Saadallah Hasawi Dr. Wafqi Sha Al-Shamaa			
Main references (sources)		From methodological books, help books, the Internet, and scientific research			
Recommended books and references (scientific journals, reports...)		Iraqi Scientific journals in basic specializations			
Electronic References, Websites		Al-Muthanna University e-learning website https://agr.mu.edu.iq/			

Course Description Form

1. Course Name:					
Principles of animal production					
2. Course Code:					
0C24201					
3. Semester / Year:					
autumn semester / first year					
4. Description Preparation Date:					
26/2/2024					
5. Available Attendance Forms:					
Present year					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Dhelal Mohammed Halboos Email: dhelalhalboos@mu.edu.iq					
8. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • It aims for the student to recognize the economic importance of animal production, as well as the sciences associated with it and the relationship of animal production to plant production. 		
9. Teaching and Learning Strategies					
Strategy	Audio methods (teaching explanation of the topic) Style of writing on the blackboard The method of direct dialogue between the teacher and the student with the student's evaluation in class participation				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	memorizing, understanding, analyzing, and applying	Introduction to animal production and its economic importance	Practical lecture and discussion	Quiz
2	4	memorizing, understanding, analyzing, and applying	Factors affecting the production efficiency of farm animals	Practical lecture and discussion	Quiz

3	4	memorizing, understanding, analyzing, and applying	Obstacles facing animal production in Iraq and ways to improve them	Practical lecture and discussion	Quiz
4	4	memorizing, understanding, analyzing, and applying	Dairy cows, beef cows and dual-purpose cows	Practical lecture and discussion	Quiz
5	4	memorizing, understanding, analyzing, and applying	Exam	Practical lecture and discussion	Exam
6	4	memorizing, understanding, analyzing, and applying	Establishing and managing a flock of sheep and goats	Practical lecture and discussion	Quiz
7	4	memorizing, understanding, analyzing, and applying	Buffalo, general characteristics of buffalo	Practical lecture and discussion	Quiz
8	4	memorizing, understanding, analyzing, and applying	Poultry birds, the economic importance of poultry projects	Practical lecture and discussion	Quiz
9	4	memorizing, understanding, analyzing, and applying	Nutrition and fodder	Practical lecture and discussion	Quiz
10	4	memorizing, understanding, analyzing, and applying	Exam	Practical lecture and discussion	Exam
11	4	memorizing, understanding, analyzing, and applying	Health care for poultry birds	Practical lecture and discussion	Quiz
12	4	memorizing, understanding, analyzing, and applying	Genetic improvement in poultry	Practical lecture and discussion	Quiz
13	4	memorizing, understanding, analyzing, and applying	Sheep and goats economic importance	Practical lecture and discussion	Quiz
14	4	memorizing, understanding, analyzing, and applying	Classification and methods used for classification	Practical lecture and discussion	Quiz
15	4	memorizing, understanding, analyzing, and applying	Sheep breeding	Practical lecture and discussion	Quiz

11. Co2urse Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Animal Production Zuhair Al-Jalili
Main references (sources)	1-Milk cattle production d. Spokesman Hamid Al-Qudsi 2- The basics of producing and raising sheep and goats, Dr. Jalal Elijah
Recommended books and references	Scientific journals in basic specializations

(scientific journals, reports...)	
Electronic References, Websites	Animal Science Journal

Course Description Form

1. Course Name: analytical chemistry

2. Course Code:

0024203

3. Semester / Year: second / second

4. Description Preparation Date: 14 / 2 / 2024

5. Available Attendance Forms: present way

6. Number of Credit Hours (Total) / Number of Units (Total)

60 hours / 3 Units

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Mohammed Radwan Mohmoud

Email: modrn@mu.edu.iq

8. Course Objectives

Course Objective

- 1 Providing students with general information about analytical chemistry
- 2- Introducing students to ways to express concentrations and their types
- 3- Introducing students to strong and weak acids and bases
- 4- Explaining to students what Buffer's solutions are and their types, with examples
- 5- Introducing students to the definition of salts and their types, with theoretic examples

9. Teaching and Learning Strategies

Strategy

- 1- Explanation and clarification
- 2- Lecture method
- 3- Student groups
- 4- Practical lessons in laboratories

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first week	2Theoretical 3Practical	memorizing, understanding, analyzing,	Learn about laboratory safety	Practical lecture and discussion	Written tests

		and applying			
second week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Acids and bases	Practical lecture and discussion	Written tests
the third week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Laboratory safety	Practical lecture and discussion	Written tests
fourth week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Laws of acids and bases	Practical lecture and discussion	Written tests
The fifth week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Identify hazardous chemicals	Practical lecture and discussion	Written tests
the sixth week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Salts	Practical lecture and discussion	Written tests
Seventh week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Types of salts	Practical lecture and discussion	Written tests
The eighth week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Identify methods for preparing liquid solutions	Practical lecture and discussion	Written tests
Week nine	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Methods for preparing liquids	Practical lecture and discussion	Written tests
The tenth week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Structured solutions	Practical lecture and discussion	Written tests
Week eleven	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Solve problems on ways to express concentrations	Practical lecture and discussion	Written tests
The twelfth week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	First month exam	Practical lecture and discussion	Written tests
The thirteenth week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	An overview of volumetric analysis and its types	Practical lecture and discussion	Written tests
The fourteenth week	2Theoretical 3Practical	memorizing, understanding, analyzing, and applying	Volumetric analysis An overview of gravimetric analysis and its types	Practical lecture and discussion	Written tests
The fifteenth week			First month exam	Practical lecture and discussion	
11. Course Evaluation					
Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest The final exam is 20 practical + 30 theoretical					
12. Learning and Teaching Resources					

Required textbooks (curricular books, if any)	1 -Volumetric and gravimetric analytical chemistry: written by Hadi Awad 2 -Analytical Chemistry - Skoog
Main references (sources)	From methodological books, help books, the Internet, and scientific research Volumetric and gravimetric analytical chemistr written by Hadi Awad
Recommended books and references (scientific journals, reports...)	Iraqi Scientific journals in basic specializations
Electronic References, Websites	Al-Muthanna University e-learning website https://agr.mu.edu.iq/

Course Description Form

1. Course Name: Plant nutrition

2. Course Code:

0014203

3. Semester / Year:

Second / Second year

4. Description Preparation Date:

14/2/2024

5. Available Attendance Forms:

Present way

6. Number of Credit Hours (Total) / Number of Units (Total)

60 hours / 3 Units

7. Course administrator's name (mention all, if more than one name)

Name: Hazim Sultan Safana

Email: Hazim-agr-70@mu.edu.iq

8. Course Objectives

Course Objectives

- Introduction to plant nutrition
- Explanation of macro and micro nutrients
- Classifications of nutrients according to their importance and functions
- Methods of calculating nutrient solutions
- Detection of nutrients
- Differences between passive absorption and active absorption
 - A brief idea about heavy metals and their effect on plants
- Study the reasons for the appearance of symptoms of element deficiency on plants
- Study the methods of water mass transfer within the plant body
 - Study the ways nutrients reach the plant
- A simplified idea about the effects of stress on plants trees in cities and central islands

9. Teaching and Learning Strategies

Strategies

Ask students inferential questions
 Establishing training programs
 Finding solutions to the problems and obstacles that students encounter in the practical part
 Enabling students to find solutions and applications

crisis situations

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	4	memorizing, understanding, analyzing, and applying	Introduction to pate nutrition	Attend	a daily test
the second	4	memorizing, understanding, analyzing, and applying	Taking plant samples preparing them for analysis	Attend	a daily test
the third	4	memorizing, understanding, analyzing, and applying	Estimating the moisture content of plant samples	Attend	a daily test
the fourth	4	memorizing, understanding, analyzing, and applying	Digestion of plant samples	Attend	a daily test
Fifth	4	memorizing, understanding, analyzing, and applying	Nitrogen in plants - symptoms of deficiency Estimation of total nitrogen in plant samples	Attend	a daily test
VI	4	memorizing, understanding, analyzing, and applying	Phosphorus in plants symptoms of deficiency estimation of total phosphorus in plant samples	Attend	a daily test
Seventh	4	memorizing, understanding, analyzing, and applying	Potassium in plants symptoms of deficiency Estimation of total potassium in plant samples -	Attend	a daily test
VIII	4	memorizing, understanding, analyzing, and applying	First month exam	Attend	a daily test
Ninth	4	memorizing, understanding, analyzing, and applying	Calcium and magnesium in plants - symptoms of deficiency - estimation of calcium and magnesium in plant samples	Attend	a daily test
The tenth	4	memorizing, understanding, analyzing, and applying	Sulfur in plants - symptoms of deficiency estimation of total sulfur in plant samples	Attend	a daily test
eleventh	4	memorizing, understanding, analyzing, and applying	Estimating cations of microelements in plants and studying the symptoms of their deficiency in plants. plants and studying the symptoms of their deficiency in plants	Attend	a daily test
twelveth	4	memorizing, understanding, analyzing, and applying	Determination of chlorophyll in plants	Attend	a daily test

Thirteenth	4	memorizing, understanding analyzing, and applying	Second month exam	Attend	a daily tes
fourteenth	4	memorizing, understanding analyzing, and applying	Food farms	Attend	a daily tes
Fifteenth	4	memorizing, understanding analyzing, and applying	Nutrient solutions	Attend	a daily tes
11. Course Evaluation					
Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Plant Nutrition Book by Hamza Kadhim A Zubaidi, May God bless Najm Al-Nuaim		
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites			Information and lectures from the Intern		

Course Description Form

1. Course Name:

Computer applications 2

2. Course Code:

U024202

3. Semester / Year:

Second semester / second year

4. Description Preparation Date:

29\2\2024

5. Available Attendance Forms:

Actual presence

6. Number of Credit Hours (Total) / Number of Units (Total)

30 hours / 2 units

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Karrar Hameed Abdulkareem

Email: khak9784@mu.edu.iq

8. Course Objectives

Course Objectives

- The student gets to know Microsoft excel
- The student should know advantages of Microsoft excel in real life.
- The student should apply many examples that relative to agriculture sector as well as other sectors.

9. Teaching and Learning Strategies

Strategy

- 1-Explanation and clarification.
- 2- Practical lessons.
- 3- Self-learning method through practical application individually..

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	memorizing, understanding, analyzing and applying	memorizing	Explanation, presentation of the model and lecture	the exam
second	2	memorizing, understanding, analyzing, and applying	Tabs and totals	Explanation, presentation of the model and lecture	the exam
third	2	memorizing, understanding, analyzing and applying	Workbooks and sheets	Explanation, presentation of the model and lecture	the exam
fourth	2	memorizing, understanding, analyzing and applying	Practical Examples	Practical session	the exam

Fifth	2	memorizing, understanding, analyzing, and applying	Practical Examp	Practical session	the exam	
Sixth	2	memorizing, understanding, analyzing, and applying	Workbooks desi	Explanation, presentation of the model and lectur	the exam	
Seventh	2	memorizing, understanding, analyzing, and applying	Fundamentals of data entry	Explanation, presentation of the model and lectur	the exam	
Eighth	2	memorizing, understanding, analyzing, and applying	Fundamentals of data entry	Explanation, presentation of the model and lectur	the exam	
Ninth	2	memorizing, understanding, analyzing, and applying	Fundamentals of data entry	Explanation, presentation of the model and lectur	the exam	
Tenth	2	memorizing, understanding, analyzing, and applying	Practical Examp	Practical session	the exam	
Eleventh	2	memorizing, understanding, analyzing, and applying	Practical Examp	Practical session	the exam	
Twelfth	2	memorizing, understanding, analyzing, and applying	Tables	Explanation, presentation of the model and lectur	the exam	
Thirteen	2	memorizing, understanding, analyzing, and applying	Charts	Explanation, presentation of the model and lectur	the exam	
fourteen	2	memorizing, understanding, analyzing, and applying	Practical Examp	Practical session	the exam	
Fifteenth	2	memorizing, understanding, analyzing, and applying	Practical Examp	Practical session	the exam	

11. Course Evaluation

1-Theoretical tests	25
2- Practical tests	15
3- Reports and studies	10
4- Final exam	50

12. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	
Main references (sources)	1- Microsoft Excel 2016 Step by Step 1st Edition by Curt Frye 2- Microsoft Excel 2016 prepared by Muhammad Malik.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://support.microsoft.com/en-gb/office/introduction-to-excel-starter-601794a9-b73d-4d04-b2d4-eed4c40f98be

Course Description Form

1. Course Name: Microbiology

2. Course Code:

0C14201

3. Semester / Year:

First semester / second year

4. Description Preparation Date:

14 / 2 / 2024

5. Available Attendance Forms:

Present way

6. Number of Credit Hours (Total) / Number of Units (Total) :-

60 hours / 3 Units

7. Course administrator's name (mention all, if more than one name)

Name: :- Assistant Professor .Sofia Jabbar Jassim

Email: sofia.jabbar@mu.edu.iq

8. Course Objectives

Course Objective

- 1- Learn about the types of microorganisms (bacteria, fungi, algae, snakeworms, parasites)
- 2- Knowing the structure of bacterial and fungal cells, their physiology, nutrition, metabolism, and these biology
 - 3--Knowledge of bacterial families and their characteristics
 - 4-Knowing the types of fungi.
 - 5- Access to the most important microbiology laboratory instructions
- 6-Knowledge of sterilization methods for materials and equipment used in the laborato
- 7-Knowing the types and methods of preparing media used in growing microscopic organisms
 - 8-Knowing the method of dyeing
 - 9-Study of bacterial counting methods

9. Teaching and Learning Strategies

Strategy

Method of discussion, lecture and interrogation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	Memorize, understand, analyze	Definition of biology and classification of sciences	The lecture and Discussion	the exams Editorial
2	4	Memorize, understand, analyze	Bacterial shapes and external surface components for the bacterial cell	The lecture and Discussion	the exams Editorial
3	4	Memorize, understand, analyze	Internal components of bacterial cell	The lecture and Discussion	the exams Editorial
4	4	Memorize, understand, analyze	Bacterial growth and reproduction	The lecture and Discussion	the exams Editorial
5	4	Memorize, understand, analyze	Nutrition of microorganisms	The lecture and Discussion	the exams Editorial
7	4	Memorize, understand, analyze	Fungi	The lecture and Discussion	the exams Editorial
8	4	Memorize, understand, analyze	Protozoa (parasites)	The lecture and Discussion	the exams Editorial
9	4	Memorize, understand, analyze	Viruses	The lecture and Discussion	the exams Editorial
10	4	Memorize, understand, analyze	Microbial genetics	The lecture and Discussion	the exams Editorial

