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

Academic Program and Course Description Guide

2024_2025

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: University of Anbar
Faculty/Institute: College of Agriculture
Scientific Department: Plant Protection.
Academic or Professional Program Name: Bachelor / Agricultural Sciences – Plant Protection
Final Certificate Name: Bachelor / Agricultural Sciences – Plant Protection
Academic System: courses
Description Preparation Date: 22/9/2024
File Completion Date: 6/10/2024

Signature:
Head of Department Name:
Asst. Prof. Dr. Faiz Tahseen Fadhel
Date: 6/10/2024

Signature:
Scientific Associate Name:
Asst. Prof. Dr. Osama Hussein Mahedi
Date: 6/10/2024

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Signature: Asst. Prof. Dr. Waleed Ismaal Kurdi
Date: 6/10/2024

Approval of the Dean
Prof. Dr. Idham Ali Abed
Date: 6/10/2024

Academic Program Description Form

University Name: **University of Anbar**

Faculty/Institute: **College of Agriculture**

Scientific Department: **Department of Plant Protection**

Academic or Professional Program Name: **Bachelor of Plant Protection**

Final Certificate Name: **Bachelor of Agricultural Sciences**

Academic System: Course-based system

Description Preparation Date: **2024/4/8**

1. **Program Vision**
Enhancing students' academic level through curriculum development, activating applied research, and striving to introduce the latest agricultural devices and technologies in the field of plant protection. Additionally, expanding postgraduate programs and enhancing the teaching staff with various scientific specialties to achieve the highest possible quality, contributing to the elevation of the Department of Plant Protection and College of Agriculture in global rankings.

2. **Program Mission**
Harnessing all scientific and research capabilities, both theoretical and applied, to address the challenges facing the agricultural sector by preparing competent agricultural engineers capable of solving problems related to plant protection and combating various agricultural pests. This aims to enhance the agricultural sector and improve the quality and quantity of agricultural crops, thereby supporting the overall economy of the country.

3. **Program Objectives**
Providing students with knowledge of the nature and methods of diagnosing agricultural pests and combating them from an academic and professional point of view
Understand the nature of agricultural pests and their livelihood according to scientific standards
Understand the nature of direct and indirect economic damages caused by agricultural pests and how to deal with them according to correct applied scientific methods
Provide students with information on how to manage IPM programs of pests
Develop their awareness regarding dealing with chemical pesticides and how to dispose of their residues
Training students based on the summer training system in the supportive competent authorities, such as the agricultural divisions and the agricultural quarantine

4. **Program Accreditation**

5. **Other external influences**

6. **Program Structure**				
Program Structure	**Number of Courses**	**Credit hours**	**Percentage**	**Reviews***
Institution Requirements	12	14	20.33%	
College Requirements	23	77.5	38.98%	
Department Requirements	24	78.5	40.67%	
Summer Training	**1**			
Other				

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

7. Program Description				
Years 2, 3 and 4 Following courses system				
Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Second	**APP2201**	Principles of statistics	2	3
Second	**APP2202**	Machinery & equipment control	2	3
Second	**APP2203**	Plant taxonomy	2	3
Second	**APP1204**	Computer Science 3		3
Second	**APP2205**	Principles of animal production	2	3
Second	**APP2206**	Microbiology	2	3
Second	**APP1207**	English language 2	1	
Second	**APP1208**	The crimes of the Baath regime	1	
Second	**APP2209**	Plant physiology	2	3
Second	**APP1210**	Computer Science 4		3
Second	**APP3211**	Medical &veterinary insects	2	3
Second	**APP1212**	Arabic language	1	
Second	**APP3213**	Insects taxonomy	2	3
Second	**APP2214**	Plant nutrition	2	3
Second	**APP2215**	Analytic chemistry	2	3
Second	**APP2216**	Principles of field crops	2	3
Third	**APP3301**	Insect physiology	2	3
Third	**APP2302**	Ecology	2	3
Third	**APP2303**	Experimental design &analysis	2	3
Third	**APP3304**	Mycology 1	2	3
Third	**APP2305**	Biochemistry	2	3
Third	**APP2306**	Plant genetic	2	3

Third	**APP2307**	Agricultural extension	2	
Third	**APP2308**	Plant breeding	2	3
Third	**APP3309**	Plant pathology	2	3
Third	**APP3310**	Bee breeding	2	3
Third	**APP3311**	Mycology 2	2	3
Third	**APP3312**	Nematodes	2	3
Third	**APP2313**	Biotechnology	2	3
Third	**APP2314**	Weed & control methods	2	3
Third	**APP1315**	English language 3	1	
Fourth	**APP3401**	Field crops diseases	2	3
Fourth	**APP3402**	Biological control	2	3
Fourth	**APP3403**	Storage pests	2	3
Fourth	**APP3404**	Pesticides	2	3
Fourth	**APP3405**	Insect ecology	2	3
Fourth	**APP3406**	Diseases of vegetables & protected agriculture	2	3
Fourth	**APP3407**	Acarology	2	3
Fourth	**APP3408**	Fruit diseases	2	3
Fourth	**APP3409**	Plant virology	2	3
Fourth	**APP3410**	Field crops insects	2	3
Fourth	**APP3411**	Horticultures insects	2	3
Fourth	**APP3412**	Integrated pest management	2	3
Fourth	**APP1413**	English language 4	1	
Fourth	**APP3414**	Seminar	2	
Fourth	**APP3415**	Research project	1	

8. Expected learning outcomes of the program

Knowledge

1- Instilling values and principles in the student by emphasizing the independence of the statistician when expressing his impartial opinion

2- Emphasis on personal characteristics such as integrity, honesty, confidentiality and morals.

3 - Statement of the importance of the rules of professional conduct and its exposure to legal penalties in case of violation

4- Emphasizing the importance of combating financial and administrative corruption by the regulatory bodies

Skills

1- Determine the type of pest
2- Determining the level of economic damage
3- Determining the type, method and timing of the control
4- Integrated pest management

Ethics

1 - Through the participation of students in the lecture, based on their prior preparation of the subject.
2 - Giving them an exercise as homework and asking for it to be solved with separate papers, collected from them in the next lecture.
3- Giving the students a case study and dividing the students into groups to write a report about such study.
4- Evaluation through periodic monthly exams.

9. Teaching and Learning Strategies

1- Adopting the method of giving lectures and linking each topic with examples from the reality of the agricultural work situation
2- Giving them some simple practical exercises that are discussed by the students and solved during the lecture
With the participation of all students in the section with the professor to give the material as a kind of interaction.
3- Training students in laboratories by conducting the necessary laboratory tests for diagnosis
4- Summer training in supporting institutions such as the Directorates of Agriculture, Silos and Agricultural Quarantine

10. Evaluation methods

1 - Through the participation of students in the lecture, based on their prior preparation of the subject.
2 - Giving them an exercise as a homework and asking for it to be solved with separate papers, collected from them in the next lecture.
3- Giving the students a case study and dividing the students into groups to write a report about such study.
4- Evaluation through periodic monthly exams.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof.	Crop Fields	Plant Biotechnologies			√	
Prof.	Plant Protection	Pesticides			√	
Assist.Prof.	Crop Fields	Plant Genetics			√	
Assist.Prof.	Plant Protection	Fungal Toxins			√	
Assist.Prof.	Plant Protection	Biological Resistance			√	
Assist.Prof.	Plant Protection	Insects			√	
Assist.Prof.	Plant Protection	Fungi			√	
Assist.Prof.	Plant Protection	Fungi			√	
Assist.Prof.	Crop Fields	Plant Genitics			√	
Lecturer.Dr	Plant Protection	Plant Pathology			√	

Lecturer.Dr	**Plant Protection**	**Insects**			√	
Lecturer.	**Plant Protection**	**Plant Protection**			√	
Lecturer.	**Plant Protection**	**Plant Protection**			√	
Assist. Lecturer.	**Plant Protection**	**Plant Protection**			√	
Assist. Lecturer.	**Plant Protection**	**Plant Protection**			√	
Assist. Lecturer.	**Plant Protection**	**Plant Protection**			√	
Assist. Lecturer.	**Plant Protection**	**Plant Protection**			√	

Professional Development

Mentoring new faculty members

Motivating faculty members to join developmental programs and specialized courses held in the scientific department, college, or university, encouraging them to accomplish the required tasks, and preparing educational programs according to the standards required by the Ministry of Higher Education and Scientific Research. Directing them to pass the teaching methods course and the teaching competency course held at the Continuous Education Center/University Presidency.

Professional development of faculty members

Guiding instructors to join skill development courses held in the scientific department, college, or university, such as specialized courses, workshops, and seminars like Civil Defense and ISO courses, etc.

12.	**Acceptance Criterion**
Central	

13.	**The most important sources of information about the program**
Website: *https://www.uoanbar.edu.iq/AgricultureCollege/CMS.php?ID=31* ***E-mail:*** *plantprotection@uoanbar.edu.iq*	

14.	Program Development Plan
Forming committees from the faculty members holding scientific titles and those with expertise to update the curricula to align with scientific advancements for each course.	

Program Skills Outline															
				Required program Learning outcomes											
Year/Level 2024_2025	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second	APP2201	Principles of statistics	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second	APP2202	Machinery & equipment control	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second	APP2203	Plant taxonomy	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second	APP1204	Computer Science 3	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second	APP2205	Principles of animal production	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second	APP2206	Microbiology	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second	APP1207	English language 2	Basic	√	√	√	√	√	√	√	√	√	√	√	√

Second	**APP1208**	**The crimes of the Baath regime**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP2209**	**Plant physiology**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP1210**	**Computer Science 4**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP3211**	**Medical &veterinary insects**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP1212**	**Arabic language**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP3213**	**Insects taxonomy**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP2214**	**Plant nutrition**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP2215**	**Analytic chemistry**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP2216**	**Principles of field crops**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second	**APP3301**	**Insect physiology**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√

Third	**APP2302**	**Ecology**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP2303**	**Experimental design &analysis**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP3304**	**Mycology 1**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP2305**	**Biochemistry**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP2306**	**Plant genetic**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP2307**	**Agricultural extension**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP2308**	**Plant breeding**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP3309**	**Plant pathology**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP3310**	**Bee breeding**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP3311**	**Mycology 2**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP3312**	**Nematodes**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP2313**	**Biotechnology**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√

Third	**APP2314**	**Weed & control methods**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Third	**APP1315**	**English language 3**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3401**	**Field crops diseases**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3402**	**Biological control**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3403**	**Storage pests**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3404**	**Pesticides**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3405**	**Insect ecology**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3406**	**Diseases of vegetables & protected agriculture**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3407**	**Acarology**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3408**	**Fruit diseases**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3409**	**Plant virology**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√

Fourth	**APP3410**	**Field crops insects**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3411**	**Horticultures insects**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3412**	**Integrated pest management**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP1413**	**English language 4**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3414**	**Seminar**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	**APP3415**	**Research project**	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√

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

MODULE DESCRIPTION FORM

Year 2, 3 and 4 Following Courses System

Course Description Form

1. Course Name: Beekeeping
2. Course Code: APP3309
3. Semester / Year: Second/ Third
2024_2025
4. Description Preparation Date : (22- 9 – 2024)
5. Available Attendance Forms: lectures
6. Number of Credit Hours (Total) / Number of Units (Total): 75
7. Course administrator's name (mention all, if more than one name)
Name: Waad Hamoudi Awad Email: waad.awaad@uoanbar.iq
8. Course Objectives
The beekeeping course, both practical and theoretical, aims to introduce students to the be insect, what is the economic and medical importance of raising this insect, how to deal wi it correctly, and what is the benefit of beekeeping.
9. Teaching and Learning Strategies
A- Knowledge and Understanding A1- Understand the science of beekeeping A2- Identify the types and breeds of honey bees A 3- Distinguish between the different pests that infect bees. A4- Knowing the economic importance of beekeeping A 5- Knowing the correct and modern methods of beekeeping A6 - Real knowledge of practical methods for managing the apiary.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Initial knowledge about bees	the introduction Development and breeding of bees and signed by the animal kingdom and its types Taxonomic position of bees in the animal kingdom Beekeeping in Iraq Breeds of bees in Iraq	Lecture	quiz
2	5	Knowledge of beekeeping ar and life behav	The best beekeeping areas in Iraq Sources of nectar and pollen The life behavior of honey bees The life cycle of honey bees mating behavior egg laying behavior	Lecture	quiz
3	5	Know the divisions and ages of the bee insect	Periods of immature roles for honeybees larval stage virgins stage adult stage Formal traits between queens, workers, and male	Lecture	quiz
4	5	Knowing the economic importance of beekeeping	The economic importance of beekeeping Honey and its benefits Royal food and its benefits Wax and its benefits Pollen and its benefits Bee venom and its benefits Propolis and its benefits	Lecture	quiz
5	5	Know the behavior of mating and laying eggs	Honey bee brood production Economical plant pollination	Lecture	quiz