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

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

Course Description Form

1. Course Name:

Plant classification

2. Course Code:

0024202

3. Semester / Year:

Second semester / Second year

4. Description Preparation Date:

14/2/2024

5. Available Attendance Forms:

Present way

6. Number of Credit Hours (Total) / Number of Units (Total)

60 hours / 3 Units

7. Course administrator's name (mention all, if more than one name)

Name: Hazim Sultan Safana

Email: Hazim-agr-70@mu.edu.iq

8. Course Objectives

Course Objectives

- Researches plant taxonomy on the principles adopted in plant taxonomy and the applied fields of taxonomy and relationships between plants
- It includes knowledge of the different plant organs through which plant can be classified
- Knowing the vegetative and reproductive characteristics and the importance in plant classification
 - Methods used in plant classification
- Study the evolutionary importance of reproductive organs
- Study of monocotyledonous and dicotyledonous plants

9. Teaching and Learning Strategies

Strategies

Ask students inferential questions
 Establishing training programs
 Finding solutions to the problems and obstacles that students encounter the practical part
 Enabling students to find solutions and applications for crisis situation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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the first	4	Explanations , presentation of the model and lucture	Introduction to plant classification and its importance - the foundations of plant classification and general terminology about classification	Attend	a daily test
the second	4	Explanations , presentation of model and lucture	Applied fields of taxonomy - relationships between plants	Attend	a daily test
the third	4	Explanations , presentation of model and lucture	Classification system ancient and modern classification pattern scientific nomenclature its laws and taxonomic ranks	Attend	a daily test
the fourth	4	Explanations , presentation of model and lucture	Primitive and advanced traits in plant parts vegetative and reproductive traits and their importance in classification	Attend	a daily test
Fifth	4	Explanations , presentation of model and lucture	Installation of floral organs on the floral stem flower symmetry - number of flower ring and number of members in one ring	Attend	a daily test
VI	4	Explanations , presentation of model and lucture	Floral systems - floral equation - Al-Tamish	Attend	a daily test
Seventh	4	Explanations , presentation of model and lucture	Methods of studying taxonomic units comparatively	Attend	a daily test
VIII	4	Explanations , presentation of model and lucture	The evolutionary importance of reproductive parts - non-flowering vascular plants flowering vascular plants	Attend	a daily test
Ninth	4	Explanations , presentation of model and lucture	Evolutionary characteristics of flowering plants - the origin of flowering plants	Attend	a daily test
The tenth	4	Explanations , presentation of model and lucture	Study of plant groups and confirmation of seed plants and the characteristics of families of gymnosperm plants	Attend	a daily test
eleventh	4	Explanations , presentation of model and lucture	Monocot and dicotyledonous plants	Attend	a daily test
twelveth	4	Explanations , presentation of model and lucture	Description of selected families of monocots such as the Najiliyya and the Saidia	Attend	a daily test
Thirteenth	4	Explanations , presentation of model and lucture	Description of selected dicotyledons such as leguminous, mallow, saprophytic, and aspen	Attend	a daily test
fourteenth	4	Explanations , presentation of model and lucture	Description of the Crusader, Compound	Attend	a daily test

			Cucumber, and Solanaceae families		
Fifteenth	4	Explanations , presentation of model and lucture	Plants of the Iraqi environment	Attend	a daily test

11. Course Evaluation

Attendance 5 + Daily exams and assignments 2 + Reports 3 + Practical exam 15 + Monthly exam 25 = 50 quest , The final exam is 20 practical + 30 theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Plant classification, Dr. Hussein Ali Al-Moussawi
Main references (sources)	Recent articles from the Internet and from specialized scientific journals, the Iraqi Agricultural Sciences Journal, and the virtual library
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic References, Websites	Plant taxonomy

Course Description Form

1. Course Name:

Agricultural guidance

2. Course Code:

0C14202

3. Semester / Year:

first Semester / second year

4. Description Preparation Date

12 / 2 / 2024

5. Available Attendance Forms:

In a present way

6. Number of Credit Hours (Total) / Number of Units (Total)

30 hours / 2 units

7. Course administrator's name (mention all, if more than one name)

Name: Alaa Hussein Abed

Email: alaahussein73@mu.edu.iq

8. Course Objectives

Course Objectives

- Teaching and introducing students to the most important link in the agricultural extension system, which is the agricultural extension worker and his role in transferring scientific material from scientific research departments and delivering it to farms with some ease and guidance.
- Teaching students the art of adopting positive ideas in the field of agriculture

9. Teaching and Learning Strategies

Strategy

- A- Cognitive objectives
 B - The program's skill objectives
 1- Graduation research.
 2- Scientific reports
 3- Linking information to engineering reality

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	memorizing, understand practical application	A historical overview of agricultural extension	Lecture and discussion	Oral tests
2	2	memorizing, understand practical application	Types of extension training	Lecture and discussion	Quick exam

3	2	memorizing, understanding, practical application	Communication processes	Lecture and discussion	Oral tests
4	2	memorizing, understanding, practical application	The process of adoption and spread of modern innovations	Lecture and discussion	Quick exams
5	2	memorizing, understanding, practical application	- Rural leadership	Lecture and discussion	Oral tests
6	2	memorizing, understanding, practical application	Planning extension programs	Lecture and discussion	Quick exams
7	2	memorizing, understanding, practical application	- Agricultural extension methods and extension methods	Lecture and discussion	Written exams
8	2	memorizing, understanding, practical application	The philosophy of agricultural extension	Lecture and discussion	Oral tests
9	2	memorizing, understanding, practical application	Rank straight wings. Half - wing rank.	Lecture and discussion	Quick exams
10	2	memorizing, understanding, practical application	The importance of using modern irrigation methods and their economic effects	Lecture and discussion	Oral tests
11	2	memorizing, understanding, practical application	The role of agricultural extension in preserving archaeological areas	Lecture and discussion	Quick exams
12	2	memorizing, understanding, practical application	Water crisis	Lecture and discussion	Oral tests

11. Course Evaluation

Attendance 5 + daily exams and assignments 2 + reports 3 + monthly exam 40 = 50, final exam 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principles of agricultural extension - Abdullah Al-Samarrai
Main references (sources)	Planning extension programs - Abdullah Al-Samarrai 1992 Agricultural Extension Science - Adnan Hussein Al-Gharji 1990
Recommended books and references (scientific journals, reports...)	-Iraqi Agriculture Journal -Magazines dealing with beekeeping -Bulletins issued by agricultural companies
Electronic References, Websites	All agricultural magazine sites

Course Description Form

1. Course Name:

Computer applications 1

2. Course Code:

U014201

3. Semester / Year:

First semester / second year

4. Description Preparation Date:

7/3/2024

5. Available Attendance Forms:

Actual presence

6. Number of Credit Hours (Total) / Number of Units (Total)

30 Hours / 2 Units

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Karrar Hameed Abdulkareem

Email: khak9784@mu.edu.iq

8. Course Objectives

Course Objectives

- The student gets to know Microsoft PowerPoint
- The student should know advantages of Microsoft PowerPoint in real life.
- The student should apply many examples that relative to agriculture sector as well as other sectors.

9. Teaching and Learning Strategies

Strategy

- 1-Explanation and clarification.
- 2- Practical lessons.
- 3- Self-learning method through practical application individually.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	memorizing, understanding, analyzing and applying	Introduction to Microsoft PowerPoint	Explanation, presentation of the model and lecture	Exam
second	2	memorizing, understanding, analyzing and applying	Tabs and groups	Explanation, presentation of the model and lecture	Exam
third	2	memorizing, understanding, analyzing and applying	Tabs and groups	Explanation, presentation of the model and lecture	Exam
fourth	2	memorizing, understanding, analyzing and applying	Practical Examples	Practical session	Exam

			and applying			
Fifth	2	memorizing, understanding, analyzing and applying	Practical Examp	Practical session	Exam	
Sixth	2	memorizing, understanding, analyzing and applying	Tables	Explanation, presentation of the model and lecture	Exam	
Seventh	2	memorizing, understanding, analyzing and applying	Deals with moving	Explanation, presentation of the model and lecture	Exam	
Eighth	2	memorizing, understanding, analyzing and applying	Deals with moving	Explanation, presentation of the model and lecture	Exam	
Ninth	2	memorizing, understanding, analyzing and applying	Shapes, smartart and charts	Explanation, presentation of the model and lecture	Exam	
Tenth	2	memorizing, understanding, analyzing and applying	Practical Examp	Practical session	Exam	
Eleventh	2	memorizing, understanding, analyzing and applying	Practical Examp	Practical session	Exam	
Twelfth	2	memorizing, understanding, analyzing and applying	Shapes, smartart and charts	Explanation, presentation of the model and lecture	Exam	
Thirteen	2	memorizing, understanding, analyzing and applying	Shapes, smartart and charts	Explanation, presentation of the model and lecture	Exam	
fourteen	2	memorizing, understanding, analyzing and applying	Practical Examp	Practical session	Exam	
Fifteenth	2	memorizing, understanding, analyzing and applying	Practical Examp	Practical session	Exam	

11. Course Evaluation

1-Theoretical tests	25
2- Practical tests	15
3- Reports and studies	10
4- Final exam	50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- Microsoft Excel 2016 Step by Step 1st Edition by Curtis Frye 2- Microsoft Excel 2016 prepared by Muhammad Malik
Recommended books and references (scientific journals, reports...)	
Electronic References, Website	https://edu.gcfglobal.org/en/powerpoint2010/slide-basics/1

Course Description Form

1. Course Name:					
Biotechnology					
2. Course Code:					
0024303					
3. Semester / Year:					
Second semester / third year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Assist prof. Dr. Difaf jabbar shamran Email: dhifaf15@mu.edu.iq					
8. Course Objectives					
Course Objectives	Learn about biotechnology • Study of nucleic acids and their structure • Study gene expression and ways to regulate it • Knowledge of life technologies used genetic engineering • Identify methods of rearranging nucleic acids and transferring genes between different species and races • Identify applications life technologies in agricultural, medical, industrial and other various fields				
9. Teaching and Learning Strategies					
Strategies	<p style="text-align: center;">A- Cognitive objectives</p> <p style="text-align: center;">1- Learn about life technologies</p> <p style="text-align: center;">2- Recognizing the importance of life technologies</p> <p style="text-align: center;">3- The reasons that led to the development of biotechnology</p> <p style="text-align: center;">4- Identify the methods of genetic expression of different genes and the specialization occurring in cells.</p> <p style="text-align: center;">5- The student will learn genetic engineering techniques, genetic modification methods, and the possibility of using them in the field of plant protection from pathogens.</p> <p style="text-align: center;">B- Skills goals</p> <p style="text-align: center;">1- Students' knowledge of nucleic acid extraction techniques</p> <p style="text-align: center;">2- Identify methods of amplifying DNA using PCR technology</p> <p style="text-align: center;">3- Identify methods of electrophoresis to cut DNA</p> <p style="text-align: center;">4- Identify the bioreactors used in biomanufacturing</p>				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	4		Introduction to the science of life technologies, the stages of its development, and the reasons for its development	Attend	a daily test
the second	4		Experiments to prove genetic material, the structure of DNA, and the difference between eukaryotes and prokaryotes	Attend	a daily test

the third	4		RNA structure, its different types and the differences between them	Attend	a daily test
the fourth	4		DNA replication enzymes involved in replication and the stages of replication	Attend	a daily test
Fifth	4		Gene expression, mRNA cloning, its stages and trimming processes	Attend	a daily test
sixth	4		Monthly exam	Attend	a daily test
Seventh	4		Genetic expression, translation, protein synthesis, stages of polypeptide formation and subsequent processes	Attend	a daily test
VIII	4		Regulation of gene expression, types of genes, induced and repressor expression, the concept of the operon, examples of it	Attend	a daily test
Ninth	4		Introduction to genetic engineering	Attend	a daily test
The tenth	4		Plasmids vectors	Attend	a daily test
eleventh	4		Cloning methods for inserting genes into cells	Attend	a daily test
twelfth	4		Nanotechnology and its types of uses	Attend	a daily test
Thirteenth	4		Monthly exam	Attend	a daily test
fourteenth	4		Bioreactors Biofuels		
Fifteenth	4		Comprehensive exam		

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)	Plant biotechnology, K. G. RAMAWAT Udaipur-India
Recommended books and references (scientific journals, reports...)	Iraqi academic books and journals
Electronic References, Websites	All websites related to life technologies Wikipedia, NCBI

Course Description Form

1. Course Name:					
Insect physiology					
2. Course Code:					
0014305					
3. Semester / Year:					
First semester /Third					
4. Description Preparation Date:					
27 \2\ 2024					
5. Available Attendance Forms					
: In person					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Khalid Jaber AbdelRazzaq					
Email: khadry.ahmed@mu.edu.iq					
8. Course Objectives :					
Course Objective	To introduce the importance of insect physiology, its basics, practical applications, and the functions of insect body organs.				
9. Teaching and Learning Strategies					
Strategy	1-Sudden daily and continuous weekly tests 2-Exercises and activities in the classroom 3- Directing students to some websites				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorize, understand. analysis	The body wall in insects: its importance in the life of insects and its components, moulting in insects.	Lecture and discussion	Written test
2	4	Memorize, understand. analysis	Digestive system: - The physiological functions of the parts of the digestive canal, absorptive digestion, the role of living organisms in digesting food materials.	Lecture and discussion	Written tests
3	4	Memorize, understand. analysis	Excretory system in insects: the typical excretory system Methods of removing toxic and excess substances, the role of the device in water balance.	Lecture and discussion	Written tests
4	4	Memorize, understand. analysis	Respiratory system: How to breathe in terrestrial and aquatic parasitic insects	Lecture and discussion	Written tests