			Production of fertilized queens and divisions business of individuals Queen's business Housework work		
6	5	Knowing the work of the workers throughout the year	The work of the field workers collect nectar pollen collection Pollen collection mechanism collecting water water use	Lecture	quiz
7	5	Learn about the external anatomy of a honey bee	External anatomy of a honey bee The head and its appendages The chest and its appendages The abdomen and its appendages the Queen female kingdom Factors affecting the construction of royal houses Queen production supplies Conditions of the nanny sect Breeding of virgin queens queen production	Lecture	quiz
8	5	Learn about the methods and purpose of artificial feeding	robbery industrial feeding nutrition purposes Signs of a nutritional deficiency types of nutrition Important notes on nutrition Feeding times and concentrations of nutrient solutions types of food	Lecture	quiz
9	5	Recognize the trapping and ways to prevent	natural reproduction (scattering) When does expulsion happen? Reasons for the occurrence of swarming	Lecture	quiz

			swarming damage spurting marks Methods of preventing swarming		
10	5	Identifying late parcels and ways to keep parcels	late swarming expulsion and substitution Keeping and housing parcels Some cases of parcel holding Division of sects The stages of producing g denominations	Lecture	quiz
11	5	Learn about honey sorting and packing tools	honey sorting tools Honey sorting tools from modern cells excretions honey filter Packing tools after sorting	Lecture	Quiz
12	5	Learn how to sell honey and packaging	packing containers Honey discs and strips Sorting honey from municipal cells Honey sorting for amateurs and beginners Auxiliary tools for the screening process	Lecture	Quiz
13	5	Knowing the locations of the beekeepers and the work of the beekeeper	Apiaries sites disintegrated The work of the beekeeper during the months of the year Actions that honey bees do themselves Dispersal measures taken by the beekeeper Biological and nutritional status of cells before and after dispersal Indoors in the basement Cell dispersal materials	Lecture	Quiz
14	5	Identify diseases and pests of bees	bee pest diseases brood diseases American brood rot disease Nosemia disease bee paralysis Deformed wings virus	Lecture	Quiz
15	5	Learn about	Varroa disease	Lecture	Quiz

		some bee pests	Wax moths Great Wax Moth Minor wax moth red hornet Abi Khudair bird		

11. Course Evaluation

12. Learning and Teaching Resources

Required textbooks (curricular books any)	
Main references (sources)	Beekeeping for amateurs and beginners / Abdul Baqi Muhammad Al-Ali _ 2011
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://m.facebook.com/groups/703717849742773?view permalink&id=1781528738628340 https://m.facebook.com/groups/703717849742773?view permalink&id=1781525558628658 https://m.facebook.com/groups/703717849742773?view permalink&id=1781524501962097 https://m.facebook.com/groups/703717849742773?view permalink&id=1641398395974709. https://m.facebook.com/groups/703717849742773?view

Course Description Form

1. Course Name: Vegetable Diseases and Protected 2. Agriculture
3. Course Code: APP3406
4. Semester / Year: SPRING
2024_2025
5. Description Preparation Date: (22- 9 – 2024)
6. Available Attendance Forms: IN CLASS
7. Number of Credit Hours (Total) / Number of Units (Total): 5HOURS/3.5 UNITS
8. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof. Dr. Jasim Mahmood Abed ag.jasim.mahmoodl@uoanbar.edu.iq
9. Course Objectives

Course Objectives	**1- Knowledge and UnderstandingA1. Understand the concept of plant disease** **2. Distinguishing between communicable and non-communicable diseases** **3. Distinguishing between the types of pathogens: fung bacterial, alphaviral, nematode and others** **4. The most important losses caused by vegetable diseases in open and protected agriculture** **5. Knowing the most important diseases that affect vegetable crops in open and protected agriculture.** **6 . Identify the characteristics of protected agriculture i terms of productivity and the environments it requires.**

10. Teaching and Learning Strategies	
Strategy	Teaching therolotical parts in class by using data show and some new methods, Teaching the practical part through field visits/work in the department's laboratories
11. Course Structure	

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	5	Introduction to plant diseases	1- plant disease 2. Losses caused by plant diseases 3. Methods used in the diagnosis of plant diseases 4. The most important symptoms and signs of illness 5- How do plants defend themselves? 6- The most important pathogens	Lecture	Quiz
2	5	Diseases of the Solanaceae	The most important fungal, bacterial and viral diseases that affect	Lecture	Quiz
3	5	Diseases of the Solanaceae	The most important fungal, bacterial and viral diseases that affect the crop	Lecture	Quiz
4	5	Diseases of the cucurbit	The most important fungal, bacterial and viral diseases that affect the crop	Lecture	Quiz
5	5	Diseases of the cucurbit	The most important fungal, bacterial and viral diseases that affect the crop	Lecture	Quiz
6	5	Compositae Diseases	The most important fungal, bacterial and viral diseases that affect the crops	Lecture	Quiz
7	5	Compositae Diseases	The most important fungal, bacterial and viral diseases that affect the crops	Lecture	Quiz
8	5	Leguminosae Disease	The most important fungal, bacterial and viral diseases that affect the crops	Lecture	Quiz
9	5	Liliaceae Disease	The most important fungal, bacterial and viral diseases that affect the crop	Lecture	Quiz
10	5	Mallowceae diseases	The most important fungal, bacterial and viral diseases that affect the crop	Lecture	Quiz
11	5	Diseases of ornamental plants	The most important fungal, bacterial and viral diseases that affect the crop	Lecture	quiz
12	5	Nursery diseases	The most important fungal, bacterial and viral diseases that affect the crop	Lecture	quiz

13	**5**	**Post - harvest diseases**	**The most important fungal, bacterial and viral diseases that affect the crop**	**Lecture**	**quiz**
14	**5**			**Lecture**	**quiz**
15	**5**	**Identify and diagnose nematode diseases**	**The most important l, nematodes diseases that affect the crop**	**Lecture**	**quiz**

12. 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

13. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Horticulture and vegetable diseases/Dr. Samir Hosni Mikhail, Dr. Abdel Hamid Tarabieh and Mr. Jawad Al-Zarari / 1981
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Youtube.com Springer.com

Course Description Form

1. Course Name:	
General Mathematics	
2. Course Code:	
3. Semester / Year:	
First Semester/2024-20245	
4. Description Preparation Date:	
2024/9/22	
5. Available Attendance Forms:	
in-person learning	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30/2	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr.Bilal Yaseen Taher Email: ag.bilal.yaseen@Uoanbar.edu.iq	
8. Course Objectives	
Course Objectives	A-Ability to understand the principle of mathematical functions B-Increasing the skills of students using it to solve the problems C-Ability the undergraduate students to use these skills in different fields. D-Ability the students to graph equations, inequalities and all function
9. Teaching and Learning Strategies	
Strategy	A1. Analysis the problems and understand how can you be ability to solve it. A2. Testing these equations in the practical experimental. A3. Using equations to find variables in the problems. A4. Ability to convert the scales on the real number line. A5. Ability of student to evaluate the problems, and writing the scientific reports. A6. The student can acquire the practical and scientific experience his specialized field.it.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Analysis the problems and understand how can you be able to solve it.	The rate of change function	Theoretical Lectures,white board	questions , discussions, and examples
Second	2	Ability to use suitable coordinates in the problems.	Cartesian coordinates	on the white boa	questions , discussions, and examples
Third	2	Ability to use suitable coordinates in the problems.	Increments in coordinates	on the white board, Homewo	questions , discussions, and examples
Fourth	2	Using slope to find the variables in the problems.	Slope and angles of inclination	on the white boa	questions , discussions, and examples
Fifth	2	Exam of first month			
Sixth	2	special cases of slope of lines	Properties of parallel and perpendicular lines	on the white boa	questions , discussions, and examples
Seventh	2	Boundary conditions for	Domain and Range of functions	on the white boa	questions , discussions, and examples
Eighth	2	solving equation of Absolute values and inequalities	Absolute values for equations and inequalities	on the white boa	questions , discussions, and examples
Ninth	2	solving equations of Exponential and logarithm	Exponential and logarithm functions	on the white boa	questions , discussions, and examples
Tenth	2	Exam of second month			
Eleventh	2	solving equations of Trigonometric	Trigonometric functions	on the white boa	questions , discussions, and examples
Twelfth	2	solving equations of Inverse Trigonometric.	Inverse Trigonometric functions	on the white boa	questions , discussions, and examples
Thirteenth	2	Prove identities of Trigonometric functions	Identities of Trigonometric functions	on the white boa Homework	questions , discussions, and examples
Fourteenth	2	Testing these equations in the practical experimental.	Solve all homework and problems	on the white boa Homework, Applications computers	questions , discussions, and examples

		Exam of the third month

11. Course Evaluation

Theory exam 30%, Practical Quiz 10%, Practical exam 10%, final exam 50%.
Final degree from 100%.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Calculus, Thomas, 11Ed, 2006, Addison-Wesley, United States.
Recommended books and references (scientific journals, reports…)	Understanding Basic Calcul S.K.Chung, Wolfram,2007, Hc Kong.
Electronic References, Websites	https://en.wikipedia.org/wiki/Function_ (mathematics(

Course Description Form

1. Course Name: **Experiment Design**
2. Course Code: **AFC1932**
3. Semester / Year: **Course Autumn**
2024_2025
4. Description Preparation Date: (22- 9 – 2024)
5. Available Attendance Forms: **Direct**
6. Number of Credit Hours (Total) / Number of Units (Total) 75 / 5
7. Course administrator's name (mention all, if more than one name)
Name:. Dr. Hadeel Sabar Hamad Email: ag.hadeel.sabar@uoanbar.edu.iq
Course Objectives :
8.

The student learns about the scientific foundations designing and analyzing theoretical and practi experiments	**Learn about modern technologies relevant to designing experiments**

9. Teaching and Learning Strategies	
Strategy	**A** - Expanding the student's theoretical and practical understandings **B**- Access to recent and critical experiments related to experimental design **C**-Learn about methods for designing experiments, processes, and conditions surrounding the research or experiment

10. Course Structure

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

1	(30 hours theoretical + 45 practical) (75 hours 5 hours (2 + 3)	Look and work Explanation and interpretation with Use means Electronic clarification	Introduction to the history of statistics, first researchers in designing experimer studying statistical tests	theoretical practical	Theoretical and practical tests
2	5	Look and work Explanation and interpretation with Use means Electronic clarification	An introduction to the history of statistics, the first researchers in statistics and experimental design,	heoretical and practical	Theoretical and practical tests
3	5	Look and work Explanation and interpretation with Use means Electronic clarification	The importance designing experime for the researcher	theoretical and practical	Theoretical and practical tests
4	5	Look and work Explanation and interpretation with Use means Electronic clarification	Sources of differe in the design experiments	theoretical and practical	Theoretical and practical tests
5	5	Look and work Explanation and interpretation with Use means Electronic clarification	Completely randomized C isometric design	theoretical and practical	Theoretical and practical tests
6	5	Look and work Explanation and interpretation with Use means Electronic clarification	Solve iso-repea whole-randomized CRD exercises	theoretical and practical	Theoretical and practical tests
7	5	Look and work Explanation and interpretation with Use means Electronic clarification	Completely randomized C design with uneq replicates.	theoretical and practical	Theoretical and practical tests
8	5	Look and work Explanation and interpretation with Use means Electronic clarification	Solve the exercises complete randomi CRD isome replication design.	theoretical and practical	Theoretical and practical tests
9	5	Look and work Explanation and interpretation with Use means	Randomized compl block design (RCBI	theoretical and practical	Theoretical and practical tests

		Electronic clarification			
10	5	Look and work Explanation and interpretation with Use means Electronic clarification	RCBD Randomi Complete Bl Design Exercises	theoretical and practical	Theoretical and practical tests
11	5	Look and work Explanation and interpretation with Use means Electronic clarification	Missed View Rating	theoretical and practical	Theoretical and practical tests
12	5	Look and work Explanation and interpretation with Use means Electronic clarification	latin square design	theoretical and practical	Theoretical and practical tests
13	5	Look and work Explanation and interpretation with Use means Electronic clarification	split experiences	theoretical and practical	Theoretical and practical tests
14	5	Look and work Explanation and interpretation with Use means Electronic clarification	Split plot experiments Exercises	theoretical and practical	Theoretical and practical tests
15	5	Look and work Explanation and interpretation with Use means Electronic clarification	Orthogonal comparisons experiments and trend analysis	theoretical and practical	Theoretical and practical tests

11. Course Evaluation

1-Weekly tests (quiz) and semester and final exams (theoretical and practical).
2- Interaction within the lecture.
3- Attendance.
4- Commitment and discipline within the classroom and laboratory.
5- Preparing scientific reports, providing scientific explanations and presenting them
6-Expanding the student's theoretical and practical understandings
7- Learn about modern techniques relevant to Design of experiments

8- Identify the surrounding factors related to the science of Design of experiments
9-Learn about Design of experiments and field planning operations.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book of Statistical methods book for agricultural research

Main references (sources)	Book of Agricultural experiment design and analysis book
Recommended books and references (scientific journals, reports…)	Book of applications in the design and analysis of experiments
Electronic References, Websites	hpp// **Principles of experimental design. com.**

Course Description Form

13. Course Name: Field crops insects
14. Course Code: APP3410
15. Semester / Year: Second/fourth
2024_2025
16. Description Preparation Date: (22- 9 – 2024)
17.Available Attendance Forms: lectures
18.Number of Credit Hours (Total) / Number of Units (Total): 75
19. Course administrator's name (mention all, if more than one name)
Name: Waad Hamoudi Awad Email: waad.awaad@uoanbar.iq
20. Course Objectives
The field crop insects course aims to introduce students to the insect pests that infect field crop plants and how to identify them through the phenotypic characteristics of these insects. damage using the best technology.
21. Teaching and Learning Strategies
1- Adopting the method of giving lectures and linking each topic with examples from the reality of the agricultural work situation 2- Giving them some simple practical exercises that are discussed by the students and solved during the lecture with the participation of all students in the section with the professor to give the material as a kind of interaction.

3- Training students in laboratories by conducting the necessary laboratory tests for diagnosis
4- Summer training in supporting institutions such as the directorates of agriculture, silos and agricultural quarantine

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	1- Entomology 2- class of insects 3- Characteristics of a class of insects 4- Evolution and Impossibility [Metamorphosis 5- Insect Orders	Knowledge of entomology and identification of the characteristics of the class of insects and the types of evolution in insects	Lecture	
2	5	Gryllatalpa gryllotalpa Life cycle, damage and control method -2Desert locusts Schistocerca gregaria Life cycle, damage and control method	Biological knowledge, description and damage of the desert locust and carp insects	Lecture	
3	5	-1Ocnogyna loewii -2Microcerotermes diversus Study the life cycle, damage and control method	Knowledge of the outward appearance, lifestyle and damage of spring worms and termites	Lecture	
4	5	1-Eurygaster integriceps -2Haplothrips tritici Study the life cycle, damage and control method	Knowledge of the external appearance, lifestyle and damage of the sun and thrips insects	Lecture	
5	5	-1Schizaphis graminum -2Oria musculosa -3 Syringopais temperatella	Knowledge of the structure and knowledge of the external shape, lifesty and damage to an ins of wheat, ear breaker and wheat leaf borer	Lecture	

		Study the life cycle, damage and control method			
6	5	–1 Anisoplia austriaca –2 Zabrus morio –3 Phytophaga destructor Study the life cycle, damage and control method	Knowledge of the structure, external appearance, lifestyle and damage of the wheat-making insect, the chewer of wheat seedlings and the Hechian fly.	Lecture	
7	5	–1 Cephus pygmaeus –2Rhopalosiphum (Aphis) maidis Study the life cycle, damage and control method	Knowledge of the structure, external shape, lifestyle and damage of the two insects of the Saw-wheat wasp and from the aphid corn	Lecture	
8	5	–1 Leucania loreyi –2 Sesamia critica –3 Aphis craccivora Study the life cycle, damage and control method	Knowledge of the structure, outward appearance, lifestyle, and damage to cornworms, corn stalk borers, Aphis craccivora	Lecture	
9	5	–1 Therioaphis maculat Hypera fascocinerea Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and the control of my insects from Therioaphis maculate and the Hypera fascocinerea	Lecture	
10	5	–1 Aphis fabae –2 Bruchus rufimanus –3 Bruchidius incarnates –4	Knowing the external appearance and symptoms of infection and control each insect of the aphid black bean, the bean beetle, the legume worm and the cowpea leaf border	Lecture	

		Cosmolyce boeticus –5 Phytomysa atricarnis Study the life cycle, damage and control method			
11	5	–1 Aphis gossypii Clover –2 Bemisia gossypipedra (Bemisia tabaci(–3 Thrips tabaci Lind Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and control each of the cotton bug, cotton white fly and onion thrips	Lecture	
12	5	–1 Oxycarenus hyalinipennis cost –2 Spodoptera Littoralis (Boisd(Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and control of both the cottonseed bugs and the cotton leaf worm	Lecture	
13	5	–1 Pegomyia hoyoscyami –2Phyllotreta cruciferae –3 Myzus persicae Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and control each of the beet leaf borer, the cruciferous flea beetle, and the aphid green peach	Lecture	
14	5	–1 Spodoptera (Laphygma) exigua –2 Agrotis ipsilon –3 Heliothis armigera –4	Knowing the external appearance and symptoms of infection and control each of the green worm, cutworm, American cotton nut worm and thistle	Lecture	

		Eris insulana Boisd Study the life cycle, damage and control method			

23. Course Evaluation

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Field crop insects / Iyad Youssef Al-Haj Ismail Economic Insects / Ibrahim Kaddouri
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

25. Course Name:	
Plant Breeding	
26. Course Code:	
APP3311	
27. Semester / Year:	
2024_2025	
28. Description Preparation Date:	
2024/9/22	
29.Available Attendance Forms:	
In person, class	
30.Number of Credit Hours (Total) / Number of Units (Total)	
31. Course administrator's name (mention all, if more than one name)	
Name: Faiz Tahseen Fadhel Email: ag.faiz.tahseen@uoanbar.edu.iq	
32. Course Objectives	
Course Objecti	1- The student will be acquainted with the scientific bases in plant breeding, both theoretical and practical 2- Expand the student's theoretical and practical knowledge 3- Getting acquainted with the modern techniques related to plant breeding. 4- Increasing students' awareness in identifying recent trends in plant breeding, which include modern and vital technologies.5- Identifying biotic and abiotic factors related to plant breeding. 6- The student deduces the relationship between the genetic structure of the organism and the traits that distinguish it from others and how to transfer those traits between generations
33. Teaching and Learning Strategies	
Strategy	1-Adopting the method of giving lectures and linking each topic with examples from the reality of agricultural work 2- Giving the students some simple practical exercises that are discussed by the students and solved during the lecture With the participation of all students in the section with the professor to give the material as a form of interaction 3- Training students in laboratories by conducting the necessa laboratory tests for diagnosis

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student's knowledge of the first and founding era of studied science	Introduction to the history plant breeding	Presentation and training	Discussion Weekly and mon testing
2	5	Student knowledge of systems Reproduction is fundamental understanding Genetic variations	Reproduction systems in plants,	Presentation and training	Discussion Weekly and mont testing
3	5	The student's knowledge of genetic material, which is the basis of the work of plant breeders	Cell, nucleus, chromosom	Presentation and training	Discussion Weekly and mont testing
4	5	The student's familiarity with sources Genetic variations in The plant community, which i considered the raw material fo plant development and improvement	Genetic variations sources And environmental interaction	Presentation and training	Discussion Weekly and mont testing
5	5	Student awareness of how to transfer Intergenerational traits and how Control it and benefit from it Education improvement programmers	Hardy and Weinberg's law, genetic action and genetic repetition Types of genetic action	Presentation and training	Discussion Weekly and mont testing
6	5	One of the important cases in Plant to understand the mechanism of production of some Hybrids and breeds	Sterility, male and cytoplasmic sterility, self-incompatibility, and culturing of strains in cytoplasmic male sterility.	Presentation and training	Discussion Weekly and mont testing
7	5	How to produce hybrids and varieties and mix the desired genotypes	Multi-parental hybrid cultivars, their deduction, progeny deduction, transfe traits to progeny, isolation distances.	Presentation and training	Discussion Weekly and mont testing
8	5		Quantitative genetics, crop yield improvement and the genes responsible for it, yi and yield components	Presentation and training	Discussion Weekly and mont testing
9	5	To understand the breeding of self-pollinating plants	Breeding cross-pollinated crops, quantitative selection	Presentation and training	Discussion Weekly and mont testing
10	5	To understand the breeding mechanism of cross-pollinate plants	Calculating the Heterosi of the hybrid and attributing heritability in the broad and narrow se	Presentation and training	Discussion Weekly and mont testing
11	5	Knowledge of the mechanism development of vegetative reproductive crops	Breeding vegetative crops, breeding, cultivar selection and hybrid breeding	Presentation and training	Discussion Weekly and mont testing
12	5	Knowing the mechanism of controlling the trait, whether it is genetic or environmental , how to benefit from it in breeding programs, and knowing which genetic combinations are best for use.	Breeding to resist various epidemics	Presentation and training	Discussion Weekly and mont testing

13	5	The student's knowledge of genetic material, which is the basis of the work of plant breeders	Tissue culture and biotechnology in plant breeding	Presentation and training	Discussion Weekly and mont testing
14	5	Understanding Modern Methods in plant breeding	Applications of genetic engineering in plant breeding and genetically modified plants,	Presentation and training	Discussion Weekly and mont testing

35. Course Evaluation

1- Daily and monthly tests through questions and discussions in the subject.
2- Evaluating the student's participation in research and scientific reports.
3- Student activities through the possibility of applying some experiments

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of field crops breeding and genetics
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1- Plant breeding and improvement (Medhat A Sahoki, Hamid Globe Ali and Muhammad Ghaf Ahmad) 2-Breeding of field crops (john Milton)
Electronic References, Websites	

Course Description Form

37. Course Name:	
Plant Breeding	
38. Course Code:	
APP3301	
39. Semester / Year:	
2024_2025	
40. Description Preparation Date:	
2024/9/22	
41.Available Attendance Forms:	
In person, class	
42.Number of Credit Hours (Total) / Number of Units (Total)	
43. Course administrator's name (mention all, if more than one name)	
Name: Faiz Tahseen Fadhel Email: ag.faiz.tahseen@uoanbar.edu.iq	
44. Course Objectives	
Course Objective	1- The student will be acquainted with the scientific bases in plant genetics, both theoretical and practical 2- Expand the student's theoretical and practical knowledge 3- Getting acquainted with the modern techniques related to plant genetics. 4- Increasing students' awareness in identifying recent trends in plant genetics, which include modern and vital technologies. 5- Identifying biotic and abiotic factors related to plant genetics. 6- The student deduces the relationship between the genetic structure of the organism and the traits that distinguish it from others and how to transfer those traits between generations
45. Teaching and Learning Strategies	
Strategy	4- Adopting the method of giving lectures and linking each topic with examples from the reality of agricultural work 5- Giving the students some simple practical exercises that are discussed by the students and solved during the lecture With the participation of all students in the section with the professor to give the material as a form of interaction 6- Training students in laboratories by conducting the necessary laboratory tests diagnosis
46. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student's knowledge of the first and founding era of studied science	An introduction to genetics, including its origins, development prospects, and achievements in the fields of agriculture, medicine, society, and its relationship with plant breeding.	Presentation and training	Discussion Weekly and monthly testing
2	5	Student knowledge of systems Reproduction is fundamental understanding Genetic variations	Introduction to the cell and chromosome, types of divisions: cell division, meiosis, and mitosis in prokaryotic organisms	Presentation and training	Discussion Weekly and monthly testing
3	5	The student's knowledge of genetic material, which is the basis of the work of plant breed	Mendelian inheritance: the laws of isolation and free distribution of genes, types of crossbreeding, the use of the Point square, the branching method in determining the ratios of genotypes, phenotypic forms, and types of gametes.	Presentation and training	Discussion Weekly and monthly testing
4	5	The student's familiarity with sources Genetic variations in The plant community, which is considered the raw material for plant development and improvement	Modifications in Mendelian ratios, genetic overlap, lethal alleles, multiple alleles, and self-incompatibility alleles	Presentation and training	Discussion Weekly and monthly testing
5	5	Student awareness of how to transfer Intergenerational traits and how Control it and benefit from it Education a improvement programmers	Statistical analysis of genetic data, chi-square test	Presentation and training	Discussion Weekly and monthly testing
6	5	One of the important cases in Plant to understand the mechanism of production of so Hybrids and breeds	Linkage, crossing over, and chromosomal mapping	Presentation and training	Discussion Weekly and monthly testing
7	5	How to produce hybrids and varieties and mix the desired genotypes	Inheritance of sex and traits linked, determined and influenced by sex, sex in plants	Presentation and training	Discussion Weekly and monthly testing
8	5		Structural changes in chromosomes: additions, deletions, inversions, and inversions	Presentation and training	Discussion Weekly and monthly testing
9	5	To understand the breeding of self-pollinating plants	Types of chromosome duplication, its causes, effects, replicative production and plant breeding	Presentation and training	Discussion Weekly and monthly testing
10	5	To understand the breeding mechanism of cross-pollinated plants	Genetic material: DNA and RNA, specifications and structural composition, types, RNA, Karvith's experiment, replication of genetic material	Presentation and training	Discussion Weekly and monthly testing

11	5	Knowledge of the mechanism development of vegetative reproductive crops	The gene, cloning, translation, protein construction, regulation of gene function, a brief definition of genetic transfer methods	Presentation and training	Discussion Weekly and monthly testing
12	5	Knowing the mechanism of controlling the trait, whether it is genetic or environmental , how to benefit from it in breeding programs, and knowing which genetic combinations are best for use.	Genetic mutations	Presentation and training	Discussion Weekly and monthly testing
13	5	The student's knowledge of genetic material, which is the basis of the work of plant breed	Cytoplasmic inheritance	Presentation and training	Discussion Weekly and monthly testing
14	5	Understanding Modern Methods in plant breeding	Quantitative inheritance, population inheritance, and heritability coefficient,	Presentation and training	Discussion Weekly and monthly testing

47. Course Evaluation

4- Daily and monthly tests through questions and discussions in the subject.
5- Evaluating the student's participation in research and scientific reports.
6- Student activities through the possibility of applying some experiments

48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of field crops breeding and genetics
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1- Plant breeding and improvement (Medhat Al Sahoki, Hamid Globe Ali and Muhammad Ghaffar Ahmad) 2-Breeding of field crops (john Milton)
Electronic References, Websites	

Course Description Form

1. Course Name: pesticides

2. Course Code: Fourth \ **APP3404**

3. Semester / Year: Autumn

2024_2025

4. Description Preparation Date: (22- 9 – 2024)

5. Available Attendance Forms:

Lectures

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

75 Hours 5 Untis

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

Name: Pro.Dr.Khalid W.Ibade
Email: ag.khalid.abade@uoanbar.edu.iq

8. Course Objectives

Course Objectives	Knowing how to diagnose the pest. knowing how to determine the level of damage Knowing method of appropriate control and at the appropriate time Knowing how to manage the integrated crop.