5	4	Memorize, understand. analysis	Circulatory system: Description of the system, blood and its chemical components	Lecture and discussion	Written tests
6	4	Memorize, understand. analysis	Functions of blood cells and blood plasma	Lecture and discussion	Written tests
7	4	Memorize, understand. analysis	The nervous system in insects: Description of the system	Lecture and discussion	Written tests
8	4	Memorize, understand. analysis	Method of transmitting nerve signals and sense organs	Lecture and discussion	Written tests
9	4	Memorize, understand. analysis	The reproductive system in insects and reproductive organs	Lecture and discussion	Written tests
10	4	Memorize, understand. analysis	How eggs and sperm are formed in the female and male systems	Lecture and discussion	Written tests
11	4	Memorize, understand. analysis	Hormones: their types	Lecture and discussion	Written tests
12	4	Memorize, understand. analysis	The role of hormones in growth,	Lecture and discussion	Written tests
13	4	Memorize, understand. analysis	development, reproduction and insect growth regulators	Lecture and discussion	Written tests
14	4	Memorize, understand. analysis	Pheromones: their types, their role in the life of the insect.	Lecture and discussion	Written tests

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)	Insect physiology\Dr. Thabet Abdel Moneim Al-Darkzali
Main references (sources)	Lectures of insect physiology by (Raad Fadh 2010)
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	All entomology e-journals

Course Description Form

1. Course Name:					
Parasitic Nematodes					
2. Course Code:					
0024304					
3. Semester / Year: 2024					
Second semester / third year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ahmed Shamkhi Jabbar Email: ahmedshmky65@mu.edu.iq					
8. Course Objectives					
Course Objectives	<ul style="list-style-type: none"> • Identify nematode diseases that affect plants and their life cycle • Knowing how to isolate and diagnose nematodes in the laboratory • Knowing the appropriate methods to combat caecilians, whether using agricultural or natural methods, using biological or chemical methods, or using resistant varieties. • Identify the role of nematodes as vectors of viral and bacterial diseases and how to prevent and reduce infection in the field • It highlights the skill of field dealing with farms in explaining problems of nematode diseases and methods of controlling them 				
9. Teaching and Learning Strategies					
Strategy	By using theoretical lectures and practical lessons in the laboratory and field visits to the fields, using illustrative images and videos related to scientific subject, as well as searching the Internet to solve the questions posed by the teacher and holding a discussion circle on the topics presented.				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical and 2 practical	Definition of (nematodes)	Nematodes	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
2	2 theoretical and 2 practical	nematodes	The economic importance of caecilians as important pests	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
3	2 theoretical and 2 practical	nematodes	Its general features - the nature of its presence and spread, with a focus on plant nematodes	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
4	2		Study of important	Using	Exams,

	theoretical and 2 practical	nematodes	morphological characteristics in terms of size and shape	PowerPoint, field visits, and student discussions	reports, discussions, quizzes
5	2 theoretical and 2 practical	nematodes	External - body wall, digestive tract (oral cavity - esophagus - intestine....)	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
6	2 theoretical and 2 practical	nematodes	The excretory system - the reproductive system - the nervous system and the sense organs	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
7	2 theoretical and 2 practical	nematodes	Classification of plant nematodes, with a study and description of the common and important genera of the Iraqi nematode	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
8	2 theoretical and 2 practical	nematodes	Environmental factors and their relationship to nematode activity and reproduction	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
9	2 theoretical and 2 practical	nematodes	Soil and its various qualities - moisture - temperature - nutrition	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
10	2 theoretical and 2 practical	nematodes	Plant hosts, disease symptoms caused by nematode infection and the resulting damage	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
11	2 theoretical and 2 practical	nematodes	Study of the widespread and important diseases caused by nematodes in terms of their spread factors and symptoms	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
12	2 theoretical and 2 practical	nematodes	The nature of the nematode damage that causes the disease - its reproduction and life cycle	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
13	2 theoretical and 2 practical	nematodes	Methods of prevention, reducing infection, and resistance to parasites, especially those diseases caused by some common species.	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes

14	2 theoretical and 2 practical	nematodes	Transmission of some plant phytophages by caecilians and the relationship between them, methods of resistance to caecilians (nematode pests)	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes
15	2 theoretical and 2 practical	nematodes	Resistance through agricultural and biological methods - resistance through natural methods - resistant varieties and strains - chemical resistance using pesticides	Using PowerPoint, field visits, and student discussions	Exams, reports, discussions, quizzes

11. Course Evaluation

A theoretical monthly exam of 30 marks, divided into 25 marks, a written exam and 5 marks distributed between the daily and oral exams and reports, and a practical exam of 20 marks divided into 15 marks for the monthly exam and 5 marks distributed as in the theoretical exam.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Books available
Main references (sources)	<ul style="list-style-type: none"> - Abu Gharbia, Walid Ibrahim, Ahmed Saad Al-Hazmi, Zuhair Aziz Estefan and Ahmed Abdel Samie Dawab (2010). Plant Nematodes in Arab Countries (Parts One and Two), Dar Wael for Publishing and Distribution, 824 pages. - Al-Hazmi, Ahmed Saad (2009). Introduction to plant nematology. Scientific Publishing and Press, King Saud University, Kingdom of Saudi Arabia, 440 pages. - Sharif, Fayyad Muhammad (2012). Nematode diseases of plants and primary animals. Al-Dhakra Publishing and Distribution, Baghdad, Iraq, 248 pages. - Othman, Ahmed Ahmed (2008) The World of Nematodes: The Problem - The Solution. Arab Publishing and Distribution House, Cairo, Arab Republic of Egypt, 600 pages.
Recommended books and references (scientific journals, reports...)	<ul style="list-style-type: none"> - Journals dealing with nematology - Bulletins issued by agricultural companies
Electronic References, Websites	- All Arab and international agricultural journal websites published in English

Course Description Form

1. Course Name:					
Bees breeding					
2. Course Code:					
0024307					
3. Semester / Year:					
Second Semester / 2024					
4. Description Preparation Date					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Alaa Hussein Abed					
Email: alaahussein73@mu.edu.iq					
8. Course Objectives					
Course Objectives	<ul style="list-style-type: none"> • Study of modern methods in beekeeping • Study the philosophy of beekeeping • The importance of the study of beekeeping • Knowledge of pest control methods affecting the bee population <ul style="list-style-type: none"> • Identify the bees • Identify ways to sort honey • Benefits of bee range products 				
9. Teaching and Learning Strategies					
Strategy	<p style="text-align: center;">A-Cognitive objectives</p> <p>A-1: Identify the members of the honeybee community</p> <p>A-2: Identify the philosophy and principles of beekeeping</p> <p style="padding-left: 40px;">Collect information on beekeeping programs</p> <p>A-4 that the student mastered how to beekeeping.</p> <p>A-5 to be able to find solutions in the case of epidemic diseases that affect honey bees and methods of treatment.</p> <p style="text-align: center;">B- the skills objectives of the program:</p> <p>B-1 - Students' knowledge of honey bee breeding and screening programs</p> <p>B-2 - take the decision quickly to control pests that affect honeybees</p> <p>B-3 - access to the information network and knowledge of modern beekeeping</p> <p>B-4 - Using modern technology in sorting honey</p> <p>B - 5 - To master the use of modern methods and advanced in education.</p>				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	Save, understand, practical application	Historical basis of beekeeping, economic importance of beekeeping, bee species, hierarchy of bees	Lecture and discussion	Oral tests
2	4	Save, understand, practical application	Honey bee strains, genetic characteristics adopted for the diagnosis of bee strains, good qualities of honey - producing strains	Lecture and discussion	Quick exam
3	4	Save, understand, practical application	External anatomy of the body of the bees (head and appendages, chest and appendages, abdomen and appendages)	Lecture and discussion	Oral tests
4	4	Save, understand, practical application	The digestive system and its accessories, the mechanics of digestion, the method of converting nectar to honey, the output device (sections, work and its role in the disposal of toxic substances and waste), bee glands	Lecture and discussion	Quick exam
5	4	Save, understand, practical application	Circulatory system, sections, functions, respiratory system, sections, respiratory stomata and distribution, nervous system	Lecture and discussion	Oral tests
6	4	Save, understand, practical application	Exam month only	Lecture and discussion	Quick exam
7	4	Save, understand, practical application	Female reproductive system, divisions, factors affecting the rate of egg count laid by the queen, male reproductive system, divisions	Lecture and discussion	Written exam
8	4	Save, understand, practical application	Life of members of the bee (queen, worker, male)	Lecture and discussion	Oral tests
9	4	Save, understand, practical application	The various phenomena in the life of members of the sect (expulsion, false mothers, theft) causes, signs of emergence, methods of control	Lecture and discussion	Quick exam
10	4	Save, understand, practical application	The basic rules for the establishment of apiary, the foundations of beekeeping, the catalysts for the success of standard beekeeping	Lecture and discussion	Oral tests

11	4	Save, understand, practical application	The importance of bees in the mixed pollination of plants, the number of beehives needed for pollination per unit area planted.	Lecture and discussion	Quick exam
12	4	Save, understand, practical application	Monthly Exam	Lecture and discussion	Oral tests
13	4	Save, understand, practical application	Diseases of bees	Lecture and discussion	Quick exam
14	4	Save, understand, practical application	Effect of chemical pesticides on honey bees, and methods of protecting bees from pesticide risk	Lecture and discussion	Oral tests
15	4	Save, understand, practical application	Birds harmful to grain in the stores and the most important types, the importance of agricultural and the most important damage and types of control methods used against them.	Lecture and discussion	Quick exam

11. Course Evaluation

Daily exam ; 10 grades
Daily activity ; 10 grades
Homework ; 10 grades
Reports ; 10 grades
Monthly exam ; 60 grades

12. Learning and Teaching Resources

Required textbooks (curricular books, any)	Bee Breeding and Silkworm / D. Louay Karim Al-Naji
Main references (sources)	1-Bee Breeding with modern ways / Said Al- Tazyi 2-Honey Bee Breeding / D. Hassan Ben Talib Al-loati
Recommended books and references (scientific journals, reports...)	-Iraqi Agriculture Journal -Magazines dealing with beekeeping -Bulletins issued by agricultural companies
Electronic References, Websites	All agricultural magazine sites

Course Description Form

1. Course Name:					
Design and analysis of experiments					
2. Course Code:					
0C14301					
3. Semester / Year:					
First semester / third year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ali Ajil Jassim Email: aliajil2005@mu.edu.iq					
8. Course Objectives					
Course Objectives	<ul style="list-style-type: none"> * Teaching the student that there are areas that depend on conducting experiments, and these experiments must be designed on scientific foundations * Analyzing experiments according to scientific methods and logical steps * Obtaining accurate results of the experiment leads to making the appropriate decision * Teaching the student many types of designs, as each experiment has specific design * Teaching the student how to test the significance of each mathematical model * Teaching the student that there are tests conducted before the experiment and tests proposed after the experiment * Teaching the student that there are values that can be lost during the experiment and that they can be estimated 				
9. Teaching and Learning Strategies					
Strategy	<p style="text-align: center;">A- Cognitive objectives</p> <ul style="list-style-type: none"> * Enables the student to understand the nature of experiments * Enabling the student to distinguish between each design and another * Enabling the student to focus on the importance and types of factorial experiments <ul style="list-style-type: none"> * Enabling the student to know integration and its types * Teach the student when to use the split plot design <p style="text-align: center;">B- The program's skill objectives</p> <ul style="list-style-type: none"> * Skills for dealing with various types of experiences * Skills to distinguish between types of experiments and choose the correct mathematical model * Skills in using many types of experiments in practical applications 				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical application	A historical overview of statistics, definition of statistics, division of statistics	Lecture and discussion	Oral exams
2	4	Memorization,	Measures of central	Lecture and	Quick exam

		understanding, practical application	tendency, measures of centralization	discussion	
3	4	Memorization, understanding, practical application	Measures of dispersion	Lecture and discussion	Oral exams
4	4	Memorization, understanding, practical application	Hypothesis testing, statistical errors, hypothesis t-test	Lecture and discussion	Quick exam
5	4	Memorization, understanding, practical application	Chi-square test	Lecture and discussion	Oral exams
6	4	Memorization, understanding, practical application	General concepts and definitions in designing and analyzing experiments	Lecture and discussion	Quick exam
7	4	Memorization, understanding, practical application	Types of agricultural experiments, complete randomized design	Written exam	Written exam
8	4	Memorization, understanding, practical application	Means testing	Lecture and discussion	Oral exams
9	4	Memorization, understanding, practical application	Randomized complete block design	Lecture and discussion	Quick exam
10	4	Memorization, understanding, practical application	Latin square design	Lecture and discussion	Oral exams
11	4	Memorization, understanding, practical application	Factorial experiments, factorial experiments with two factors	Lecture and discussion	Quick exam
12	4	Memorization, understanding, practical application	Factorial experiments with three factors	Lecture and discussion	Oral exams
13	4	Memorization, understanding, practical application	Split plot design, with two factors	Lecture and discussion	Quick exam
14	4	Memorization, understanding, practical application	Split-plot design, with three factors	Lecture and discussion	Oral exams
15	4	Memorization, understanding, practical application	Correlation and simple linear regression	Written exam	Written exam

11. Course Evaluation

- Theoretical tests: (daily exams - monthly exams - oral exams)
- Practical tests: (daily exams - monthly exams - oral exams)
- Theoretical and practical reports
- Models for examination and practical experiments

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Design and analysis of experiments / Al-Rav and Khalfulla, 2000
Main references (sources)	
Recommended books and references (scientific)	-Books specialized in designing agricultural

journals, reports...)	experiments
Electronic References, Websites	Articles published by academic and professional journals