9. Teaching and Learning Strategies

Strategy	The academic course (Pesticides) discusses the fundamental concep of pesticides and categorizes them according to specific criteria.It also delves into methods of pest control using major groups of chemical pesticides, highlighting the characteristics of each group, their modes of action, and their impact and toxicity on organisms and the environment

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5 hours	Agricultural Pests, the Damage They Cause	Types of pests Damage of pests.	Lecture	Exam
2	5 hours	Economic Threshold	Assessing the level of infestation.	Lecture	Exam
3	5 hours	Definition of Pesticide. Advantages and Disadvantages of Pesticides	Determining the Economic threshold.	Lecture	Exam

4	5 hours	A Historical Overview of Pesticide Use. The Key Points to Follow in Chemical Pest Control.	eviewing the use of pesticides and their types.	Lecture	Exam
5	5 hours	Toxicology, Acute Toxicity, Chronic Toxicity, Pesticide Residue.	Identifying the type , econom threshold of pest , Toxicity types .	Lecture	Exam
6	5 hours	Chemical Pesticide Metabolis Metabolic Enzymes, General Metabolic Pathways.		Lecture	Exam
7	5 hours	Semester Exam: Pesticide Classification, Principles of Classification According to Pe Type.	Understand metabolism Enzymes and metabolic pathways.	Lecture	Exam
8	5 hours	Absorption and Translocation of Chemical Pesticides.	Dividing pesticides by Type of pest, toxicity, application methods.	Lecture	Exam
9	5 hours	Insecticides and Their Classifications.	Methods of pesticide absorption.	Lecture	Exam
10	5 hours	Fungicides.	Organochlorine , Carbamates , Pyrethroids I pesticides .	Lecture	Exam
11	5 hours	Herbicides.	Division of Fungicides. Division of Herbicides.	Lecture	Exam
12	5 hours	Nematicides and Rodenticides.	Division Nematicides and Rodenticides pesticides.	Lecture	Exam
13	5 hours	Semester Exam: Pest Resistance to Pesticides + Pesticide Analysis.	Types of resistance , knowing the methods of analysis pesticides.	Lecture	Exam
14	5 hours		Understanding the ecosysten and the pesticide pollution.	Lecture	Exam
15	5 hours	Environmental Pollution by Pesticides.		Lecture	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 (curricu books, if any)	**Chemical pesticides in plant protection .1979 .**
Main references (sources)	**Pesticides (1993) .**
Recommended books and references (scientific journals, reports…)	**- Pesticides science** **- Principles of plant pest control**
Electronic References, Website	https://en.wikipedia.org/wiki/Pesticide https://www.niehs.nih.gov/health/topics/agents/pesticides/index.cfm https://www.researchgate.net/publication/269398458_Pesticides

Course Description Form

1. Course Name: Orchard insects

2. Course Code: Fourth \ **APP3411**

3. Semester / Year: Spring

2024_2025

4. Description Preparation Date: (22- 9 – 2024)

5. Available Attendance Forms:

Lectures

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

75 Hours 5 Untis

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

Name: Pro.Dr.Khalid W.Ibade
Email: ag.khalid.abade@uoanbar.edu.iq

8. Course Objectives

Course Objectives	Identifying the types of insects that afflict plants grown within orchar whether vegetables or fruits, along with understanding their harmful sta and damage, along with methods of control.

9. Teaching and Learning Strategies

Strategy	Adopting the method of delivering lectures and linking each topic with examples from the actual practice of agriculture, while providing students with simple practical exercises that are discussed and solved during the lecture, with the participation of all students in the class along with the professor to enhance interaction. Additionally, training students in laboratories by conducting necessary laboratory tests for diagnosis.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5 hours	Entomology and its relations to the Environment. .	Environmental Factors Influencing the Presence of Insects.	Lecture	Exam.
2	5 hours	Metamorphosis, and the types of larvae and pupa.	The metamorphosis , knowing the types of larvae and pupae.	Lecture	Exam.
3	5 hours	Desert locusts , the mole criket and termite insects.	Identifying the damages insects, economic, Methods Control.	Lecture	Exam.

4	5 hours	Aphids insects and types .	Identifying of aphids types .	Lecture	Exam.
5	5 hours	Palm tree insects.	Identifying the damages insects, economic, Method Control.	Lecture	Exam.
6	5 hours	Citrus insects and stem borers .	The important insects that affect citrus, their life cycles, the damages , they cause, and methods contro	Lecture	Exam.
7	5 hours	Vegetable insects 1, cabbage butterfly and red pumpkin beetle .	Identifying vegetable pests economic, and the damage they cause.	Lecture	Exam.
8	5 hours	Cabbage webworm and Diamondback moth.	Identifying the scientific and common names , modes of damage, method control.	Lecture	Exam.
9	5 hours	Vegetable insects 2, melon fly, Small Cucurbit Fly.	Identifying the damages insects, economic, Method Control.	Lecture	Exam.
10	5 hours	black cutworm, whitefly and gastropod	Identifying the damages insects, economic, methods of control.	Lecture	Exam.
11	5 hours	Vegetable insects 3, bollworm and potato tuber moth .	Identifying the scientific and common names , modes of damage, method control	Lecture	Exam.
12	5 hours	Eggplant stem borer, onion thrips.	The importance insect, its cycle, damages it causes, and methods of control.	Lecture	Exam.
13	5 hours	Carob moth , Moth Cydia and Fig-Tree Moth.	Identifying vegetable pests economic, and the damage they cause.	Lecture	Exam.
14	5 hours	Fig fruit fly, olive leaf fly.	Identifying the damages insects, economic, Method Control.	Lecture	Exam.
15	5 hours	Grape leafhopper , Hawk Moth and cicada.	The importance insect, its cycle, damages it causes, and methods of control	Lecture	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 (curricu books, if any)	Pests of Orchards" by Dr. Iyad Youssef Al-Haj Ismail and Bannan Rakan Dabdoub. Published in 2008 by the Ministry of Higher Education and Scientific Research, Mosul University, 2010.
Main references (sources)	Insects of Orchards" by Salem Jameel Jergis and Dr. Mohammed Abd Karim Mohammed. Published in 1992 by the Ministry of Higher Education and Scientific Research, Mosul University, College of

	Agriculture and Forestry.
Recommended books and references (scientific journals, reports…)	Pests of Fruit CropsA Colour Handbook, Second Edition By Alford , Copyriht . 2014. David V.
Electronic References, Websites	https://link.springer.com/book/10.1007/978-3-662-07913-3

Course Description Form

1. Course Name: MYCOLOGY 2

2. Course Code: APP3034

3. Semester / Year: Semester

2024_2025

4. Description Preparation Date: (22- 9 – 2024)

5. Available Attendance Forms: Lecture

6. Number of Credit Hours (Total) / Number of Units (Total)70 Hours

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

Name: Theyab A Farhan
Email: deab.frahen@uoanbar.idu.iq

8. Course Objectives

Course Objective The course aims to teach students what fungi and mycology are And its direct and indirect economic damage to agricultural crops	What are the symptoms of infection and how to l diagnose and combat it?Correct scientific method the lowest costs.....

9. Teaching and Learning Strategies

Strategy	1- Knowing how to diagnose fungi and their diseases 2 - Knowing how to determine the level of damage, the appropriate type and method of control, and the appropriate timing 3- Knowing how to manage integrated crops

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	kingdom of fungi	The most important characteristics of fungi	Lecture	quiz
2	5	Phylum Chytridia fungi	Knowledge of chytrid fungi	Lecture	quiz
3	5	The most important clas and orders of chytrid fur	Knowledge of composition Internal and external fungi	Lecture	quiz
4	5	The most important clas and orders of chytrid fur	Know the types of fungi	Lecture	quiz
6	5	Division of aerobic fung	Diagnosis of the most important fungi	Lecture	quiz
7	5	Sections, orders and ger of aerobic fungi	Identify the most important fungi And its damage	Lecture	quiz
8	5	Division of zygotic fung	Identify the types The structures formed by the gelatinous cells	Lecture	quiz
9	5	Mycorrhizal fungi divisi	The foundations opted in diagnosis This fungus	Lecture	quiz

10	5	The most important orc and genera of Mycorrhiz	characteristics of these fungi	Lecture	quiz
11	5	Phylum Cystic Fungi	Fundamentals of fungal diagnosis Cystic	Lecture	quiz
12	5	Sections of cyst fungi	Its distinction General characteristics	Lecture	quiz
13	5	characteristics of Phylum asidiomycetes Sections of basidiomycetes	Identify the most important types And ways to classify them	Lecture	quiz
14	5	Imperfect fungi	General characteristics	Lecture	quiz

11. Course Evaluation

1 - Through the participation of students in the lecture, based on their prior preparation of the subject.
2 - Giving them an exercise as a homework and asking for it to be solved with separate papers, collected from them in the next lecture.
3- Giving the students a case study and dividing the students into groups to write a report about that study.
4- Evaluation through monthly exams

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	The Fungi . book Plant disease. book
Main references (sources)	Journals and reserch
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Web set

Course Description Form

1. Course Name: MYCOLOGY 2

2. Course Code: APP3034

3. Semester / Year: Semester

2024_2025

4. Description Preparation Date:

2024/9/22

5. Available Attendance Forms: Lecture

6. Number of Credit Hours (Total) / Number of Units (Total)70 Hours

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

Name: Theyab A Farhan
Email: deab.frahen@uoanbar.idu.iq

8. Course Objectives

Course Objective The course aims to teach students what fungi and mycology are And its direct and indirect economic damage to agricultural crops	What are the symptoms of infection and how to l diagnose and combat it?Correct scientific method the lowest costs……

9. Teaching and Learning Strategies

Strategy	1- Knowing how to diagnose fungi and their diseases 2 - Knowing how to determine the level of damage, the appropriate type and method of control, and the appropriate timing 3- Knowing how to manage integrated crops

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	kingdom of fungi	The most important characteristics of fungi	Lecture	quiz
2	5	Phylum Chytridia fungi	Knowledge of chytrid fungi	Lecture	quiz
3	5	The most important clas and orders of chytrid fur	Knowledge of composition Internal and external fungi	Lecture	quiz
4	5	The most important clas and orders of chytrid fur	Know the types of fungi	Lecture	quiz
6	5	Division of aerobic fung	Diagnosis of the most important fungi	Lecture	quiz
7	5	Sections, orders and ger of aerobic fungi	Identify the most important fungi And its damage	Lecture	quiz
8	5	Division of zygotic fung	Identify the types The structures formed by the gelatinous cells	Lecture	quiz
9	5	Mycorrhizal fungi divisi	The foundations opted in diagnosis This fungus	Lecture	quiz

10	5	The most important orc and genera of Mycorrhiz	characteristics of these fungi	Lecture	quiz
11	5	Phylum Cystic Fungi	Fundamentals of fungal diagnosis Cystic	Lecture	quiz
12	5	Sections of cyst fungi	Its distinction General characteristics	Lecture	quiz
13	5	characteristics of Phylum asidiomycetes Sections of basidiomycetes	Identify the most important types And ways to classify them	Lecture	quiz
14	5	Imperfect fungi	General characteristics	Lecture	quiz

11. Course Evaluation

1 - Through the participation of students in the lecture, based on their prior preparation of the subject.
2 - Giving them an exercise as a homework and asking for it to be solved with separate papers, collected from them in the next lecture.
3- Giving the students a case study and dividing the students into groups to write a report about that study.
4- Evaluation through monthly exams

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	The Fungi . book Plant disease. book
Main references (sources)	Journals and reserch
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Web set

Course Description Form

49. Course Name:	
Crimes of the former Baath regime / AL Baath Crimes	
50. Course Code:	
BACR205	
51. Semester / Year:	
2024_2025	
52. Description Preparation Date:	
2024/9/22	
53. Available Attendance Forms:	
Presence	
54. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours 2 units per week	
55. Course administrator's name (mention all, if more than one name)	
Name: mohammed kareem shaker Email: ag.mohammed.kareem@uoanbar.edu.iq	
56. Course Objectives	
1-Preparing educated students with correct ideas 2- Instilling noble values and morals	**3- Helping in writing scientific research objective** **4- Know the facts and not falsify them** **5- Knowing the repressive methods used by the former regime**
57. Teaching and Learning Strategies	
Strategy	1- Enabling students to obtain the intellectual framework 2- Preparing students with a correct culture 3- Instilling and preserving the principles of patriotism 4- Developing the intellectual side of students 5- Vocabulary formulation and its absence 6- Expanding cognitive awareness

58. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	Understanding an	Violation of rights and freedoms	My presence	the exam
2	2	learning	A descriptive overvie of political systems	My presence	the exam
3	2	skills developmen	The Baathist regime's violation of rights an freedoms	My presence	the exam
4	2	Know the facts	The impact of the behavior of the forme Baathist regime on the society	My presence	the exam
5	2	Knowledge of sou	The impact of the transitional period	My presence	the exam
6	2	principles	The psychological fie + the social field	My presence	the exam
7	2	Knowledge and	Religion and state	My presence	the exam
8	2	awareness	First month exam	My presence	the exam
9	2	Learn high values	Culture, media, and t militarization of socie	My presence	the exam
10	2	raising awareness	The impact of oppression and wars the environment and population	My presence	the exam
11	2	Knowledge and	The use of internationally prohibited weapons and environmental pollution	My presence	the exam
12	2	perception	Scorched earth policy drying of the marshes	My presence	the exam
13	2	Crystallization of	Destruction of the agricultural and anim environment	My presence	the exam
14	2	ideas	Mass graves	My presence	the exam
15	2	Mind developmen	Second month exam	My presence	
		Learn the facts			
		Brief and learn			
		Discrimination			
		Understanding an perception			
		The right style			

59. Course Evaluation
1- Through daily and monthly exams, homework, oral exams, attendance, and 2- class activities.

60. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Curriculum Crimes of the former Baath regime
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Arabic
2. Course Code:
BRAL104
3. Semester / Year:
2024_2025
4. Description Preparation Date:
2024/9/22
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours 2 units per week
7. Course administrator's name (mention all, if more than one name)
Name: mohammed kareem shaker Email: ag.mohammed.kareem@uoanbar.edu.iq
8. Course Objectives

1- Preparing students, including the Arabic language 2- Instilling the values of the Arabic language the hearts of students	**3–Assistance in writing scientific research in objective Arabic** **4– Familiarity with Arabic language vocabulary a correct spelling** **5– Knowing the common mistakes**

9. Teaching and Learning Strategies	
Strategy	1- Enabling students to obtain the intellectual framework for the Arabic language subject 2- Preparing students linguistically and educationally 3- A solid knowledge of the Arabic language vocabulary that enables the student formulate Arabic vocabulary 4- Avoid spelling mistakes 5- Correct pronunciation of some vocabulary 6- Expanding cognitive awareness

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understanding an	Sections of speech	My presence	the exam
2	2	learning	punctuation mark	My presence	the exam
3	2	skills developmen	Common linguistic	My presence	the exam
4	2	Correct spelling	errors	My presence	the exam
5	2	Know the errors	The difference	My presence	the exam
6	2	Knowledge and	between dha and	My presence	the exam
7	2	awareness	dha	My presence	the exam
8	2	Learn to parse	Solar and lunar lar	My presence	the exam
9	2	Learn to parse	The simple and	My presence	the exam
10	2	Knowledge and	marbuta tā’	My presence	the exam
11	2	perception	Number and	My presence	the exam
12	2	Learn Arabic	number	My presence	the exam
13	2	Proper	Suspicious actions	My presence	the exam
14	2	pronunciation	Imperfect verbs	My presence	the exam
15	2	Learn the differences	The subject and th predicate	My presence	
		Brief and learn Discrimination	Sound feminine plural		
		Understanding an perception	Sound masculine plural		
		The right style	The parsing Discrimination Exception		

11. Course Evaluation

1- Through daily and monthly exams, homework, oral exams, attendance, and class activities.

12. Learning and Teaching Resources

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

Course Description Form

61. Course Name: Field crops insects
62. Course Code: APP3410
63. Semester / Year: Second/fourth
2024_2025
64. Description Preparation Date
2024/9/22
65.Available Attendance Forms: lectures
66.Number of Credit Hours (Total) / Number of Units (Total): 75
67. Course administrator's name (mention all, if more than one name)
Name: Waad Hamoudi Awad Email: waad.awaad@uoanbar.iq
68. Course Objectives
The field crop insects course aims to introduce students to the insect pests that infect field crop plants and how to identify them through the phenotypic characteristics of these insects. damage using the best technology.
69. Teaching and Learning Strategies
5- Adopting the method of giving lectures and linking each topic with examples from the reality of the agricultural work situation 6- Giving them some simple practical exercises that are discussed by the students and solved during the lecture with the participation of all students in the section with the professor to give the material as a kind of interaction. 7- Training students in laboratories by conducting the necessary laboratory tests for diagnosis 8- Summer training in supporting institutions such as the directorates of agriculture, silos and agricultural quarantine
70. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	1- Entomology 2- class of insects 3- Characteristics of a class of insects 4- Evolution and Impossibility [Metamorphosis 5- Insect Orders	Knowledge of entomology and identification of the characteristics of the class of insects and the types of evolution in insects	Lecture	
2	5	Gryllatalpa gryllotalpa Life cycle, damage and control method -2Desert locusts Schistocerca gregaria Life cycle, damage and control method	Biological knowledge, description and damage of the desert locust and carp insects	Lecture	
3	5	-1Ocnogyna loewii -2Microcerotermes diversus Study the life cycle, damage and control method	Knowledge of the outward appearance, lifestyle and damage of spring worms and termites	Lecture	
4	5	1-Eurygaster integriceps -2Haplothrips tritici Study the life cycle, damage and control method	Knowledge of the external appearance, lifestyle and damage of the sun and thrips insects	Lecture	
5	5	-1Schizaphis graminum -2Oria musculosa -3 Syringopais temperatella Study the life cycle, damage and control method	Knowledge of the structure and knowledge of the external shape, lifesty and damage to an ins of wheat, ear breaker and wheat leaf borer	Lecture	
6	5	-1 Anisoplia austriaca -2 Zabrus morio -3 Phytophaga destructor	Knowledge of the structure, external appearance, lifestyle and damage of the wheat-making insect, the chewer of wheat seedlings and the Hechian fly.	Lecture	

		Study the life cycle, damage and control method			
7	5	–1 Cephus pygmaeus –2Rhopalosiphum (Aphis) maidis Study the life cycle, damage and control method	Knowledge of the structure, external shape, lifestyle and damage of the two insects of the Saw-wheat wasp and from the aphid corn	Lecture	
8	5	–1 Leucania loreyi –2 Sesamia critica –3 Aphis craccivora Study the life cycle, damage and control method	Knowledge of the structure, outward appearance, lifestyle, and damage to cornworms, corn stalk borers, Aphis craccivora	Lecture	
9	5	–1 Therioaphis maculat Hypera fascocinerea Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and the control of my insects from Therioaphis maculate and the Hypera fascocinerea	Lecture	
10	5	–1 Aphis fabae –2 Bruchus rufimanus –3 Bruchidius incarnates –4 Cosmolyce boeticus –5 Phytomysa atricarnis Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and control each insect of the aphid black bean, the bean beetle, the legume worm and the cowpea leaf border	Lecture	
11	5	–1 Aphis gossypii Clover	Knowing the external appearance and symptoms of	Lecture	

		–2 Bemisia gossypipedra (Bemisia tabaci(–3 Thrips tabaci Lind Study the life cycle, damage and control method	infection and control each of the cotton bug, cotton white fly and onion thrips		
12	5	–1 Oxycarenus hyalinipennis cost –2 Spodoptera Littoralis (Boisd(Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and control of both the cottonseed bugs and the cotton leaf worm	Lecture	
13	5	–1 Pegomyia hoyoscyami –2Phyllotreta cruciferae –3 Myzus persicae Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and control each of the beet leaf borer, the cruciferous flea beetle, and the aphid green peach	Lecture	
14	5	–1 Spodoptera (Laphygma) exigua –2 Agrotis ipsilon –3 Heliothis armigera –4 Eris insulana Boisd Study the life cycle, damage and control method	Knowing the external appearance and symptoms of infection and control each of the green worm, cutworm, American cotton nut worm and thistle	Lecture	
71. Course Evaluation					
72. Learning and Teaching Resources					

Required textbooks (curricular books, if any)	
Main references (sources)	Field crop insects / Iyad Youssef Al-Haj Ismail Economic Insects / Ibrahim Kaddouri
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

73. Course Name:	
Plant Breeding	
74. Course Code:	
APP3311	
75. Semester / Year:	
2024_2025	
76. Description Preparation Date:	
2024/9/22	
77.Available Attendance Forms:	
In person, class	
78.Number of Credit Hours (Total) / Number of Units (Total)	
79. Course administrator's name (mention all, if more than one name)	
Name: Faiz Tahseen Fadhel Email: ag.faiz.tahseen@uoanbar.edu.iq	
80. Course Objectives	
Course Objecti	1- The student will be acquainted with the scientific bases in plant breeding, both theoretical and practical 2- Expand the student's theoretical and practical knowledge 3- Getting acquainted with the modern techniques related to plant breeding. 4- Increasing students' awareness in identifying recent trends in plant breeding, which include modern and vital technologies.5- Identifying biotic and abiotic factors related to plant breeding. 6- The student deduces the relationship between the genetic structure of the organism and the traits that distinguish it from others and how to transfer those traits between generations
81. Teaching and Learning Strategies	
Strategy	7-Adopting the method of giving lectures and linking each topic with examples from the reality of agricultural work 8- Giving the students some simple practical exercises that are discussed by the students and solved during the lecture With the participation of all students in the section with the professor to give the material as a form of interaction

	9- Training students in laboratories by conducting the necessa laboratory tests for diagnosis

82. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student's knowledge of the first and founding era of studied science	Introduction to the history plant breeding	Presentation and training	Discussion Weekly and mon testing
2	5	Student knowledge of system Reproduction is fundamenta understanding Genetic variations	Reproduction systems in plants,	Presentation and training	Discussion Weekly and mont testing
3	5	The student's knowledge of genetic material, which is the basis of the work of plant breeders	Cell, nucleus, chromosom	Presentation and training	Discussion Weekly and mont testing
4	5	The student's familiarity with sources Genetic variations in The plant community, which considered the raw material fo plant development and improvement	Genetic variations sources And environmental interaction	Presentation and training	Discussion Weekly and mont testing
5	5	Student awareness of how to transfer Intergenerational traits and how Control it and benefit from it Education improvement programmers	Hardy and Weinberg's law, genetic action and genetic repetition Types of genetic action	Presentation and training	Discussion Weekly and mont testing
6	5	One of the important cases in Plant to understand the mechanism of production of some Hybrids and breeds	Sterility, male and cytoplasmic sterility, self-incompatibility, and culturing of strains in cytoplasmic male sterility.	Presentation and training	Discussion Weekly and mont testing
7	5	How to produce hybrids and varieties and mix the desired genotypes	Multi-parental hybrid cultivars, their deduction, progeny deduction, transfe traits to progeny, isolation distances.	Presentation and training	Discussion Weekly and mont testing
8	5		Quantitative genetics, crop yield improvement and the genes responsible for it, yi and yield components	Presentation and training	Discussion Weekly and mont testing
9	5	To understand the breeding of self-pollinating plants	Breeding cross-pollinated crops, quantitative selection	Presentation and training	Discussion Weekly and mont testing
10	5	To understand the breeding mechanism of cross-pollinate plants	Calculating the Heterosi of the hybrid and attributing heritability in the broad and narrow se	Presentation and training	Discussion Weekly and mont testing
11	5	Knowledge of the mechanism development of vegetative reproductive crops	Breeding vegetative crops, breeding, cultivar selection and hybrid breeding	Presentation and training	Discussion Weekly and mont testing
12	5	Knowing the mechanism of controlling the trait, whether it is genetic or environmental	Breeding to resist various epidemics	Presentation and training	Discussion Weekly and mont testing

		, how to benefit from it in breeding programs, and knowing which genetic combinations are best for use.			
13	5	The student's knowledge of genetic material, which is the basis of the work of plant breeders	Tissue culture and biotechnology in plant breeding	Presentation and training	Discussion Weekly and mont testing
14	5	Understanding Modern Methods in plant breeding	Applications of genetic engineering in plant breeding and genetically modified plants,	Presentation and training	Discussion Weekly and mont testing

83. Course Evaluation

7- Daily and monthly tests through questions and discussions in the subject.
8- Evaluating the student's participation in research and scientific reports.
9- Student activities through the possibility of applying some experiments

84. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of field crops breeding and genetics
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1- Plant breeding and improvement (Medhat A Sahoki, Hamid Globe Ali and Muhammad Ghaf Ahmad) 2-Breeding of field crops (john Milton)
Electronic References, Websites	

Course Description Form

85. Course Name: Principals of Microbiology	
86. Course Code: AF19201	
87. Semester / Year: Semester	
2024_2025	
88. Description Preparation Date:	
2024/9/22	
89.Available Attendance Forms: Mandatory	
90.Number of Credit Hours (Total) / Number of Units (Total): 75	
91. Course administrator's name (mention all, if more than one name)	
Name: Ali Ameen Yaseen Email: ag.ali.ameen@uoanbar.edu.iq	
92. Course Objectives	
Course Objectives	**1- Introduction to microbiology** **2- Identify the location of microorganisms among living organisms. And studying the characteristics of microorganisms - such as cultural characteristics, phenotypic appearance. Metabolic properties** **3- Studying the structures and anatomy of microorganisms and knowing the functions of these structures. Studying microbial feeding systems, identifying culture media, growth factors, preserving microbial cultures, growth phases, and methods for estimating microbial growth.** **4- Study of microbial genetics, nucleic acid synthesis, DNA replication, RNA cloning, protein synthesis, the occurrence of genetic mutations and genetic exchange (conjugation)**
93. Teaching and Learning Strategies	
Strategy	1-Develop teaching programs in coordination with higher departments. 2- Developing teaching curricula similar to the work environment. 3- Sending students to departments and directorates for conducting summ application. 4- Assigning students to conduct research and reports.