Course Description Form

1. Course Name:					
Mycology II					
2. Course Code:					
0024302					
3. Semester / Year:					
the second semester / third year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ali Faraj Jubair Email: alifj80@mu.edu.iq					
8. Course Objectives					
Course Objectives	<ul style="list-style-type: none"> • Teaching students about the types of ascomycetes basidiomycetes, and imperfect fungi that infect economic plants. • Determine the economic importance of the benefits and harms caused these fungi. • Identify various environmental factors and their impact on the spread fungi. • Identify the classes, orders, families, and individuals of these groups fungi that infect plants in particular. <ul style="list-style-type: none"> • Pathological symptoms caused by pathogenic fungi. • Finding the best ways to combat diseases through methods (chemical, biological, integrated control programs) 				
9. Teaching and Learning Strategies					
Strategy	<p style="text-align: center;">A- Cognitive objectives</p> <ul style="list-style-type: none"> * The student gets to know the diseases that affect plants and their names * To try to find out how pathogens are transmitted from one field to another or how the pathogen spreads through the same field. * The student must master how to prevent and control the occurrence of diseases. <ul style="list-style-type: none"> * To be able to find solutions in cases of rapidly spreading epidemic diseases and ways to control them. * Identify quick methods for diagnosing fungal infections of plants. * The student must master how to disseminate the information obtained controlling the disease. <p style="text-align: center;">B - The skills objectives of the course.</p> <ul style="list-style-type: none"> * The student must master how to diagnose these diseases. * The student will be able to treat fungal infections that affect various plants. <ul style="list-style-type: none"> * To be proficient in using pest control machines. * To be proficient in using modern and advanced methods of pest control 				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding,	Ascomycete fungi	Lecture and discussion	Oral exams

		practical application			
2	4	Memorization, understanding, practical application	Spherical ascomycete fungi	Lecture and discussion	Quick exam
3	4	Memorization, understanding, practical application	Ascomycete fungi with bottle-fruited fruits	Lecture and discussion	Oral exams
4	4	Memorization, understanding, practical application	Cup fungi	Lecture and discussion	Quick exam
5	4	Memorization, understanding, practical application	Basidiomycetes	Lecture and discussion	Oral exams
6	4	Memorization, understanding, practical application	Basidiom and types of fruiting bodies	Lecture and discussion	Quick exam
7	4	Memorization, understanding, practical application	Classifications of basidiomycetes	Written exam	Written exam
8	4	Memorization, understanding, practical application	Order of Rusts	Lecture and discussion	Oral exams
9	4	Memorization, understanding, practical application	Order of smut fungi	Lecture and discussion	Quick exam
10	4	Memorization, understanding, practical application	Class hymenobasidiomycetes	Lecture and discussion	Oral exams
11	4	Memorization, understanding, practical application	Order Agaricales	Lecture and discussion	Quick exam
12	4	Memorization, understanding, practical application	Division of Imperfect Fungi	Lecture and discussion	Oral exams
13	4	Memorization, understanding, practical application	Ranking of imperfect fungi	Lecture and discussion	Quick exam
14	4	Memorization, understanding, practical application	Imperfect fungal families	Lecture and discussion	Oral exams
15	4	Memorization, understanding, practical application	The most important types of imperfect fungi	Written exam	Written exam

11. Course Evaluation

- Theoretical tests: (daily exams - monthly exams - oral exams)
- Practical tests: (daily exams - monthly exams - oral exams)
- Theoretical and practical reports
- Models for examination and practical experiments

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

1. Principles of fungi and their plant disease/ Mahdi Alshukri
2. fungi / AlSuhaili etal 1990

Main references (sources)	Basic of fungi/Abdulaziz Nukhailan
Recommended books and references (scientific journals, reports...)	- All Biological, Mycology Journals
Electronic References, Websites	- All e-journals (Mycology, Agricultural, Biological)

Course Description Form

1. Course Name:					
Plant diseases (Plant pathology)					
2. Course Code:					
0024301					
3. Semester / Year:					
Second semester / third year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ali Faraj Jubair Email: alifj80@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Introducing the student to the various types of diseases that affect plants (fungal, bacterial, viral, nematode, and physiological). • Determine the economic importance of these diseases • Identify various environmental factors and their impact on the spread of infectious plant diseases • Pathological symptoms caused by these diseases • Finding the best ways to combat diseases through methods (natural, applied, mechanical, agricultural, biological, legislative, chemical, genetic integrated control programs) 			
9. Teaching and Learning Strategies					
Strategy		<p>A- Cognitive objectives</p> <ul style="list-style-type: none"> * The student gets to know the diseases that affect plants and their names * To try to find out how pathogens are transmitted from one field to another or how the pathogen spreads through the same field. * The student must master how to prevent and control the occurrence of diseases. * To be able to find solutions in cases of rapidly spreading epidemic diseases and ways to control them. * Learn about modern methods of disease diagnosis and control. * The student must master how to disseminate the information obtained from disease control. <p>B - The skills objectives of the course.</p> <ul style="list-style-type: none"> * The student must master how to diagnose these diseases. * The student will be able to treat diseases that affect plants * To be proficient in using disease control machines. * To be proficient in using modern and advanced methods of pest control 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical application	History of the development of plant pathology introduction	Lecture and discussion	Oral exams
2	4	Memorization,	Some definitions and	Lecture and	Quick exam

		understanding, practical application	terms in plant diseases	discussion	
3	4	Memorization, understanding, practical application	Living standards of living organisms	Lecture and discussion	Oral exams
4	4	Memorization, understanding, practical application	Stages of disease development	Lecture and discussion	Quick exam
5	4	Memorization, understanding, practical application	development Diagnosing the pathogen and the host's response to the infection	Lecture and discussion	Oral exams
6	4	Memorization, understanding, practical application	Division of pathogens	Lecture and discussion	Quick exam
7	4	Memorization, understanding, practical application	Written exam	Written exam	Written exam
8	4	Memorization, understanding, practical application	The effect of pathogens on their hosts and Means of spread of pathogens	Lecture and discussion	Oral exams
9	4	Memorization, understanding, practical application	Resistance and defenses of the plant host against pathogens	Lecture and discussion	Quick exam
10	4	Memorization, understanding, practical application	Methods of controlling plant diseases	Lecture and discussion	Oral exams
11	4	Memorization, understanding, practical application	Fungi and the diseases they cause	Lecture and discussion	Quick exam
12	4	Memorization, understanding, practical application	Bacteria and the diseases they cause	Lecture and discussion	Oral exams
13	4	Memorization, understanding, practical application	Plant viruses and the diseases they cause	Lecture and discussion	Quick exam
14	4	Memorization, understanding, practical application	Other pathogens and the diseases they cause	Lecture and discussion	Oral exams
15	4	Memorization, understanding, practical application	Written exam	Written exam	Written exam

11. Course Evaluation

- Theoretical tests: (daily exams - monthly exams - oral exams)
- Practical tests: (daily exams - monthly exams - oral exams)
- Theoretical and practical reports
- Models for examination and practical experiments

12. Learning and Teaching Resources

Required textbooks (curricular books, if any) | 1. The basics of fungi and their diseases / Dr.

	Majeed al-Shukri 2. Diseases of field crops / Dr. Maysar Zarzis
Main references (sources)	- Iraqi Agriculture Journal - Journals dealing with diseases of all field crops - Bulletins issued by agricultural companies and pesticide companies
Recommended books and references (scientific journals, reports...)	- All agricultural sites and crop disease journals
Electronic References, Websites	- World Wide Web

Course Description Form

1. Course Name:					
Weed control					
2. Course Code:					
0024306					
3. Semester / Year:					
Second semester / third year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Associate Professor Dr. Husam Saadi Mogammed Email: husam.saadi@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> Identification Protection Control Production quality and quantity improvement 			
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> Tutorials Q&A discussions Lectures Practicals 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical application	Introduction/concept	Lecture and discussion	Oral exams
2	4	Memorization, understanding, practical application	Specifications of jungle plants	Lecture and discussion	Quick exam
3	4	Memorization, understanding, practical application	Additional specifications for the jungle	Lecture and discussion	Oral exams
4	4	Memorization, understanding, practical application	Specifications of bush seeds	Lecture and discussion	Quick exam
5	4	Memorization, understanding, practical application	The phenomenon of stillness	Lecture and discussion	Oral exams
6	4	Memorization, understanding, practical application	Jungle classification is natural	Lecture and discussion	Quick exam
7	4	Memorization, understanding, practical application	Industrial classification of jungles	Written exam	Written exam

8	4	Memorization, understanding, practical application	Methods of bush reproduction	Lecture and discussion	Oral exams
9	4	Memorization, understanding, practical application	Means of spreading bushes	Lecture and discussion	Quick exam
10	4	Memorization, understanding, practical application	Preventive means to reduce the spread	Lecture and discussion	Oral exams
11	4	Memorization, understanding, practical application	Mechanical control methods	Lecture and discussion	Quick exam
12	4	Memorization, understanding, practical application	Biological control methods	Lecture and discussion	Oral exams
13	4	Memorization, understanding, practical application	Agricultural practices	Lecture and discussion	Quick exam
14	4	Memorization, understanding, practical application	Chemical method	Lecture and discussion	Oral exams
15	4	Memorization, understanding, practical application	Integrated and sustainable pest control	Written exam	Written exam

11. Course Evaluation

- 1- Theoretical (monthly): 25%
- 2- Practical (monthly): 10%
- 3- Report and attendance: 5%
- 4- Daily tests: 10%
- 5- Final: 50%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	College books
Main references (sources)	Published research
Recommended books and references (scientific journals, reports...)	Scientific journals & reports
Electronic References, Websites	Professional, government & institutional publications

Course Description Form

1. Course Title:					
Biochemistry					
2. Course Code					
0014301					
3. Semester / Year					
Second / autumn					
4. The history of preparation of this description					
26/2/2024					
5. Available Attendance Forms					
Came					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2 hours theoretical and 3 hours practical Number of units 3					
7. Course administrator's name (if more than one name)					
Name: Prof. Jassim Qasim Manati Email: jasimiraqe@mu.edu.iq					
8. Course Objectives					
<ul style="list-style-type: none"> • Introducing the student to the importance of biochemistry • Carbohydrate study • Study of amino acids • Study of lipids • Nucleic acid study 			Course Objectives:		
9. Teaching and Learning Strategies					
Audio methods (teaching explanation of the subject) Blackboard writing style The method of direct dialogue between the teacher and the student with the evaluation of student in the classroom participations					Strategy
10. Course Structure					
Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Rapid exam	Lecture	Carbohydrates - definition - sections	Theoretical lecture	4	1
Rapid exam	Lecture	Monosaccharides	Theoretical lecture	4	2
Rapid exam	Lecture	Low polysaccharides	Theoretical lecture	4	3
Rapid exam	Lecture	Polysaccharides	Theoretical lecture	4	4
First month exam	Theoretical exam	Examination	examination	4	5
Rapid exam	Lecture	Amino acids – their divisions – their interactions	Theoretical lecture	4	6

Rapid exam	Lecture	Proteins - their structure - construction - their divisions	Theoretical lecture	4	7
Rapid exam	Lecture	Fatty acids – their divisions – their interactions	Theoretical lecture	4	8
Rapid exam	Lecture	Simple sinters – their composition – their sections	Theoretical lecture	4	9
Second month exam	Theoretical exam	examination	examination	4	10
Rapid exam	Lecture	Compound and derived lipids - their composition - their divisions	Theoretical lecture	4	11
Rapid exam	Lecture	Nucleic acids, their importance	Theoretical lecture	4	12
Rapid exam	Lecture	Installation, Sections	Theoretical lecture	4	13
Rapid exam	Lecture	Enzymes, their qualities	Theoretical lecture	4	14
Rapid exam	Lecture	Factors affecting it	Theoretical lecture	4	15

11. Course Evaluation

Distributing the score 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

Foundations of Biochemistry Ali Aldaoudi	Required textbooks (methodology, if any)
Integrated Biochemistry Hohn W. Pelley	Main references (sources)
List of chemistry journals	Recommended books and references (scientific journals, reports...)
https://www.chemistry1science.com/2018/08/2-pdf-44.html	Electronic References, Websites

Course Description Form

1. Course Name:					
Plant genetics					
2. Course Code:					
0014303					
3. Semester / Year:					
First semester/ Third					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Mohanad . T . Muften Email: mohanadturki@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Training students to apply the basic laws of Mendelian inheritance, and testing the extent to which the results match Mendel's laws using genetic hypotheses using the Chi-square test. • Identify some genetic concepts such as genetic interaction, genetic crossing over, linkage, and others • Teaching students the concepts of cytoplasmic inheritance and maternal influences • Teaching students the basic principles of clan inheritance • Teaching students the concepts of genetics and applications of quantitative genetics 			
Teaching and Learning Strategies					
Strategy		<p>A- Cognitive objectives</p> <ul style="list-style-type: none"> * The student learns about the concept of genetics * The student learns about Mendel's laws and mutations in Mendelian ratios * The student is able to solve exercises in the field of genetics using Mendel's laws, and ensure that the results from Mendel's laws match using the chi-square test. * The student will be trained to apply the most important genetic concepts in the laboratory * The student will be familiar with the most important applications of genetics in the field of plant breeding and improvement <p>B - Course-specific skills.</p> <ul style="list-style-type: none"> * Training the student to solve exercises using Mendel's laws * Enabling students to use the various techniques used in the field of reliance on genetic material and genetic variation among plants * Training students to use genetic concepts in plant breeding and improvement. 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	Genetics, its development, and the relationship of genetics to other sciences	Plant genetics	Lecture and discussion	Oral exams
2	4	Introducing the student to Mendel's first law, Mendel's second law, and an introduction to genetic	Plant genetics	Lecture and discussion	Quick exam
3	4	The student gets to know the types of genetic action	Plant genetics	Lecture and discussion	Oral exams
4	4	Genetic hypothesis and goodness-of-fit test (chi-square) with Mendelian	Plant genetics	Lecture and discussion	Quick exam
5	4	Learn about sex determination systems in living organisms, sex-linked genetics	Plant genetics	Lecture and discussion	Oral exams
6	4	Sex-determined inheritance, sex-influenced inheritance	Plant genetics	Lecture and discussion	Quick exam
7	4	The student learns what genetic crossing over, multiple genetic linkage, and chromosomal mapping	Plant genetics	Written exam	Written exam
8	4	Multiple allele inheritance	Plant genetics	Lecture and discussion	Oral exams
9	4	Nonlinear inheritance and the factors affecting it	Plant genetics	Lecture and discussion	Quick exam
10	4	Learn about the cell cycle and division process	Plant genetics	Lecture and discussion	Oral exams
11	4	The student will learn about the production of DNA, protein, and genetic code	Plant genetics	Lecture and discussion	Quick exam
12	4	Identify the equipment used in genetics laboratories	Plant genetics	Lecture and discussion	Oral exams
13	4	Application of genetic foundations in the field of plant breeding and improvement	Plant genetics	Lecture and discussion	Quick exam
14	4	The student learns the relationship between genes	Plant genetics	Lecture and discussion	Oral exams
15	4	Teaching the student what mutations are, their effects, and their benefits	Plant genetics	Written exam	Written exam