	5- Assigning students to go to the library and collect sources on the topic. Implementing practical lessons in laboratories, each according to their currency

94. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theory and Pract.		Introduction to microbiology	Giving lectures	Quiz+ activities
2	Theory and Pract.		The location of microorganisms among living organisms.	Giving lectures	Quiz+ activities
3	Theory and Pract.		Characteristics of microorganisms	Giving lectures	Quiz+ activities
4	Theory and Pract.		Structure of bacteria and functions of their parts.	Giving lectures	Quiz+ activities
5	Theory and Pract.		Nutrition of microorganisms. Bacterial nutrition	Giving lectures	Quiz+ activities
6	Theory and Pract.		Growth and reproduction of bacteria. Isolation of bacteria in pure culture,	Giving lectures	Quiz+ activities
7	Theory and Pract.		preservation of bacterial cultures, cell cycle, growth phases, estimation of bacterial growth,	Giving lectures	Quiz+ activities
8	Theory and Pract.		Mycoplasma, Phytoplasma, Rickettsia	Giving lectures	Quiz+ activities
9	Theory and Pract.		- Microbial genetics, nucleic acid synthesis, DNA replication, RNA replication, protein synthesis, heterogeneity in bacteria, genetic mutations, genetic exchange (conjugation),	Giving lectures	Quiz+ activities
10	Theory and Pract.		- Viruses... their discovery, physical properties, and chemical composition. Virus division	Giving lectures	Quiz+ activities
11	Theory and Pract.		- Fungi. External appearance, parasitism, fungal cell	Giving lectures	Quiz+ activities

			structure, changes in the vegetative structure of the fungus,		
12	Theory and Pract.		- Algae: Botozoa: Soil microorganisms. Food—sources of food contamination, control of sources of contamination,	Giving lectures	Quiz+ activities
13	Theory and Pract.		- Microorganisms in milk and its products, microorganisms in vegetables and fruits. Damage	Giving lectures	Quiz+ activities
14	Theory and Pract.		- Control of microorganisms.	Giving lectures	Quiz+ activities
15	Theory and Pract.		Third month exam	Giving lectures	Quiz+ activities

95. 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

96. Learning and Teaching Resources

Required textbooks (curricular books, if any	Principals of Microbiology Dr. Khalaf Soofi Al-Delaimy
Main references (sources)	Relying on recent scientific research and publications issued by reputable international publishing houses and journals
Recommended books and references (scientific journals, reports…)	Scientific journals related to the field of microbiology
Electronic References, Websites	https://www.researchgate.net/ https://scholar.google.com/schhp?hl=ar

Course Description Form

1. Course Name: Weed Science and weed control methods
2. Course Code:
3. Semester / Year: Seasonal /2nd attempt
2024_2025
4. Description Preparation Date: ()
2024/9/22
5. Available Attendance Forms: Weekly
6. Number of Credit Hours (45) Number of Units (3)
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed A. Almarie Email: ag.ahmed.abdalwahed@uoanbar.edu.iq
8. Course Objectives

Course Objectives	Students acquire scientific knowledge in categorizing and diagnosing weeds and knowing their damages. Students benefit by identifying the types of weed, their damages, and how to control them.

9. Teaching and Learning Strategies

Strategy	1. lecture. 2. Explanation and clarification. 3. Use of electronic means of clarification (Data show). 4. practical lessons in agricultural fields

10. Course Structure

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

1	5	Oral	Introduction in weeds	Oral & power point	Weekly & monthly Exam
2	5	Oral	Weeds is it friend or enemy	Oral & power point	Weekly & monthly Exam
3	5	Oral	Weed Classification	Oral & power point	Weekly & monthly Exam
4	5	Oral	Weed Dispersal Methods	Oral & power point	Weekly & monthly Exam
5	5	Oral	Weed Losses	Oral & power point	Weekly & monthly Exam
6	5	Oral	Allelopathy	Oral & power point	Weekly & monthly Exam
7	5	Oral	Weed Control Methods	Oral & power point	Weekly & monthly Exam
8	5	Oral	Chemical Weed Control	Oral & power point	Weekly & monthly Exam
9	5	Oral	Weed Competition	Oral & power point	Weekly & monthly Exam
10	5	Oral	Herbicides Translocation	Oral & power point	Weekly & monthly Exam
11	5	Oral	Modern methods in Weed control	Oral & power point	Weekly & monthly Exam
12	5	Oral	Herbicides Residues	Oral & power point	Weekly & monthly Exam
13	5	Oral	Classification of Herbicides Groups	Oral & power point	Weekly & monthly Exam
14	5	Oral	Improving Herbicides Efficacy	Oral & power point	Weekly & monthly Exam
15	5	Oral	The Latest Researches in Weed Control	Oral & power point	Weekly & monthly Exam

11. Course Evaluation

daily oral, monthly, and written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Korres, N. E., Burgos, N. R., & Duke, S. O. (Eds.). (2018). Weed control: sustainability, hazards, and risks in cropping systems worldwide. CRC Press. 2- Gressel, Jonathan. Molecular biology of weed control. Vol. 1. CRC Press, 2002.
Main references (sources)	Weed Control Methods. Ghanem Saadallah Hassawi and d. Baqer Abdul Khalaf Al-Jubo Ministry of Higher Education and Higher Educat - University of Baghdad. 1982.
Recommended books and references (scientific journals, reports…)	- Control Weed. Dr. Baqer Abdullah Khalaf Al-Jubouri and d. Ghanem Saadallah Hassawi and Faeq Tawfiq Chalabi. Ministry of Higher Education and Higher Education - University of Baghdad. 1985. - Weeds and Principles of control Methods. Dr. Salem Hammadi Antar Al-Obaidi.

	Ministry of Higher Education, Education Sciences a. 2009
Electronic References, Websites	www.weed science.com

Course Description Form

1. Course Name: Field crops diseases
2. Course Code: APP3401
3. Semester / Year: First trimester third stage
2024_2025
4. Description Preparation Date: Contributes to the knowledge of plant disease
2024/9/22
5. Available Attendance Forms: attendance
6. Number of Credit Hours (Total) / Number of Units (Total): 70 Hours
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Rashid M. Theer Email: ag.rashid_mashref@uoanbar.edu.iq
8. Course Objectives

Course Objectives	Identify the most important pathogens that affect crop diseases, the mechanism of action of each of them, the differences between symptoms and signs, and methods of control and resistance to the disease.

9. Teaching and Learning Strategies

Strategy	A-Knowledge and Understanding B-A1- The concept of plant disease C-A2- The most important losses caused by plant diseases D-A3- Studying the most important pathogens (fungal, bacterial, viral and nematode). E-A4- Knowing the most important diseases that affect different cereal crops F-A 5- Knowing the most important diseases that affect oil crops G-A6- Knowing the most important diseases that affect fiber crops

	H-A 7- Identify the most important diseases that affect forage crops I-A8- Finding the best means to combat these disease

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Introduction to plant diseases		Lecture	quiz
2	5	Wheat diseases		Lecture	quiz
3	5	Barley diseases		Lecture	quiz
4	5	Rice diseases		Lecture	quiz
5	5	Maize diseases		Lecture	quiz
6	5	Sorghum diseases		Lecture	quiz
7	5	Sesame diseases		Lecture	quiz
8	5	Sun flower diseases		Lecture	quiz
9	5	Diseases of sugar crops		Lecture	quiz
10	5	Flax diseases		Lecture	quiz
11	5	Cotton diseases		Lecture	quiz
12	5	Bean diseases		Lecture	quiz
13	5	Alfa alfa Diseases		Lecture	quiz
14	5	Tobacco diseases		Lecture	quiz

11. Course Evaluation

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Books and scientific research specialized in plant pathology
Main references (sources)	Diseases of field crops. 1993. Sergeant A Hamad, Maysir Gerges, Kamel Salman

Course Description Form

1. Course Name: Plant diseases

2. Course Code: APP3308

3. Semester / Year: Second trimester third stage

2024_2025

4. Description Preparation Date: Contributes to the knowledge of plant disease

2024/9/22

5. Available Attendance Forms: attendance

6. Number of Credit Hours (Total) / Number of Units (Total): 70 Hours

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

Name: Dr. Rashid M. Theer
Email: ag.rashid_mashref@uoanbar.edu.iq

8. Course Objectives

Course Objectives	Identify the mechanism of action of living and non-livi organisms that lead to plant infection, methods of penetration, Inoculum physiology, differences between symptoms and sign and methods of control and resistance to the disease.

9. Teaching and Learning Strategies

Strategy	A-Knowledge and Understanding of plant disease B- Understand the concept of plant disease A2- Distinguish between the types of plant disease A 3- Knowing how to diagnose the plant disease A4 Full knowledge of plant disease

10. Course Structure

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

1	5	Introduction to plant disease the damage they cause		Lecture	quiz
2	5	Methods of dividing the diseases of intentions		Lecture	quiz
3	5	The main causes of plant diseases and their characteristics		Lecture	quiz
4	5	The most important terms fo plant diseases		Lecture	quiz
5	5	Stages of occurrence of plar disease and methods of its spread		Lecture	quiz
6	5	Means of defense by which plants defend against pathogens		Lecture	quiz
7	5	The most important diseases caused by primary fungi and their control		Lecture	quiz
8	5	The most important diseases caused by cystic and basidiomycetes and their control		Lecture	quiz
9	5	The most important diseases caused by bacteria and their control		Lecture	quiz
10	5	The most important diseases caused by viruses and their control		Lecture	quiz
11	5	The most important diseases caused by snake worms and their control		Lecture	quiz
12	5	The most important physiological diseases and ways to combat them		Lecture	quiz
13	5	Modern methods of detectin and diagnosing plant disease		Lecture	quiz
14	5	semester exam		Lecture	quiz

11. Course Evaluation

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Books and scientific research specialized in plant pathology
Main references (sources)	Plant Diseases, written by Dr. Madih Muhammad Ali, College of Agriculture, Ain Shams University, 2010
Electronic References, Websites	

Course Description Form

13.	Course Name: Principles of Animal production
14.	Course Code:
15.	Semester / Year: SPRING
2024_2025	
16.	**Description Preparation Date:**
2024/9/22	
17.	Available Attendance Forms: IN CLASS
18.	Number of Credit Hours (Total) / Number of Units (Total): 5HOURS/3.5 UNITS
19.	Course administrator's name (mention all, if more than one name)
	Name: Assist. Prof. Dr. Waleed Ismail Kurdi ag.waleed.ismail@uoanbar.edu.iq
20.	Course Objectives

Course Objectives	1- know importance of animal production economy 2- know cattle and sheep breeds 3- know important methods for animals management 4- know principles on animal feeding 5- know field methods for animal field management **6**– know principles of animal physiology

21.	Teaching and Learning Strategies
Strategy	Teaching therolotical parts in class by using data show and some new methods, while practical part teach in animal fiel w

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	5	Local and international cattle breeds	Principles of Ira and internation cattle breeds	Power point and PDF files lecture	Quiz

Second	5	Local and international shee breeds	Principles of Ira and internation sheep breeds	Power point and PDF file lecture	Practical examination
Third	5	Reproduction in animals	Male and female reproduction orga	Power point and practical study	Quiz
Fourth	5	Animal nutrition	Feed contents, foo analysis	Power point and PDF file lecture	Quiz
Fifth	5	Milk production	Milking machine and milk secreti	Power point and practical study	Quiz
Sixth	5	Poultry productio	Principle of poultr types and poultry production	Power point and practica study	Quiz
Seventh	5	Milk secretion	Milk secretion physiology	Power point and practica study	Quiz

23. 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

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principles of farm animals production
Main references (sources)	Principles of farm animals production
Recommended books and references (scientific journals, reports…)	Cattle management Sheep and goat management
Electronic References, Websites	Youtube.com Springer.com

Course Description Form

25. Course Name:	
Classification of insects	
26. Course Code:	
APP3212	
27. Semester / Year:	
2024_2025	
28. Description Preparation Date:	
2024/9/22	
29.Available Attendance Forms:	
Study hall No. 2 / insect laboratory	
30.Number of Credit Hours (Total) / Number of Units (Total)	
75 hours / 3 unite	
31. Course administrator's name (mention all, if more than one name)	
Name: Dhurgham Duraid Farhan Email: dhurgham.farhan@uoanbar.edu.iq	
32. Course Objectives	
Course Objectives	• The course aims to introduce students to the science of insect classification, identify harmful and beneficial insects, and .distinguish between species, genera, families, and orders Explaining the importance of relying on diagnostic keys to identify .each type
33. Teaching and Learning Strategies	
Strategy	1- Adopting the method of giving lectures and linking each topic with examples from the reality of agricultural work 2- Giving them some simple practical exercises that are discussed by the students and solved during the lecture With the participation of all students in the section with the professor to give the material as a form of interaction. 3- Training students in laboratories by conducting the necessa laboratory tests for diagnosis

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	5	Defining entomology and knowing location of insects in the animal kingdon	axonomy, its definition , history ationship to other sciences, and .stages of its development	a lecture	a test
the second	5	2- Modern taxonomy and its comparison with ancient ,taxonomy, taxonomic ranks and the formation of life types .with examples	Modern taxonomy and its mparison with ancient taxonomy onomic ranks, and the formation of life types with examples	a lecture	a test
the third	5	1- The Classification of . Insect	Division of insects, taxonomic tification. The class system with .examples	a lecture	a test
the fourth	5	2- OrderCollembola - OrderThysanura- Order Dermaptera Order – Mantodea - Mayfly orderEphemeroptera - MardanBlattodea .	es of museum collections, styles ypes of models) with examples vidual plants, their types, and the ason for their appearance, with .examples	a lecture	a test
Fifth	5	3- OrderOrthoptera – Order of tremorsOdonata .	Simple Eyes . .1Ocelli .2The compound eyes	a lecture	a test
VI	5	4- OrderIsoptera Order – Cilioptera Thysanoptera .	Legs in insects .1 Leg mutations .2	a lecture	a test
Seventh	5	Structure of wings in insects Recognitio	Wing installation .1 Wing veins in insects .2	a lecture	a test
VIII	5	IdentifyWings Modification	Wing clamping devices .1 Flight process.2	a lecture	a test
Ninth	5	The abdomen and the internal Recogr parts it contains	Female egg-laying machine .1	a lecture	a test
The tenth	5	Abdomen in insects	Male impotence machine .1	a lecture	a test
eleventh	5			a lecture	a test
twelveth	5				a test

35. Course Evaluation

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	George Nasrallah Rizk / Composition and classification of insects

Main references (sources)	Nizar Mustafa Al-Mallah insect classification /
Recommended books and references (scientific journals, reports…)	Journal of the Natural History Museum, University of Baghdad
Electronic References, Websites	Michner2007+ Taxonomy + Zootaxa

Course Description Form

1- Course Name: plant classification

2- Course Code:

3- Semester / Year: 2024_2025

4- Description Preparation Date: Autumn 22/9/2024

5- Available Attendance Forms: Direct

6- Number of Credit Hours (Total) / Number of Units (Total): 75 / 5

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

Name: Assist Prof. Yaseen Abd Ahmed
Email: ag.yaseen.abd@uoanbar.edu.iq

8- Course Objectives

Course Objectives	• The student will be acquainted with the scientific bases in plant classification, both theoretical and practical. • Expand the student's theoretical and practi knowledge. • Getting acquainted with the mode techniques related to plant classificatic • Identifying biotic and abiotic factors related to plant classification.