11. Course Evaluation

- Theoretical tests: (daily exams - monthly exams - oral exams)
- Practical tests: (daily exams - monthly exams - oral exams)

- Theoretical and practical reports
- Models for examination and practical experiments

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Adnan Hassan Muhammad (1982) Basics of Genetics. Dar Al-Kutub for Printing and Publishing. Mosul
Main references (sources)	Shawqi, Ahmed Shawqi, Fathi Muhammad Abd al-Tawab, and Ali Zain al-Abidin, Id al-Salam. 1993. Principles of genetics translated book. Arab House for Publishing and Distribution. Cairo
Recommended books and references (scientific journals, reports...)	- All agricultural magazine sites and plant genetics magazines
Electronic References, Websites	- Websites concerned with genetic sciences

Course Description Form

1. Course Name:					
English course					
2. Course Code:					
U014301					
3. Semester / Year: Semester					
Second semester / thirds year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
The presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours / 2 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Lafta Awad Atshan Email: lafta.awad@mu.edu.iq					
8. Course Objectives					
Course Objectives		Teaching students skills • Trying to employ the English language to serve the school curriculum • Teaching students skills that help them pass international language tests • Motivating students to research foreign sources			
9. Teaching and Learning Strategies					
Strategy		Students are taught English language skills such as listening, reading, writing, and grammar through available learning methods such as project in classrooms, homework, direct discussion methods, quick tests, and oral and written exams.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Memorization,	Sentences strictures	The presence	Daily tests
2	2	understanding,	Past tense	The presence	Daily tests
3	2	practical application	Past simple	The presence	Daily tests
4	2	Memorization,	Past continuous	The presence	Daily tests
5	2	understanding,	Present tenses	The presence	Daily tests
6	2	practical application	Present Simple	The presence	Daily tests
7	2	Memorization,	Present continuous	The presence	Daily tests
8	2	understanding,	Future tense	The presence	Daily tests
9	2	practical application	Future simple	The presence	Daily tests
10	2	Memorization,	Paragraphs writing	The presence	Daily tests
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)			Cambridge English: Preliminary		
Recommended books and references (scientific journals, reports...)			Cambridge English: Preliminary		
Electronic References, Websites			An English videos		

Course Description Form

1. Course Name:					
Ecology					
2. Course Code:					
0014304					
3. Semester / Year: Semester					
First / third year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Saleh Shehab Sabah Email: saleh.sabah79@mu.edu.iq					
8. Course Objectives					
Course Objectives		<p>1: Introducing the student to the most important environmental factors that affect a living organism and the extent of the impact .</p> <p>2: This course aims to introduce the student to the concept of ecology - the departments of ecology, its various components, and the relationships between living organisms .</p> <p>3: Knowing the economy of nature and monitoring the relationships of an animal through the organic and the inorganic</p>			
9. Teaching and Learning Strategies					
Strategy		<p>Training students in a practical study of the characteristics of plant communities</p> <p>Identify different types of environments</p> <p>Learn about ecosystems, tropical forests, savannas, deserts, plains, Deciduous forests, cone forests, marshes.</p> <p>Training students to use and read environmental maps of different regions.</p> <p>Providing students with the basics and lectures related to the subject.</p> <p>Using point power presentation methods for the purpose of delivery</p> <p>The information is well and clear to the student.</p> <p>Urging students to go to the library by asking them to submit reports</p> <p>Scientific knowledge about the topics given to them from the academic subject.</p>			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical	A practical study on the characteristics of plant communities Sampling method and characteristics, natural food chain	The presence	Daily tests
2	4	Memorization, understanding, practical application	Learn about methods and devices for measuring lighting intensity	The presence	Daily tests

3	4	Memorization, understanding, practical application	Analysis of the effect of lighting on the vital activities of horticultural plants	The presence	Daily tests
4	4	Memorization, understanding, practical application	Conduct a study on the effect of lighting on the level of growth and elongation of horticultural plants	The presence	Daily tests
5	4	Memorization, understanding, practical application	Learn about methods and devices for measuring lighting intensity	The presence	Daily tests
6	4	Memorization, understanding, practical application	Water as an environmental factor in plant life. Pictures of water in nature and how plants are affected by it	The presence	Daily tests
7	4	Memorization, understanding, practical application	Dividing plants according to their water needs, the effect of rain on the spread of plants	The presence	Daily tests
8	4	Memorization, understanding, practical application	Winds, their types, air masses and fronts, the effect of winds on plants	The presence	Daily tests
9	4	Memorization, understanding, practical application	Atmospheric pressure, factors that affect.	The presence	Daily tests
10	4	Memorization, understanding, practical application	atmospheric pressure, distribution of	The presence	Daily tests
11	4	Memorization, understanding, practical application	atmospheric pressure and circulation,	The presence	Daily tests
12	4	Memorization, understanding, practical application	main ranges of atmospheric pressure	The presence	Daily tests
13	4	Memorization, understanding, practical application	The climate of Iraq and its impact on the spread of desert plants	The presence	Daily tests
14	4	Memorization, understanding, practical application	Pollution, its types, plant reagents, the role of plants in preserving the environment from pollution	The presence	Daily tests

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)	Ecology, physical factors, biological factors, plant environment, plants and their environments
Recommended books and references (scientific journals, reports...)	Hosting directors of weather station units in order to learn about measuring and reading weather conditions

	and how they will forecast for the coming days.
Electronic References, Websites	Simulating a method of protection from environmental extremes and ways, book Ecology Concepts and Applications, written by Manuel C Molles JR, fourth edition.

Course Description Form

1. Course Name:					
Plant Breeding and Improvement					
2. Course Code:					
0024305					
3. Semester / Year: fourth					
Second semester / third year / plant protection					
4. Description Preparation Date: 2023-2024					
2024/02/14					
5. Available Attendance Forms:					
In person					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Mohammed Hussein Noor Email: Mohammad.noor@mu.edu.iq					
8. Course Objectives					
Course Objective	1- Providing students with general information about analytical chemistry 2- Introducing students to ways to express concentrations and their types 3- Introducing students to strong and weak acids and bases 4- Explaining to students what Buffer's solutions are and their types, with examples 5- Introducing students to the definition of salts and their types, with theoretic examples				
9. Teaching and Learning Strategies					
Strategy	Strategic teaching and learning methods Audio methods (teaching explanation of the topic) Style of writing on the blackboard The method of direct dialogue between the teacher and the student, with student's evaluation in class participation Conduct experiments.				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical application	Plant Breeding and target of plant breeding	Lecture and discussion	Exams , reports, discussions Quizzes
2	4	Memorization, understanding, practical application	Pollination and fertilization	Lecture and discussion	Exams , reports, discussions
3	4	Memorization, understanding, practical application	Reproduction in plant	Lecture and discussion	Exams , reports, discussions
4	4	Memorization, understanding, practical application	Male sterility and self incompatibility	Lecture and discussion	Exams , reports, discussions
5	4	Memorization,	Genetic variation and	Lecture	Exams ,

		understanding, practical application	their relationships with plant breeding	and discussion	reports, discussions
6	4	Memorization, understanding, practical application	Important factors to determining gene action	Lecture and discussion	Exams , reports, discussions
7	4	Memorization, understanding, practical application	First Exams	Lecture and discussion	Exams , reports, discussions
8	4	Memorization, understanding, practical application	Estimation some of genetic Parameters	Lecture and discussion	Exams , reports, discussions
9	4	Memorization, understanding, practical application	Gene Frequency	Lecture and discussion	Exams , reports, discussions
10	4	Memorization, understanding, practical application	Hybridization and hybrid cultivars	Lecture and discussion	Exams , reports, discussions
11	4	Memorization, understanding, practical application	Mutation Breeding	Lecture and discussion	Exams , reports, discussions
12	4	Memorization, understanding, practical application	Chromosomal polyploidy and relationships in plant breeding	Lecture and discussion	Exams , reports, discussions
13	4	Memorization, understanding, practical application	Breeding of self-pollination plants	Lecture and discussion	Exams , reports, discussions
14	4	Memorization, understanding, practical application	Breeding of cross pollination plants	Lecture and discussion	Exams , reports, discussions
15	4	Memorization, understanding, practical application	Second Exams	Lecture and discussion	

11.

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)	Plant Breeding and improvement, 2020. Dr. Fouad Razzaq Al-Burki.
Main references (sources)	From methodological books, help books, Internet, and scientific research
Recommended books and references (scientific)	Iraqi Scientific journals in basic

journals, reports...)	specializations
Electronic References, Websites	Al-Muthanna University e-learning website https://agr.mu.edu.iq/

Course Description Form

1. Course Name:					
Integrated pests management					
2. Course Code:					
0024406					
3. Semester / Year:					
Spring Semester / 2024					
4. Description Preparation Date					
2 / 4 / 2023					
5. Available Attendance Forms:					
Courses					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours / 2 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Alaa Hussein Abed Email: alaahussein73@mu.edu.iq					
8. Course Objectives					
Course Objectives		1- Study the evolution of the thought of integrated management of pest control 2 Study the philosophy of integrated pest management 3-The importance of information in pest management 4-Knowledge of pest management and integrated control alternatives 5-Identify integrated pest management 6-Control Programs)			
9. Teaching and Learning Strategies					
Strategy		A-Cognitive objectives A-1: Identify the integrated management of pest control A-2: Identify the philosophy and principles of integrated pest control A-3 - Information gathering and injury forecasting - Develop an integrated control program A-4 that the student mastered how to prevent the occurrence of diseases and control.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Save, understand, practical application	Definition of the Pest Control Department, brief history of the stages of its development	Lecture and discussion	Oral tests
2	2	Save, understand, practical application	The types of pests and losses they cause	Lecture and discussion	Quick exam
3	2	Save, understand, practical application	Basic elements of integrated management programs	Lecture and discussion	Oral tests
4	2	Save, understand, practical application	The role of sampling, surveillance, and continuous pest	Lecture and discussion	Quick exam

			prediction programs		
5	2	Save, understand, practical application	The role of chemical pesticides in pest management	Lecture and discussion	Oral tests
6	2	Save, understand, practical application	The role of plant resistance in pest management	Lecture and discussion	Quick exam
7	2	Save, understand, practical application	The use of parasites and insect predators	Lecture and discussion	Written exam
8	2	Save, understand, practical application	The role of behavioral resistance in pest management	Lecture and discussion	Oral tests
9	2	Save, understand, practical application	Rank straight wings. Half - wing rank.	Lecture and discussion	Quick exam
10	2	Save, understand, practical application	The role of resistance agricultural methods combating the pest	Lecture and discussion	Oral tests
11	2	Save, understand, practical application	The role of legislative resistance	Lecture and discussion	Quick exam
12	2	Save, understand, practical application	The role of physical and mechanical control	Lecture and discussion	Oral tests
13	2	Save, understand, practical application	Use water to control some pests	Lecture and discussion	Quick exam
14	2	Save, understand, practical application	Software design and use in integrated management program	Lecture and discussion	Oral tests
15	2	Save, understand, practical application	Some successful examples of integrated pest management and future prospects.	Lecture and discussion	Quick exam

11. Course Evaluation

Daily exam ; 10 grades
Daily activity ; 10 grades
Homework ; 10 grades
Reports ; 10 grades
Monthly exam ; 60 grades

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Integrated pest control / D. Eyad Yousef Al-Haj Ismail
Main references (sources)	1- Integrated pest control / D. Mahmud Said Al-Zamity 2- Integrated management of Agricultural pests / D. Abed Al-star Arif Ali
Recommended books and references (scientific journals, reports...)	-Iraqi Agriculture Journal -Magazines dealing with beekeeping -Bulletins issued by agricultural companies
Electronic References, Websites	All agricultural magazine sites

Course Description Form

1. Course Name:					
Professional Ethics					
2. Course Code:					
U024401					
3. Semester / Year:					
First semester/Fourth					
4. Description Preparation Date:					
2/14/2024					
5. Available Attendance Forms:					
Mandatory official working hours					
6. Number of Credit Hours (Total) / Number of Units (Total)					
15 hours Units 1					
7. Course administrator's name (mention all, if more than one name)					
Name: MOHAMD KHALEL IBRAHIM MOHAMED					
Email: moh_kh15@mu.edu.iq					
8. Course Objectives					
Course Objectives	<p>The course aims to enhance the ethics of agricultural graduates from professional standpoint from several axes, the most important of which is religious and societal axis, given that ethics are something acquired from childhood, in addition to linking these ethics to all work facilities (whether scientific or administrative) and the impact of the lack of a worker's moral sense on the continued development of countries. Due to the depletion of economic resources through administrative or scientific fraud, which leads to the failure of agricultural projects that may lead to disasters that lead to the lives of citizens.</p>				
9. Teaching and Learning Strategies					
Strategy	<p>Cognitive objectives A1- Study the concept of professional ethics in its general, linguistic, and terminologic sense and the importance of those ethics. A2- Identify the history of ethical codes, their development, and their interrelationship A3- List some of the moral disasters that occurred due to the lack of professional ethics B - The skills objectives of the course. B1 - Organize the work well and avoid chaos that does not lead to reaping its fruits. B2- Monitor work by providing a good supervision system.</p>				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	One hour theoretically	memorizing, understanding, analyzing, and applying	The concept of professional ethics	Practical lecture, discussion,	oral examinations
second	One hour theoretically	memorizing, understanding, analyzing, and applying	Sources of professional ethics	Practical lecture and discussion	oral examinations

third	One hour theoretically	memorizing, understanding, analyzing, and applying	Family and socialization Professional ethics	Practical lecture, discussion,	oral examinations
fourth	One hour theoretically	memorizing, understanding, analyzing, and applying	Elements of professional ethics	Practical lecture and discussion	oral examinations
Fifth	One hour theoretically	memorizing, understanding, analyzing, and applying	General components of professional ethics	examination	writing examinations
Sixth	One hour theoretically	memorizing, understanding, analyzing, and applying	First test	Practical lecture, discussion,	oral examinations
seventh	One hour theoretically	memorizing, understanding, analyzing, and applying	Means of establishing professional ethics	Practical lecture, discussion,	oral examinations
Eighth	One hour theoretically	memorizing, understanding, analyzing, and applying	Role models Good deeds	Practical lecture and discussion	oral examinations
Ninth	One hour theoretically	memorizing, understanding, analyzing, and applying	Challenges and their impact on internal professional ethics	Practical lecture, discussion,	oral examinations
Tenth	One hour theoretically	memorizing, understanding, analyzing, and applying	Challenges and their impact on external professional ethics	Practical lecture and discussion	oral examinations
Eleventh	One hour theoretically	memorizing, understanding, analyzing, and applying	Social responsibility (its concept, types, elements, and components)	Practical lecture, discussion,	oral examinations
Twelfth	One hour theoretically	memorizing, understanding, analyzing, and applying	Elements of social responsibility	Practical lecture and discussion	oral examinations
Thirteenth	One hour theoretically	memorizing, understanding, analyzing, and applying	Manifestation s of poor social responsibility	Practical lecture, discussion,	oral examinations
Fourteenth	One hour	memorizing,	The basic	Practical	oral

	theoretically	understanding, analyzing, and applying	foundations of professional ethics	lecture and discussion	examinations
fifteenth	One hour theoretically	memorizing, understanding, analyzing, and applying	The second test	examination	writing examinations

11. Course Evaluation

Attendance 5 + exams and daily assignments 2 + reports 3 + written exam 40 = 50 quest + Final exam 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Professional ethics from an academic perspective, written by Dr. Salam Jassim Hammoud Al-Ardi and teacher Miqdad Jassim Abd
Main references (sources)	Lectures on professional ethics for Qamiha Publishing_Partie1
Recommended books and references (scientific journals, reports...)	Lessons in professional ethics.
Electronic References, Websites	Some of the global websites specialized in studying professional ethics in its academic form

Course Description Form

1. Course Name:					
Acarology					
2. Course Code:					
0024402					
3. Semester / Year:					
Second semester / Fourth year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ali Ajil Jassim Email: aliajil2005@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Teaching the student about the types of mites that infect economic plants, domestic animals, and humans • Determine the economic significance of dream damage • Identify the different environmental factors and their impact on the spread of mites • Identify the mite hosts that infect plants in particular • The pathological symptoms it causes • Applying the best methods to combat diseases through methods (chemical, biological, integrated control programmes) 			
9. Teaching and Learning Strategies					
Strategy		<p>A- Cognitive objectives</p> <ol style="list-style-type: none"> 1- The student will learn about the diseases that affect orchids and their names. 2- Learn about the transmission of pathogens from one field to another or the spread of the pathogen through the same field. 3- The student will learn how to prevent and control the occurrence of diseases. 4- To be able to find solutions in cases of rapidly spreading epidemic diseases and ways to control them. 5- Identify quick ways to diagnose mite infestation of plants. 6- The student will be able to disseminate the information obtained to control the pest. <p>B - The skills objectives of the course.</p> <ol style="list-style-type: none"> 1-The student will learn how to diagnose this lesion. 2- That the student will be able to treat mite infestations that affect various plants. 3- To be proficient in using pest control machines. 4- To be proficient in using modern and advanced methods of pest control. 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization,	Acarology	Lecture and	Oral exams

		understanding, practical application		discussion	
2	4	Memorization, understanding, practical application	Taxonomic position of mites within the kingdom Arthropoda	Lecture and discussion	Oral exams
3	4	Memorization, understanding, practical application	The taxonomic position of the mite within the Acari- order and sub-order Mites	Lecture and discussion	Oral exams
4	4	Memorization, understanding, practical application	The economic importance of the dream	Lecture and discussion	Oral exams
5	4	Memorization, understanding, practical application	Methods of dispersal of mite families	Lecture and discussion	Oral exams
6	4	Memorization, understanding, practical application	The most important theories of silk spinning	Lecture and discussion	Oral exams
7	4	Memorization, understanding, practical application	Written exam	Lecture and discussion	Oral exams
8	4	Memorization, understanding, practical application	Habits and habitat	Lecture and discussion	Oral exams
9	4	Memorization, understanding, practical application	Reproduction in a dream	Lecture and discussion	Oral exams
10	4	Memorization, understanding, practical application	The external appearance of the dream	Lecture and discussion	Oral exams
11	4	Memorization, understanding, practical application	Various dream devices	Lecture and discussion	Oral exams
12	4	Memorization, understanding, practical application	Pest resistance to chemical pesticides	Lecture and discussion	Oral exams
13	4	Memorization, understanding, practical application	Anti-dream	Lecture and discussion	Oral exams
14	4	Memorization, understanding, practical application	Integrated crop management	Lecture and discussion	Oral exams
15	4	Memorization, understanding, practical application	Written exam	Lecture and discussion	Oral exams

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)

.1Mice that are harmful to economic plants /
Translated by Dr. Jalil Abu Al-Hob

	.2Non-insect animal pests
Main references (sources)	.1Non-insect animal pests / practical part .2Mice and ticks / Jobson
Recommended books and references (scientific journals, reports...)	-Iraqi Agriculture Journal -Magazines dealing with pests and pesticides -Bulletins issued by agricultural companies and pesticide companies
Electronic References, Websites	-All agricultural magazine sites and magazines dealing with mites and ticks

Course Description Form

1. Course Name:	
Biological Control	
2. Course Code:	
0014401	
3. Semester / Year:	
Autumn Semester / 2024	
4. Description Preparation Date	
27 / 12 / 2023	
5. Available Attendance Forms:	
Courses	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours / 3 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Alaa Hussein Abed Email: alaahussein73@mu.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Study the evolution of the thought of biological control of insect pests • Study the philosophy of vital enemies • The importance of information in pest control • Knowledge of pest control methods and alternatives to integrated control • Identify the biological control • Identify the philosophy of biological control • Identify the life of vital enemies
9. Teaching and Learning Strategies	
Strategy	<p>A-Cognitive objectives</p> <p>A-1: Identify the biological control</p> <p>A-2 - Identify the philosophy and principles of biological control</p> <p>A-3 - Information gathering and injury forecasting - Develop an integrated control program</p> <p>A-4 that the student mastered how to prevent the occurrence of diseases and control.</p> <p>A.5. Be able to find solutions in the case of epidemic epidemics and ways of controlling them.</p> <p>A-6 that the student acquires how to disseminate the information obtained in the control of insect pests.</p> <p>B- the skills objectives of the program;</p> <p>B- the skills objectives of the program;</p> <p>B - 1 - Students' knowledge of the biological control programs for each crop</p> <p>B-2 - Decision-making quickly to control pests</p> <p>B - 3 - access to the information network and know the talk in the fight against insect pests</p> <p>B - 4 - The use of modern technology in the prediction of infection and conduct appropriate control</p> <p>B - 5 - To master the use of modern methods and advanced contro</p>
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Save, understand, practical application	Introduction to the r of bio-resistance in plant protection	Lecture and discussion	Oral tests
2	4	Save, understand, practical application	Procedures for introducing vital 1.enemies: Diagnosis of the lesion as an alien species. 2.Determine the original habitat of the pest. 3. External explorati of vital enemies.	Lecture and discussion	Quick exam
3	4	Save, understand, practical application	Quarantine of imported models. education and mass propagation of vital enemies.	Lecture and discussion	Oral tests
4	4	Save, understand, practical application	Final evaluation of vital enemies ((isolation and exclusion method, construction of life tables)).	Lecture and discussion	Quick exam
5	4	Save, understand, practical application	mportant groups of insect parasites Ranks to which parasitic insects belong: -1Membranes of paranormal wings. Parasites of the wing type.	Lecture and discussion	Oral tests
6	4	Save, understand, practical application	Incomplete phases of parasitic insects: Types of eggs	Lecture and discussion	Quick exam
7	4	Save, understand, practical application	-Types of larval ages. - Important groups insect predators	Lecture and discussion	Written exam
8	4	Save, understand, practical application	Ranks to which predatory insects belong: The rank of the May fly. The rank of shivers.	Lecture and discussion	Oral tests
9	5	Save, understand,	Rank straight	Lecture and	Quick exam

		practical applicatio	wings. Half - wing rank.	discussion	
10	4	Save, understand, practical applicatio	Rank of the wings. Rank with two wing	Lecture and discussion	Oral tests
11	4	Save, understand, practical applicatio	Rank of membranous wings. Rank of sheath wing	Lecture and discussion	Quick exam
12	4	Save, understand, practical applicatio	Pathogens: Types of bacteria & viruses in resistance insect pests	Lecture and discussion	Oral tests
13	4	Save, understand, practical applicatio	Types of pathogenic fungi	Lecture and discussion	Quick exam
14	4	Save, understand, practical applicatio	Types of insect pathogenic worms	Lecture and discussion	Oral tests
15	4	Save, understand, practical applicatio	Biological resistance the bush using insect	Lecture and discussion	Quick exam

11. Course Evaluation

Daily exam ; 10 grades
Daily activity ; 10 grades
Homework ; 10 grades
Reports ; 10 grades
Monthly exam ; 60 grades

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Biological Control / D. Hamza Kadum Zubaidy
Main references (sources)	1-Biological control its philosophy mechanism of Action and sustainability / D. Nazar Must Al-Malah 2-Biological control of Agricultural pests / D. Ahmad Hussien Al-Hinidy and D.Yahia Hussien Fiad
Recommended books and references (scientific journals, reports...)	-Iraqi Agriculture Journal -Magazines dealing with beekeeping -Bulletins issued by agricultural companies
Electronic References, Websites	All agricultural magazine sites

Course Description Form

1. Course Name:					
Field crop diseases					
2. Course Code:					
0014403					
3. Semester / Year:					
first semester / second year					
4. Description Preparation Date:					
2024 \2 \14					
5. Available Attendance Forms:					
my presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ali Faraj Jubair Email: alifj80@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Introducing the student to the various types of diseases that affect field crops (fungal, bacterial, viral, nematode, and physiological). • Determine the economic importance of these diseases • Identify various environmental factors and their impact on the spread of infectious plant diseases • Pathological symptoms caused by these diseases • Finding the best ways to combat diseases through methods (natural, agricultural, biological, legislative, chemical, genetic, integrated control programs) 			
9. Teaching and Learning Strategies					
Strategy		<p>A- Cognitive objectives</p> <ul style="list-style-type: none"> * The student should know the diseases that affect agricultural crops and their names. * To try to find out how pathogens are transmitted from one research to another or the causative spread through the same field. * The doctor must master how to prevent and control diseases. * Innovation to find solutions in cases of rapid epidemic diseases and control them. * Learn about modern methods of disease diagnosis and control. * The student must master how to disseminate the information obtained in disease surveillance. 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical application	Introduction to field crop diseases	Lecture and discussion	Oral exams
2	4	Memorization, understanding, practical application	Wheat diseases	Lecture and discussion	Quick exam
3	4	Memorization, understanding, practical application	Barley diseases	Lecture and discussion	Oral exams
4	4	Memorization, understanding, practical application	Rice diseases	Lecture and discussion	Quick exam

5	4	Memorization, understanding, practical application	Maize diseases	Lecture and discussion	Oral exams
6	4	Memorization, understanding, practical application	Sorghum diseases	Lecture and discussion	Quick exam
7	4	Memorization, understanding, practical application	Written exam	Written exam	Written exam
8	4	Memorization, understanding, practical application	Bean diseases	Lecture and discussion	Oral exams
9	4	Memorization, understanding, practical application	Diseases of oil crops (sunflower, safflower)	Lecture and discussion	Quick exam
10	4	Memorization, understanding, practical application	Diseases of oil crops (soybean, pistachio, sesame)	Lecture and discussion	Oral exams
11	4	Memorization, understanding, practical application	Diseases of sugar crops	Lecture and discussion	Quick exam
12	4	Memorization, understanding, practical application	Diseases of cotton and flax	Lecture and discussion	Oral exams
13	4	Memorization, understanding, practical application	Diseases of forage crops	Lecture and discussion	Quick exam
14	4	Memorization, understanding, practical application	Tobacco diseases	Lecture and discussion	Oral exams
15	4	Memorization, understanding, practical application	Written exam	Written exam	Written exam

11. Course Evaluation

- Theoretical tests: (daily exams - monthly exams - oral exams)
- Practical tests: (daily exams - monthly exams - oral exams)
- Theoretical and practical reports
- Models for examination and practical experiments

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. The basics of fungi and their diseases / D Majeed Al-Shukri 2. Diseases of field crops / Dr. Maysar Zarzis
Main references (sources)	- Iraqi Agriculture Journal - Magazines dealing with diseases of all field crops - Bulletins issued by agricultural companies - pesticide companies
Recommended books and references (scientific journals, reports...)	- All agricultural magazine sites and crop disease magazines
Electronic References, Websites	- world Wide Web

Course Description Form

1. Course Name:	
Pesticides	
2. Course Code:	
0014402	
3. Semester / Year:	
First semester/2023-2024	
4. Description Preparation Date:	
03/02/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 Hours / Units 3	
7. Course administrator's name (mention all, if more than one name)	
Name: Malik hasan karem Email: malik.hasan@mu.edu.iq	
8. Course Objectives	
Course Objectives	<ol style="list-style-type: none"> 1. Understanding the theoretical foundations: achieving an understanding of the chemical and biological basics of pesticides. 2. Environmental impact analysis: Understanding the effects of pesticides on the environment and how to reduce negative effects. 3. Health effects analysis: Understanding the health effects of the proper and improper use of pesticides and how to prevent risks. 4. Safe and effective use: Teaching students how to use pesticides in a safe and effective way and ensuring adherence to safety instructions. 5. Developing research skills: Motivating students to search for modern and reliable information on the topic of chemical pesticides. 6. Promoting critical thinking: Encouraging students to think critically about the need and potential effects of pesticide use. 7. Promoting social participation: Supporting student communication with pesticide issues and participating in sustainable development solutions.
9. Teaching and Learning Strategies	
Strategy	<ol style="list-style-type: none"> 1. Providing content: providing detailed information about the types of pesticides and their use clearly. 2. Practical interaction: Encouraging students to experiment with using pesticides in a safe way, which enhances their practical understanding of the subject. 3. Discussion: Encouraging students to discuss the environmental and health impact of excessive use of pesticides and stimulating critical thinking. 4. Include recent information about research and developments in the field of chemical pesticides. 5. Directing students to conduct research on the use of pesticides and their effects, which enhances research and analysis skills. 6. Encouraging students to participate in class discussions and exchange experiences on the topic of chemical pesticides.