9- Teaching and Learning Strategies

Strategy	1- Providing students with theoretical and practical scientific knowledge on the subject of plant classification of all kin 2- Students benefit from practical experiences in the subject plant classification and its relationship to various grov factors and the conditions surrounding the plant.

10- Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5(2theory+ practical)	plant classification	Taxonomy , history , importance and relationship to other sciences	Giving lectures (theoretical and practical) (e-learning)	Daily and monthly test + scores on activities, reports and attendance
2	5	plant classification	Systems of Classification (Artificial , Natural , Phylogenetic)		
3	5	plant classification	Nomenclature , Common names		
4	5	plant classification	Scientific nomenclature		
5	5	plant classificatior	Spermatophytes Class Gymnospermae Class Angiospermae		
6	5	plant classification	Monocotyledone Dicotyleadone		
7	5	plant classification	Phytography Terminology of Vegetative Organs		first month exam
8	5	plant classification	Roots and shapes		
9	5	plant classification	Stems and shapes		
10	5	plant classification	Buds , Leaves		

11	5	plant classification	Leaf parts , Simple leaf , Compound Leaf , Stipules , Visture types		
12	5	plant classification	Flower , Floral parts , Aestivation Placentation		
13	5	plant classification	Inflorescences , Cymose , Racemose		
14	5	plant classification	Fruits and Seeds , Simple fruits , Aggregate fruits		
15	5	plant classification	Pollen Grains Pollination , Pollination , self pollination and cross pollination		second month exam

11- Course Evaluation

1-Weekly exams (quiz) and quarterly and final exams (theoretical and practical).
2- Interaction within the lecture.
3- Attendance.
4- Commitment and discipline in the classroom and laboratory.
5- Preparing scientific reports and presenting them with scientific explanations.

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	Classification of Spermatophytes
Main references (sources)	Morphology and anatomy
Recommended books and references (scientific journals, reports…)	Plant Physiology
Electronic References, Websites	

Course Description Form

37. Course Name:	
Plant Nutrition advance	
38. Course Code:	
39. Semester / Year:	
2024_2025	
40. Description Preparation Date:	
2024/9/22	
41.Available Attendance Forms:	
Theoretical material is given 100% in person. Practical material is given 100% in person.	
42.Number of Credit Hours (Total) / Number of Units (Total)	
30 hours / units 3.5	
43. Course administrator's name (mention all, if more than one name)	
Name: Dr. omar hashim muslah Email: ohmosleh@uoanbar.edu.iq	
44. Course Objectives	
Course Objectives Studying the various nutritional facto affecting growth and yield formation Learn about ways to divide nutrients Knowing the appropriate soil for ea agricultural crop. Knowing the harms and benefits nutrients. Learn about ways to feed horticultu plants. Identify the nutritional needs of plants	• ..... • ..... • .....
45. Teaching and Learning Strategies	
Strategy	1- Follow the lecture method and use modern presentati methods. 2- Conduct field experiments of the media. 3- Direct dialogue with students by asking them questions. 4- Homework assignments (writing scientific reports). 5- Learning through applied field work.

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first	5	the computer A modern mobile device Observations and field	applications Introduction to plant nutrition	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
Second	5	the computer A modern mobile device Observations and field	applications Soil as a medium for plant growth and the readiness of nutrients	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
Third	5	the computer A modern mobile device Observations a field	lectures and practical application in laboratorie and fields	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
Fourth	5	the computer A modern mobile device Observations a field	applications Nutrient absorption (ionic absorption and its theori	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
Fifth	5	the computer A modern mobile device Observations a field	First Exam	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
Sixth	5	the computer A modern mobile device Observations a field	applications of water, pla nutrition and water physiological need	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
seventh	5	the computer A modern mobile device Observations a field	Plant nutrition and the amount of yield (the relationship of the plant t the yield	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
Eighth	5	the computer A modern mobile device Observations a field	Plant nutrition, disease a insect resistance	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
	5	the computer A modern mobile device Observations and field	Plant nutrition, disease a insect resistance	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples
Ninth	5	the computer A modern mobile devic Observations a field	Soil salinity and plant nutrition	electronic lectures a practical applicatior laboratories and fie	Questions, discussions and examples

The tenth	5	the computer A modern mobile device Observations a field	Second exam	electronic lectures a practical applicatio laboratories and fie	Questions, discussions and examples
eleventh	5	the computer A modern mobile device Observations a field	Pollution and plant nutri	electronic lectures a practical applicatio laboratories and fie	Questions, discussions and examples
twelveth	5	the computer A modern mobile device Observations a field	Food crops and their role plant nutrition	electronic lectures a practical applicatio laboratories and fie	Questions, discussions and examples
Thirteenth	5	the computer A modern mobile device Observations a field	Organic soil, organic fertilization and organic farming: importance, organic farming and integrative fertilization And the role of organic farming in sustainable agriculture	electronic lectures a practical applicatio laboratories and fie	Questions, discussions and examples

47. Course Evaluation

1- Monthly exams.
2- Rapid exams (Quazat).
3- Evaluation through classroom activity.
4- By preparing scientific reports and taking advantage of information networks.
5- Final exams.

48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fertility and plant nutrition / Al-Qarwani, Mohieddin 1979 Plant nutrition / Al-Rais, Abdul Hadi Jawad 1988 Applied plant nutrition / Al-Sahhaf, Fadel Hussein 1989 Theoretical and practical plant nutrition (Muzaffar Ahmed Daoud Al-Mousili et al.) 2019
Main references (sources)	Fertility and plant nutrition / Al-Qarwani, Mohieddin 1979 Plant nutrition / Al-Rais, Abdul Hadi Jawad 1988 Applied plant nutrition / Al-Sahhaf, Fadel Hussein 1989 Theoretical and practical plant nutrition (Muzaffar Ahmed Daoud Al-Mousili et al.) 2019
Recommended books and references (scientific journals, reports…)	Mineral Nutrition and Plant Disease null by Lawrence E. Datnoff (Author, Editor), Wade H. Elmer (Editor), Don M. Hube 2007
Electronic References, Websites	

Course Description Form

1. Course Name: Computer applications 2
2. Course Code:
3. Semester / Year: second
2024_2025
4. Description Preparation Date:
2024/9/22
5. Available Attendance Forms: Personal presence
6. Number of Credit Hours (Total) / Number of Units (Total) 48/ 3
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Pro. Dr. Ahmed Abdulrahman Majid Email: ag.ahmed.abd-rahmman@uoanbar.edu.iq
8. Course Objectives

Course Objectives	**1. Knowing how to operate Microsoft Word** **2. Study the basic principles of using the mouse and keyboard** **3. Study how to work on Microsoft Word** **4. Learn how to store files in Microsoft Word format**

9. Teaching and Learning Strategies	
Strategy	**Knowledge and understanding** Learn about the capabilities of printing, inserting images, tables, storing, and writing formatting. **Subject-specific skills:** Students can develop skills by gaining sufficient experience to produce Microsoft Word files in a sophisticated and artistic style. **Teaching and learning methods:** The student relies for his understanding and learning on in-person lectures during this academic year **Evaluation methods:** Through daily and monthly exams, homework, oral exams, attendance, and various activities **thinking skills:** The student relies on linking the topics of the lectures in order to provide a model answer that can benefit him in the monthly exams. **General and transferable skills (other skills related to employability and personal development).** The student can study the curriculum topics in a practical way to understand and comprehend the curriculum lectures through his visit to the laboratory.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Turning The Calculator On And Off	(practical)	Daily exam
2	3		Learn About Windows Principles	(practical)	Daily exam + homework
3	3		How To Run Microsoft Word	(practical)	Daily exam + homework
4	3		File Tab Details	(practical)	Monthly exam
5	3		Home Tab Details	(practical)	Daily exam
6	3		Insert Tab Details	(practical)	Daily exam + homework
7	3		Page Layout Tab Details	(practical)	Daily exam + homework
8	3		References Tab Details	(practical)	Monthly exam
9	3		Messages Tab Details	(practical)	Daily exam
10	3		Review Tab Details	(practical)	Daily exam + homework
11	3		View Tab Details	(practical)	Daily exam + homework
12	3		Details Tab Design In The Table	(practical)	Monthly exam
13	3		Layout Tab Details In The Table	(practical)	Daily exam
14	3		Format Tab Details In Image	(practical)	Daily exam + homework
15	3		Abbreviations In The Program	(practical)	Daily exam + homework
16	3		Professionalism Using The Program	(practical)	Monthly exam

11. Course Evaluation

Monthly exam 60%, daily exam 20%, homework 10%, attendance 10%.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer applications book Microsoft Word
Main references (sources)	**My practical experience is in the computer field**
Recommended books and references (scientific journals, reports…)	-
Electronic References, Websites	-

Course Description Form

1. Course Name: zoology	
2. Course Code: APP2113	
3. Semester / Year:	
2024_2025	
4. Description Preparation Date:	
5. Available Attendance Forms: presence	
6. Number of Credit Hours (Total) / Number of Units (Total) 75H/ 3.5	
7. Course administrator's name (mention all, if more than one name)	
Name: Ahmed S. Naser Email: asnaser@uoanbar.edu.iq	
8. Course Objectives	
Course Objectives	Knowing and understanding the most important biological standards and concepts and using them to describe and classify animals and knowing the details of the animal kingdom and the location of farm animals within it. Developing thinking and analytical skills to diagnose common communicable diseases Activating scientific skills in diagnosis and classification and their importance in animal science, breeding and management Stimulating self-development skills in scientific research and sequential investigation to activate linking information and employing it in animal production
9. Teaching and Learning Strategies	
Strategy	1- Presentation and use of modern methods to attract the student's focus a thinking 2- Using discussion methods and motivating students to participate 3- Giving applied examples 4- Giving separate breaks to activate students 5- Conducting repeated daily tests to push students to review the material 6- Imposing duties on students and writing scientific reports ng pictures, videos, and illustrative diagrams to raise students' understanding a nking

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**5**	Laboratory Rules General	Basics of zoology	presence	Daily testing
2	**5**	Applications to microscopy	Microscope	presence	Daily testing
3	**5**	Classification of animals	The cell (part one)	presence	Daily testing
4	**5**	Cnidaria Phylum	Components of an animal cell	presence	laboratory
5	**5**	Exam 1	Exam 1	presence	Daily testing
6	**5**	Phylum Platyhelminthes	Chromosomes	presence	Laboratory
7	**5**	Phylum Nematoda	Animal tissues	presence	Daily testing
8	**5**	Phylum Annelida	Connective tissue	presence	Daily testing
9	**5**	Phylum Arthropoda	Cellular division	presence	Daily testing
10	**5**	Exam 2	Exam 2	presence	Daily testing
11	**5**	CRUSTACEA	Meiosis	presence	Daily testing
12	**5**	Phylum protozoa	Biodiversity of animals	presence	Daily testing
13	**5**	Anatomy	Animal kingdom	presence	Daily testing
14	**5**	Anatomy	Hardware components	presence	laboratory
15	**5**	Exam 3	Exam 3	presence	Daily testing

11. Course Evaluation
Student questionnaires, through daily and monthly exams, homework, oral exams, attendance, and various activities.