7. Using technology, such as videos and simulations, to illustrate chemical processes and the effects of pesticides.
Provide periodic evaluation of students' progress and ensure their correct understanding of the content.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical application	Agricultural pests, the damage they cause, and the economic critical limit	Lecture, discussion and oral examinations	oral examination
2	4	Memorization, understanding, practical application	Pesticides, definition of pesticides. The pros and cons of pesticides, historical review of the use of pesticides.	Lecture, discussion and oral examinations	quiz
3	4	Memorization, understanding, practical application	Points to be followed during chemical control.	Lecture, discussion and oral examinations	Oral exam
4	4	Memorization, understanding, practical application	Toxicology, acute toxicity, chronic toxicity, pesticide fading.	Lecture, discussion and oral examinations	quiz
5	4	Memorization, understanding, practical application	Metabolism of chemical pesticides, metabolic enzymes, general methods of metabolism		Oral exam
6	4	Memorization, understanding, practical application	Classification of pesticides, basis of classification according to persistence, toxicity, method of action, form of preparation and the role of additives in activating or inhibiting pesticides.	Lecture, discussion and oral examinations	quiz
7	4	Memorization, understanding, practical application	Systemic pesticides.	Lecture, discussion and oral examinations	Exam
8	4	Memorization, understanding, practical application	Absorption and transfer of chemical pesticides and factors affecting this.	Lecture, discussion and oral examinations	quiz

9	4	Memorization, understanding, practical application	Insecticides, inorganic pesticides (natural organic pesticides (plant oils), organochlorine pesticides, organophosphorus pesticides, carbamate pesticides, pyrethroid pesticides, neonicotinoid pesticides, and chemicals that inhibit insect reproduction....	examinationsNs Lecture, discussion and oral examinationsNs	Oral exam
10	4	Memorization, understanding, practical application	Insect growth regulators.	examinationsNs Lecture, discussion and oral examinationsNs	quiz
11	4	Memorization, understanding, practical application	Fungicides	examinationsNs Lecture, discussion and oral examinationsNs	Oral exam
12	4	Memorization, understanding, practical application	Weedicides	examinationsNs Lecture, discussion and oral examinationsN	quiz
13	4	Memorization, understanding, practical application	Rodenticides	examinationsNs Lecture, discussion and oral examinationsN	Oral exam
14	4	Memorization, understanding, practical application	Nematicides.	examinationsNs Lecture, discussion and oral examinationsN	quiz
15	4	Memorization, understanding, practical application	Mite pesticides.	examinationsNs Lecture, discussion and oral examinationsN	Exam

11. Course Evaluation

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 textbooks (curricular books, if any)	بيدات الكيمائية/د. نزار مصطفى الملاح/2012
Main references (sources)	-الاسس النظرية و التطبيقية لمبيدات الافات/د. نزار مصطفى الملاح/2012. Chemical pesticides mode of action
Recommended books and references (scientific journals, reports...)	• /الاستخدام الامن و الفعال للمبيدات/ د. باتريك مايرر. الات مكافحة الافات/ د. اشرف كامل زعلوك موقع وزارة الزراعة العراقية/ دليل المبيدات
Electronic References, Websites	

Course Description Form

1. Course Name:					
Plant viruses					
2. Course Code:					
0024403					
3. Semester / Year:					
Second semester/2023-2024					
4. Description Preparation Date:					
03/02/2024					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 Hours / 3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Malik hasan karem Email: malik.hasan@mu.edu.iq					
8. Course Objectives					
Course Objectives					
9. Teaching and Learning Strategies					
Strategy		PowerPoint presentation via the Data show screen Direct delivery method and detailed explanation By showing illustrative films.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical application	overview of the general evolution of virology	Lecture, discussion and examinations	oral examinations
2	4	Memorization, understanding, practical application	The most important characteristics distinguish viruses from microorganisms and other organisms	Lecture, discussion and examinations	quiz
3	4	Memorization, understanding, practical application	The economic importance of viral plant diseases	Lecture, discussion and examinations	Oral examination

4	4	Memorization, understanding, practical application	Naming and classify viruses	Lecture, discussion and examinations	quiz
5	4	Memorization, understanding, practical application	Chemical structure viruses		Oral exam
6	4	Memorization, understanding, practical application	Morphological characteristics viruses	Lecture, discussion and examinations	quiz
7	4	Memorization, understanding, practical application	Virus infection, movement, transmission with plant tissues	Lecture, discussion and examinations	Exam
8	4	Memorization, understanding, practical	Viruses multiply	Lecture, discussion and oral	quiz
9	4	Memorization, understanding, practical application	Mixed infection with viruses and their effect on plants	examinations Lecture, discussion and examinations	Oral exam
10	4	Memorization, understanding, practical application	Symptoms of viral plant diseases: external, internal, and enclosed bodies	examinations Lecture, discussion and examinations	quiz
11	4	Memorization, understanding, practical application	Methods transmission and spread of plant viruses	examinations Lecture, discussion and examinations	Oral exam

12	4	Memorization, understanding, practical application	Virus diagnosis	examinationsNs Lecture, discuss and examinationsN	quiz
13	4	Memorization, understanding, practical application	Resistance to v diseases	examinationsNs Lecture, discuss and examinationsN	Oral exam
14	4	Memorization, understanding, practical application	The most import viruses that in vegetable crops	examinationsNs Lecture, discuss and examinationsN	quiz
15	4	Memorization, understanding, practical application	The most important viruses that infect vegetable crops	examinationsNs Lecture, discuss and examinationsN	Exam

11. Course Evaluation

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 textbooks (curricular books, if any)	
Main references (sources)	-كتاب فايروسات النبات/د. نبيل عزيز قاسم 2011. Introduction plant virology/ D.P. tripathi Characterization of plant viruses/Alan Ishwara and Govind pratap.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	www.NCBI.com WWW.ICOPV.com

Course Description Form

1. Course Name:					
English					
2. Course Code:					
U024402					
3. Semester / Year:					
Semester 2\ 4					
4. Description Preparation Date:					
4/3/2024					
5. Available Attendance Forms:					
Attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 h/ 2 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Saleh Shehab Sabah Email: saleh.sabah79@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Teaching students English language skills • Trying to employ the English language to serve the school curriculum • Teaching students skills that help them pass international language tests • Motivating students to research foreign sources • Serving final stage students by using the English language to write research papers for graduation projects • Giving students the opportunity to learn to visit the websites of scientific journals and famous research platforms 			
9. Teaching and Learning Strategies					
Strategy		Students are taught English language skills such as listening, reading, writing, and grammar through available learning methods such as projectors in classrooms, homework assignments, direct discussion methods, quick tests, oral and written exams, and various means of testing such as multiple choice tests and other skills, following up on students' writings in the daily preparation journal, and correcting errors. Spelling in it, with students distributed in the form of groups that deal with writing and preparing agricultural reports to develop academic writing skills.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2	Identify types of sentences	types of sentences	Presence	Daily test
second	2	Identify parts of speech	parts of speech	Presence	Daily test
third	2	Recognizing names	names	Presence	Daily test
fourth	2	Identify the functions of	functions of nouns	Presence	Daily test

		nouns			
Fifth	2	Identify pronouns	pronouns	Presence	Daily test
Sixth	2	Identify traits	traits	Presence	Daily test
Seventh	2	Recognize the situation	situation	Presence	Daily test
Eighth	2	Recognizing the passive voice	passive voice	Presence	Daily test
Ninth	2	Learn about the simple present	simple present	Presence	Daily test
Tenth	2	present perfect	present perfect	Presence	Daily test
Eleventh	2	Learn about the present continuous tense	present continuous tense	Presence	Daily test
Twelfth	2	Identify the types of questions	types of questions	Presence	Daily test
Thirteenth	2	Identify conditional sentences	conditional sentences	Presence	Daily test
fourteenth	2	Learn about ownership	ownership	Presence	Daily test
Fifteenth	2	Identify phrasal verbs with off	phrasal verbs with off	Presence	Daily test

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)	Internet
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://Pinterest.com

Course Description Form

1. Course Name:					
Insects Ecology					
2. Course Code:					
0024405					
3. Semester / Year:					
Spring course \ 4					
4. Description Preparation Date:2024/2/2					
2 \2\ 2024					
5. Available Attendance Forms: weekly lecture schedule					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 Hours \ 3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Ahmed Shamkhi Jabbar Email: ahmedshmky65@mu.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> Understand the concept of the environment in general and learn about the relationship of ecology to other sciences Identify the environmental factors affecting insects and their numbers, and learn about the ability of insects to adapt to unfavorable conditions Identify the possibility of benefiting from the environment by controlling insects 			
9. Teaching and Learning Strategies					
Strategy		<p>1 - Presentation of PowerPoint via the Data show screen</p> <p>2 - Observing and following up on the environment of insects through field reality and raising insects in the laboratory and exposing them to various environmental factors to determine the degree of their influence and study the interrelationship.</p> <p>3 - Direct delivery method and detailed explanation</p>			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, practical application	Introduction: - Ecology methods for studying ecology, steps studying insect ecology	Lecture, discussion and examinations	oral examinations
2	4	Memorization, understanding, practical application	Department Ecology, Insect Ecology, Definitions	Lecture, discussion and examinations	quiz

3	4	Memorization, understanding, practical application	Factors that help insects spread	Lecture, discussion and examinations	Oral exam
4	4	Memorization, understanding, practical application	Biopotential factors in insect	Lecture, discussion and examinations	quiz
5	4	Memorization, understanding, practical application	Sexual factors in insect		Oral exam
6	4	Memorization, understanding, practical application	Nutritional efficiency and protective factors in insects	Lecture, discussion and examinations	quiz
7	4	Memorization, understanding, practical application	Survival efficiency factors in insect	Lecture, discussion and examinations	Exam
8	4	Memorization, understanding, practical application	Natural balance in insects	Lecture, discussion and oral	quiz
9	4	Memorization, understanding, practical application	Abiotic factors (environmental resistance factors such as temperature, humidity)	examinations Lecture, discussion and examinations	Oral exam
10	4	Memorization, understanding, practical application	Wind, atmospheric pressure, and moonlight	examinations Lecture, discussion and examinations	quiz
11	4	Memorization, understanding, practical application	Food, competition, biotic enemies in insects	examinations Lecture, discussion and examinations	Oral exam
12	4	Memorization, understanding, practical application	Competition between individuals of the same species	examinations Lecture, discussion and examinations	quiz
13	4	Memorization, understanding, practical application	Competition between different species, biological enemies	examinations Lecture, discussion and examinations	Oral exam

14	4	Memorization, understanding, practical application	Design programs use them in con program	examinationsNs Lecture, discuss and examinationsN	quiz
15	4	Memorization, understanding, practical application	exam	examinationsNs Lecture, discuss and examinationsN	Exam

11. Course Evaluation

A theoretical monthly exam of 30 marks, divided into 25 marks, a written exam and 5 marks distributed between the daily and oral exams and reports, and a practical exam of 20 marks divided into 15 marks for the monthly exam and 5 marks distributed as in the theoretical exam.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Books available for free
Main references (sources)	-Ecology of Insects/Concepts and
Recommended books and references (scientific journals, reports...)	- Journals / insect ecology - Bulletins issued by agricultu companies
Electronic References, Websites	- All Arab and international agricultu journal websites published in English

Course Description Form

1. Course Name:					
sustainable development					
2. Course Code:					
U014402					
3. Semester / Year:					
Chapter Two/Four					
3. Description Preparation Date:					
4. Available Attendance Forms:					
Actual presence					
5. Number of Credit Hours (Total) / Number of Units (Total)					
30 Hours units 2					
6. Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Saad Mnee Enad					
Email: saad_manee@mu.edu.iq					
7. Course Objectives					
Course Objectives		For the student to know the types of analytical methods <ul style="list-style-type: none"> • The student learns how to analysis water , soil and plant • The student should evaluate the scientific reality to maintain analytical methods 			
8. Teaching and Learning Strategies					
Strategy		1- Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method			
9. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first	2	The student gets to know introduction about water , soil plant analytical	Water , soil plant analytica	Explanation , presentation of the model and lecture	the exam

The second	2	is for the student to know analytical of water	1		
Third	2	The student learns about soil analytical	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam
Fourth	2	The student gets to know plant analytical	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam
Fifth	2	: The student learns about methods of soil samples	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam
Sixth	2	: The student learns about methods of plant samples	Water , soil and plant analytical	Explanation , presentation of the model and lecture	the exam
Seventh	2	: The student gets to know the methods of water samples methods	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam
Eighth	2	The student gets to know the quantitative and volumetric methods	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam
Ninth	2	The student gets	Water	Explanation	the exam

		to know the quantitative and weighing methods	soil plant analytical	, presentation of the model and lecture	
Tenth	2	: The student will learn about electrical of a Analytical methods	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam
Eleventh	2	The student gets to know About analytical of spectroscopy The student gets to know Atomic emission methods	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam the exam
Twelfth thirteenth	2	: The student knows how the Atomic absorption methods	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam
Fourteenth	2	: The student gets to know Metal analysis methods	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam
Fifteenth	2	The student gets to know the types of X-ray analysis methods	Water soil plant analytical	Explanation , presentation of the model and lecture	the exam

10. Course Evaluation

Theoretical tests 40
 2- Practical tests -
 3- Reports and studies 10
 4- Final exam 50

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Recommended books and references (scientific | Iraqi academic scientific journals

journals, reports...)	
Electronic References, Websites	Soil Science Society Of America Library Genesis

Course Description Form

1. Course Name:					
Store pests					
2. Course Code:					
0014405					
3. Semester / Year:					
First/fourth					
4. Description Preparation Date:					
27 \ 2\ 2024					
5. Available Attendance Forms:					
The presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours/3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Khalid Jaber AbdelRazzaq Email: : khadry.ahmed@mu.edu.iq					
8. Course Objectives					
Course Objectives		1- Identify the types of pests that affect stored grains. 2- Identify methods of controlling storage pests. 3- Collecting information about storage pest control programs. 4- The student must master how to confront epidemic cases of stored pests and methods of combating them. 5- To be able to find solutions in the event that grains are infected with storage pests.			
9. Teaching and Learning Strategies					
Strategy		1 - Presentation of PowerPoint via the Data show screen 2 - Identify and diagnose lesions that affect grains through the use of optical and anatomical microscopes 3 - Direct delivery method and detailed explanation 4 - Through presentation of slides and illustrative slides.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorize, understand	Common methods of storing grains in Iraq	Lecture and discussion	Written test
2	4	analysis	Signs of damage to stored grains due to their infection with types of warehouse pests	Lecture and discussion	Written test
3	4	Memorize, understand	Direct and indirect damage to grains as a result of the infestation with warehouse insects and comparing this to field insect damage	Lecture and discussion	Written test

			grains in the field.		
4	4	analysis	Groups of insects of stored materials and their basic divisions.	Lecture discussion	Written tests
5	4	Memorize, understand	Ecology and adaptation of warehouse insects, and study of some environmental factors and their relationship with warehouse insects.	Lecture discussion	Written tests
6	4	analysis	Nutritional preferences of grain insects and stored materials and its most important indicators in warehouse environment	Lecture discussion	Written tests
7	4	Memorize, understand	Methods of controlling warehouse insects in general	Lecture discussion	Written tests
8	4	analysis	Traditional methods of pest control: their types, natural and mechanical control, biological methods, chemical methods using fumigants and the common types of control, mentioning their individual characteristics.	Lecture discussion	Written tests
9	4	Memorize, understand	Suitable conditions for growth of warehouse fungi and the most important types of fungi accompanying grains and stored materials	Lecture discussion	Written tests
10	4	analysis	Damage caused by fungi in warehouses and the most important types of mycotoxins common in grain stores infected with the common types of fungi that produce them. Types of grain bacteria and stored materials prevalent in grain stores	Lecture discussion	Written tests
11	4	Memorize, understand	Mites of stored materials: types, methods of detecting the infestation of stored materials by mites, and methods of control to be followed	Lecture discussion	Written tests
12	4	analysis	The most common types of rodents in grain stores	Lecture discussion	Written tests

			damage caused by m and rats		
13	4	Memorize,understar	Chemical methods used combat mice and rats	Lecture discussion	a Written tes
14	4	analysis	The most important ty of poisons used in cont non-chemical means control	Lecture discussion	a Written tes
15	4	Memorize,understar	Birds harmful to grains warehouses, their m important types, th importance from agricultural point of vi their most important har and the types of con methods used against the	Lecture discussion	a Written tes

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)	Storage pests\D. Iyad Ismail Al-Jamal
Main references (sources)	
Recommended books and references (scientific journals, reports...)	All magazine of Insects
Electronic References, Websites	Web. Internet

Course Description Form

1. Course Name:					
Orchard insects					
2. Course Code:					
0024404					
3. Semester / Year:					
second/fourth					
4. Description Preparation Date:					
20/2/2024					
5. Available Attendance Forms:					
The presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 Hours \ 3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Khali Jaber Abdulrazaq Email: ahmed@mu.edu.iq					
8. Course Objectives					
Course Objectives		1-The student learns about the most important insects that infect orchards 2-The student learns about the most important insects that infect vegetables 3-The student learned about the most important insects that infect greenhouse plants 4-Learn about the critical economic limit and the beginning of pest control.			
9. Teaching and Learning Strategies					
Strategy		1-Sudden daily and continuous weekly tests 2-Exercises and activities in the classroom 3- Directing students to some websites			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Memorization, understanding, analysis	The most important damage caused by insects to plants	Lecture and discussion	Written tests
2	4	Memorization, understanding, analysis	Methods of control of agricultural pests	Lecture and discussion	Written tests
3	4	Memorization, understanding, analysis	The concept of economic Threshold	Lecture and discussion	Written tests
4	4	Memorization, understanding, analysis	The most important pests that affect palm trees	Lecture and discussion	Written tests
5	4	Memorization, understanding, analysis	Termite insect	Lecture and discussion	Written tests
6	4	Memorization, understanding, analysis	General harmful insects.	Lecture and discussion	Written tests
7	4	Memorization,	The most important pests	Lecture and discussion	Written tests

		understanding, analysis	grapes	discussion	
8	4	Memorization, understanding, analysis	The most important pests citrus	Lecture and discussion	Written tests
9	4	Memorization, understanding, analysis	Pests of the cruciferous family	Lecture and discussion	Written tests
10	4	Memorization, understanding, analysis	Pests of the legume family	Lecture and discussion	Written tests
11	4	Memorization, understanding, analysis	Pests of the Apiaceae family	Lecture and discussion	Written tests
12	4	Memorization, understanding, analysis	Pests of the lily family	Lecture and discussion	Written tests
13	4	Memorization, understanding, analysis	Pests of olives and figs	Lecture and discussion	Written tests
14	4	Memorization, understanding, analysis	Narcissistic family lesions	Lecture and discussion	Written tests
15	4	Memorization, understanding, analysis	Pomegranate pests	Lecture and discussion	Written tests

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)	Orchard insects
Main references (sources)	All magazines and periodicals that
Recommended books and references (scientific journals, reports...)	Dealing with insects
Electronic References, Websites	Orchard insects\Dr. Iyad Ismail

Course Description Form

1. Course Name:					
Crop Insects					
2. Course Code:					
0014406					
3. Semester / Year: 2024					
First Semester \ fourth					
4. Description Preparation Date:					
2/2/2024					
5. Available Attendance Forms:					
Lecturer's schedule					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 Hours \ 3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Ahmed Shamkhi Jabbar Email: ahmedshmky65@mu.edu.iq					
8. Course Objectives					
Course Objectives		<p>A1- Learn about the concept of plant diseases and insect infection and methods of diagnosing them</p> <p>A2- Learn about ways to combat these diseases and other agricultural pests and methods of preventing them</p> <p>A3- Learn about the concept of integrated management to control the threat of agricultural pests</p> <p>A4- Identify the nature of the damage and losses in agricultural production caused by these pests</p> <p>A5- Identifying the reasons for the infestation of fields with these biotic or abiotic pathogens</p> <p>A6-Describe the life cycle of pathogens and insects that infect fields and identify the harmful source of infection</p>			
9. Teaching and Learning Strategies					
Strategy		<p>B1 - Knowing the concept of plant protection, especially infection resulting from biological causes</p> <p>B2 - Enabling students to diagnose infected plants and the possibility of isolating and diagnosing the causative pathogens</p> <p>B3 - The student's ability to estimate the economic critical limit</p>			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical and 2 practical	Preserving, understanding, analyzing, and applying	Preserving, understanding, analyzing, and applying the introduction and historical overview of field crop insects and their economic importance. Classes of the arthropod division, medical damage and its phenotypic characteristic	Preserving, understanding, analyzing, , lecture and	discussion oral exams

2	2 theoretical and 2 practical	Preserving, understanding, analyzing, applying	The most important insects w general damage or multi-fam insects: 1- The ground 2- Locusts 3- Carob The nature of damage ; phenotypic characteristics the most important multi-fam insects	lecture discussion,	oral exams
3	2 theoretical and 2 practical		The most important insects of grain crops (insects of the Poaceae family, such as wheat, barley, corn, and rice) The nature of damage ; phenotypic characteristics the most important insects of cereal crops (insects of Poaceae family such as wheat and barley)	lecture discussion,	Quiz
4	2 theoretical and 2 practical		The most important insects of forage crops (insects of the legume family): The nature of damage ; phenotypic characteristics the most important insects of grain crops (insects of Poaceae family such as corn and rice)	lecture discussion	Oral exam
5	2 theoretical and 2 practical		The most important insects of industrial crops (sugar beet insects) The nature of damage ; phenotypic characteristics of most important insects of forage crops (insects of the leguminosae family such as alfalfa and clover)	lecture discussion	
6	2 theoretical and 2 practical		Theoretical test 1. Practical test 1.	lecture discussion	Exam
7	2 theoretical and 2 practical		The most important insects of industrial crops (tobacco insects) The nature of the damage ; the most important phenotypic characteristics of the most important insects of sugar beet and tobacco	lecture discussion	Oral exam

8	2 theoretic and 2 prac a		The most important insects of industrial crops (safflower insects) The most important damage and appearance characteristics of safflower insects	lecture discussion	Oral exam
9	2 theoretic and 2 prac a		The most important insects of industrial crops (sunflower insects) The most important damage and phenotypic characteristics of sunflower insects	lecture discussion	Oral exam
10	2 theoretic and 2 prac a		The most important insects of industrial crops (cotton insect 1) The most important damage and phenotypic characteristics of cotton insects: 1	lecture discussion	Oral exam
11	2 theoretic and 2 prac a		The most important insects of industrial crops (cotton insect 2) The most important damage and phenotypic characteristics of cotton insects2	lecture discussion	
12	2 theoretic and 2 prac a		The most important pathogens that infect field crops The most important damage and phenotypic characteristics of acrosis	lecture discussion	Oral exam
13	2 theoretic and 2 prac a		Applied control of economic insects 1 How to conduct applied control 1	lecture discussion	
14	2 theoretic and 2 practical		Applied control of economic insects 2 How to conduct applied control 2	lecture discussion	Oral exam
15	2 theoretic and 2 practical		Theoretical test 1. Practical test 1.	lecture discussion	exam

11. Course Evaluation

A theoretical monthly exam of 30 marks, divided into 25 marks, a written exam and 5 marks distributed between the daily and oral exams and reports, and a practical exam of 20 marks divided into 15 marks for the monthly exam and 5 marks distributed as in the theoretical exam.

12. Learning and Teaching Resources

Required textbooks (curricular books) Haj Ismail, Iyad Youssef and Ba

any)	Rakan Dabdoub (2009). Insects of field crops, the theoretical part.
Main references (sources)	<p>1- Al-Azzawi, Abdullah Falih, Ibrahim Qaddouri Qaddo, and Haider Saleh Al-Haidari (1990) Economic Insects. Dar Al-Hekma Printing and Publishing Press.</p> <p>2- Jarjis, Salem Jamil, Hamza Kazem Abis, and Muhammad Abdel Karim Muhammad (2000) Insects of field crops. Dar Al-Kutub for Printing and Publishing University of Mosul.</p> <p>3- Al-Hajj Ismail, Iyad Youssef, and Banan Rakan Dabdoub (2009). Field crop insects, the theoretical part.</p>
Recommended books and references (scientific journals, reports...)	Bailey, P. T. 2007. Pests of Field Crops and Pastures. Csiro Publishing, pp. 520.
Electronic References, Websites	<p>Field crop insect pest from North Dakota State University. http://www.ext.nodak.edu/expubs/bugcrops.htm.</p> <p>- Agricultural crop pest IPM at University of California. http://www.ipm.ucdavis.edu/PMG/crops-agriculture.html.</p> <p>- Key to insect and allied pest of field pest, Agriculture Western Australia. http://www.agric.wa.gov.au/</p>

Course Description Form

1. Course Name:					
Vegetables diseases					
2. Course Code:					
0014404					
3. Semester / Year:					
First semester / fourth year					
4. Description Preparation Date:					
2024/02/14					
5. Available Attendance Forms:					
Presence					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (30 theoretical + 30 practical) / 3 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ali Ajil Jassim Email: aliajil2005@mu.edu.iq					
8. Course Objectives					
Course Objectives	<ul style="list-style-type: none"> • Introducing the student to the various types of diseases that affect plants (fungal, bacterial, viral, nematode, and physiological). • Determine the economic importance of these diseases • Identify various environmental factors and their impact on the spread of infectious plant diseases • Pathological symptoms caused by these diseases • Finding the best ways to combat diseases through methods (natural, applied, mechanical, agricultural, biological, legislative, chemical, genetic, integrated control programs) 				
9. Teaching and Learning Strategies					
Strategy	<p>A- Cognitive objectives</p> <ul style="list-style-type: none"> * The student gets to know the diseases that affect plants and their names. * To try to find out how pathogens are transmitted from one field to another or how the pathogen spreads through the same field. * The student must master how to prevent and control the occurrence of diseases. * To be able to find solutions in cases of rapidly spreading epidemic diseases and ways to control them. * Learn about modern methods of disease diagnosis and control. * The student must master how to disseminate the information obtained in disease control. <p>B - The skills objectives of the course.</p> <ul style="list-style-type: none"> * The student must master how to diagnose these diseases. * The student will be able to treat diseases that affect plants * To be proficient in using disease control machines. * To be proficient in using modern and advanced methods of pest control. 				
10. Course Structure					
Week	Hours	Required	Unit or subject	Learning	Evaluation

		Learning Outcomes	name	method	method
1	4	Memorization, understanding, practical application	Nursery diseases	Lecture and discussion	Oral exams
2	4	Memorization, understanding, practical application	Diseases of the Solanaceae family	Lecture and discussion	Quick exam
3	4	Memorization, understanding, practical application	Eggplant diseases	Lecture and discussion	Oral exams
4	4	Memorization, understanding, practical application	Tomato diseases	Lecture and discussion	Quick exam
5	4	Memorization, understanding, practical application	Potato diseases	Lecture and discussion	Oral exams
6	4	Memorization, understanding, practical application	Diseases of the cucurbit	Lecture and discussion	Quick exam
7	4	Memorization, understanding, practical application	Diseases of the cruciferous	Written exam	Written exam
8	4	Memorization, understanding, practical application	Diseases of the Compistae	Lecture and discussion	Oral exams
9	4	Memorization, understanding, practical application	Diseases of the legume	Lecture and discussion	Quick exam
10	4	Memorization, understanding, practical application	Diseases of the legumes	Lecture and discussion	Oral exams
11	4	Memorization, understanding, practical application	Diseases of the lily	Lecture and discussion	Quick exam
12	4	Memorization, understanding, practical application	Diseases of the Malviacea	Lecture and discussion	Oral exams
13	4	Memorization,	Compound	Lecture and	Quick exam

		understanding, practical application	diseases	discussion	
14	4	Memorization, understanding, practical application	Storage diseases	Lecture and discussion	Oral exams
15	4	Memorization, understanding, practical application	Monthly Exam	Written exam	Written exam

11. Course Evaluation

- Theoretical tests: (daily exams - monthly exams - oral exams)
- Practical tests: (daily exams - monthly exams - oral exams)
- Theoretical and practical reports
- Models for examination and practical experiments

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Orchard and vegetables diseases / Dr. Samer Michael
Main references (sources)	- Iraqi Agriculture Journal - Journals dealing with diseases of all field crops - Bulletins issued by agricultural companies and pesticide companies
Recommended books and references (scientific journals, reports...)	- All agricultural sites and crop disease journals
Electronic References, Websites	- World Wide Web