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	General animal basics, zoology for the first grad parts one and two
Main references (sources)	zoology, general biology
Recommended books and references (scientific journals, reports…)	Scientific journals related to animal sciences Scientific articles and research
Electronic References, Websites	روابط تساهم في تطوير التعليم والتعلم.pdf (uoanbar.edu.iq)

Course Description Form

49. Course Name:	
Plant Ecology	
50. Course Code:	
51. Semester / Year:	
2024_2025	
52. Description Preparation Date:	
2024/9/22	
53.Available Attendance Forms:	
My attendance is according to the lecture schedule	
54.Number of Credit Hours (Total) / Number of Units (Total)	
30 hour	
55. Course administrator's name (mention all, if more than one name)	
Name: Dr. Mukhalad Hadi Ismali Email: mhalani@uoanbar.edu.iq	
56. Course Objectives	
Course Objectives 1- Plant ecology studies environmental factors and their relationship with crops. 2- It includes knowledge of climatic factors, soil factors, and biological factors 3- Knowing the appropriate environment for each agricultural crop. 4- Knowing the effects of temperature and light intensity on crops. 5- Study of environmental pollution. 6- Identify the water needs and factors that affect the water nee of the crop.	• ..... • ..... • .....
57. Teaching and Learning Strategies	
Strategy 1- Follow the lecture method and use modern presentation methods 2- Conduct laboratory experiments 3- Direct dialogue with students by asking them questions 4- Homework (writing scientific reports)	

58. Course Structure

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

1- Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
First	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Grapes and their economic importance and nutritional value	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Second	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Grape classification	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Third	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Preparing a nursery for the propagation of grapes in various ways	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Fourth	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Suitable environment for farming	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Fifth	2	First month exam			
Sixth	2	1- Computer 2-Modern mobile device 3-Observations and field applications	The phenotypic structure of the grape tree	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Seventh	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Annual cycle of grape vine growth	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Eighth	2	1- Computer 2-Modern mobile device	Grape propagation	Electronic lectures and practical application in	Questions, discussions and examples

		3-Observations and field applications		laboratories and fields	
Ninth	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Breeding and pruning grapes	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Tenth	2	Second month exam			
Eleven	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Study of the small fruits (strawberry, raspberry, blackberry, blueberry, currant, cosberry, cranberry) in terms of their importance and the appropriate environment for them, their propagation, cultivation and service processes	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Twelfth	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Methods of cultivation and production of strawberry, raspberry, blackberry, currant, blueberry, cranberry and service and harvest operations	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples
Thirteen	2	1- Computer 2-Modern mobile device 3-Observations and field applications	Growing grapes on the slopes in northern Iraq	Electronic lectures and practical application in laboratories and fields	Questions, discussions and examples

Fourteenth	**2**	**1- Computer 2-Modern mobile device 3-Observations and field applications**	**Some agricultural service operations for grapes**	**Electronic lectures and practical application in laboratories and fields**	**Questions, discussions and examples**		
Fifteen	**2**	**Third month exam**					

59. Course Evaluation

1- Monthly tests
2- Rapid tests (COUZ)
3- Evaluation of classroom activity
4- Preparing scientific reports
5- Final exams

60. Learning and Teaching Resources

Required textbooks (curricular books, if a	1- Plant Ecology 2015. Dr. Iyad Hussein Muaini. 2- Plant Ecology 2019. Dr. Abdul Rahim Sult Muhammad. Issam Abdullah Bashir and Kamal Benjamin Esho.
Main references (sources)	Plant Ecology 2002. Kamal Hussein Shaltout. - Recent articles from the Internet and fr specialized scientific journals.
Recommended books and references (scientific journals, reports…)	Taiz , L. and Zeiger,E.2006. Plant physiology,4th ed. ,Sunderl MA,U.S.A.
Electronic References, Websites	

Course Description Form

61. Course Name: Plant Physiology	
62. Course Code:	
63. Semester / Year: years, season Autumn	
2024_2025	
64. Description Preparation Date:	
2024/9/22	
65.Available Attendance Forms: Presence	
66.Number of Credit Hours (Total) / Number of Units (Total)75 (5 hours weekly)	
67. Course administrator's name (mention all, if more than one name)	
Name: Assistant Prof. Bushra Shaker Jassim Email: ag.bushra.shaker@uoanbar.edu.iq	
68. Course Objectives	
Course Objectives • **Teaching students the basics of science rela to plant** • **Teaching students about the types of plant** • **Teach students how to treat plants with pl growth regulators**	• **Introducing students to the types of plant ce their components, and the function of e component. ?** • **Identify the types of plant carrier vessels, t parts and functions. ?** • **Learn about the biological processes t occur in the plant cell (transpiration, cellu respiration, photosynthesis). ?** • **Learn about some physiological concepts a plant hormones.**
69. Teaching and Learning Strategies	
Strategy	1-Understand the nature of the work of agricultural vocabulary. 2 - Distinguish between each of the types of cultivation and treatment methods. 3- Distinguishing between three terms (land, marketing, and ultimate beneficiary)

70. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledge terminology related plant growth regula and their applications Using electronic mear	An introduction to p physiology with historical view	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
2	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	The plant cell, its type study of the cell of hig plants, the cell wall, middle lamina, primary wall, secondary wall, the and the plasmonic bon	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
3	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Living contents of a p cell: cytopla mitochondria, riboson Golgi apparatus, plast spheroids, microtubu cell membranes.	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
4	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	The non-living content a plant cell. Vacuo cellular juice, crystals their types, star granules, iron granules	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
5	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Carrier vessels - we phloem, their parts functions	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
6	5	First Exim	The process of w absorption and theorie its rise	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
7	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	The process of removi excess water through t transpiration process	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
8	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Theories of water through stomata and mechanics that detern the opening and clo process	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
9	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Theories that study processes of absorptio salts and their path wi the different plant orga	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
10	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	The importance of th salts and the effect increasing or decrea them.	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
11	5	Knowledge terminology related	The process of breath and how, stages and pla it occurs inside the pla	Lecture, discussion,	Quick and mon exams, class acti and reports

		plant growth regula and their applications Using electronic mea		reports, laboratories science movi	
12	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	The process photosynthesis with al different stages, place occurrence and products. ?	Lecture, discussion, reports, laboratories science movi	Quick and mon exams, class acti and reports
13	5		Phloem transport and t to transfer the mature to the plant parts	Lecture, discussion, reports, laboratories science movi	Quick and mon exams, class acti and reports
14	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	The most important p hormones, their funct and mechanisms of act	Lecture, discussion, reports, laboratories science movi	Quick and mon exams, class acti and reports
15	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	The phenomenon vegetative hibernation its importance	Lecture, discussion, reports, laboratories science movi	Quick and mon exams, class acti and reports

71. Course Evaluation

Quick daily exams.
-Monthly exams (two or more).
- Evaluation of the students' classroom activity
- Assessments on writing research, scientific reports and homework
-Direct oral exams
-Classroom and home activities

72. Learning and Teaching Resources

Required textbooks (curricular books, if any)	plant physiology book
Main references (sources)	The basics of plant physiology
Recommended books and references (scientific journals, reports…)	Topics in plant physiology
Electronic References, Websites	https://www.barnesandnoble.com/b/books/biology-life-sciences/botany/_/N-29Z8q8Z18ca

Course Description Form

1. Course Name: Quantitative chemistry
1. Course Code: QUCH112
2. Semester / Year: – second semester
2024_2025
3. Description Preparation Date:
2024/9/22
4. Available Attendance Forms: Attendance live
5. Number of Credit Hours (75) / Number of Units (3.5)
6. Course administrator's name ; Dr. Mohammed Abd Hemed Omar Salah
7. Course Objectives

Course Objectives	Enriching the student with knowledge related to chemical analysis, laws, theoretical and practical foundations, and modern and ancient methods of analysis.

8. Teaching and Learning Strategies

Strategy	

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2+3	Quantitative chemistry	Introduction to laboratory instruments	lectures Theo. And EXP.	Daily and quart exam
2	2+3	Quantitative chemistry	Introduction to quantitative chemistry	lectures Theo. And EXP.	Daily and quart exam

3	2+3	Quantitative chemistry	Standard acid preparation	lectures Theo. And EXP.	Daily and quart exam
4	2+3	Quantitative chemistry	titrations of an acid with a base (eg HCl with NaOH)	lectures Theo. And EXP.	Daily and quart exam
5	2+3	Quantitative chemistry	Precipitation titrations	lectures Theo. And EXP.	Daily and quart exam
6	2+3	Quantitative chemistry	Determination of chlorine in water samples	lectures Theo. And EXP.	Daily and quart exam
7	2+3	Quantitative chemistry	Determination of bicarbonate in water samples	lectures Theo. And EXP.	Daily and quart exam
8	2+3	Quantitative chemistry	Determination of calcium in water samples	lectures Theo. And EXP.	Daily and quart exam
9	2+3	Quantitative chemistry	Oxidation – reduction titration	lectures Theo. And EXP.	Daily and quart exam
10	2+3	Quantitative chemistry	Complexes formation titrations	lectures Theo. And EXP.	Daily and quart exam
11	2+3	Quantitative chemistry	review	lectures Theo. And EXP.	Daily and quart exam
12	2+3	Quantitative chemistry	review	lectures Theo. And EXP.	Daily and quart exam
13	2+3	Quantitative chemistry	final exam	lectures Theo. And EXP.	Daily and quart exam
14	2+3	Quantitative chemistry	review	lectures Theo. And EXP.	Daily and quart exam
15	2+3	Quantitative chemistry	review	lectures Theo. And EXP.	Daily and quart exam

10. Course Evaluation

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

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**كيمياء تحليلية – عبد المحسن الحيدري – 1987**
Main references (sources)	**كيمياء تحليلية – عبد المحسن الحيدري – 1987**
Recommended books and references (scientific journals, reports…)	Douglas A. Skoog , West , Holler and Crouch, Fundamentals of Analytical Chemistry, 9th edition, page 14 - 47, 2014
Electronic References, Websites	-

Course Description Form

1. Course Name:
Inorganic chemistry
2. Course Code:
FS332CT
3. Semester / Year:
2024_2025
4. Description Preparation Date:
2024/9/22
5. Available Attendance Forms:
in-person learning
6. Number of Credit Hours (Total) / Number of Units (Total)
3.5/75
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Isrra Mahmood huadi Email: Imhuadi@uoanbar.edu.iq
8. Course Objectives

Course Objectives	Introducing students to the science of chemistry, preparing solutic hypotheses of scientists Thomson, Rutherford, Dalton, atomic scier what is the atom made of, how the elements are formed, how they divided, distinguishing the properties of the elements from met metalloids, and non-metals and their properties, studying the potential and the radius of atoms, types of bonds between atoms.

9. Teaching and Learning Strategies

Strategy	A1. Analysis the problems and understand how can you be ability to solve it. A2. Testing these equations in the practical experimental. A3. Using equations to find variables in the problems. A4. Ability to convert the scales on the real number line. A5. Ability of student to evaluate the problems, and writing the scientific reports. A6. The student can acquire the practical and scientific experience his specialized field.it.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2 Theoretical	Inorganic chemistry	The first week: Definition of the solution, types of solutions,equilibrium of	The meeting lecture	questions , discussions, and examples

	+ 3practical		saturatedsolutions, and factors affecting dissolution	scientific theoretical	
Second	2 Theoretical + 3practical	Inorganic chemistry	The second week: Estimation of the dissolution product constant Ksp, the effect of the common ion, and fractional sedimentation	The meeting ar lecture are scientific and theoretical	questions , discussions, and examples
Third	2 Theoretical + 3practical	Inorganic chemistry	The third week: Structure of the atom/characteristics of the electron and estimating the value of the charge to the mass of the electron e/m	The meeting a lecture are scientific and theoretical	questions , discussions, and examples
Fourth	2 Theoretical + 3practical	Inorganic chemistry	Formation of negative rays and their characteristics / Formation and characteristics of positive rays	The meeting ar lecture are scientific and theoretical	questions , discussions, and examples
Fifth	2 Theoretical + 3practical	Exam of first month			
Sixth	2 Theoretical + 3practical	Inorganic chemistry	Week Four: Methods for estimating atomic masses (Thomson-Austen-Near method)	The meeting lecture scientific theoretical	questions , discussions, and examples
Seventh	2 Theoretical + 3practical	Inorganic chemistry	Week Five: Structure of the nucleus/isotopes, equilibria, bonded nuclear energy, and scientists' imaginary models of the atom (Thomson-Rutherford model)	The meeting and lecture are scientific and theoretical	questions , discussions, and examples
Eighth	2 Theoretical + 3practical	Inorganic chemistry	Week SixRadioactivity: Definition oradioactivity / deflection of nuclear rays under a magnetic field / half-life	The meeting and lecture are scientific and theoretical	questions , discussions, and examples
Ninth	2 Theoretical + 3practical	Inorganic chemistry	Week Seven: Nuclear stability/nuclear fission/nuclear fusion/peaceful uses of radioactive isotopes	The meeting and lecture are scientific and theoretical	questions , discussions, and examples
Tenth	2 Theoretical + 3practical	Exam of second month			
Eleventh	2 Theoretical + 3practical	Inorganic chemistry	The ninth week: Rutherford's theoretical and quantitative conclusions, the assumptions of Bohr's theory, estimation of the speed and energy of the electron, the angular momentum of the orbital, estimation of the radius of	The meeting and lecture are scientific and theoretical	questions , discussions, and examples

			the orbit, and the development of Bohr's theory (Sommerfield and Wilson's theory)		
Twelfth	2 Theoretical + 3practical	Inorganic chemistry	The tenth week: The theory of wave mechanics: Habzenberg's uncertainty rule, the behavior of the electron according to Debroly's rule, the structure of the atom, the electronic distribution of the atom, the four quantum numbers, and the study of the physical form of orbital	The meeting and lecture are scientific and theoretical	questions , discussions, and examples
Thirteenth	2 Theoretical + 3practical	Inorganic chemistry	Week Eleven: Properties of the periodic table/charge For the properties of periodicity (valence / radii of atoms / density and atomic size / radii Nuclei (blocking)	The meeting and lecture are scientific and theoretical	questions , discussions, and examples
Fourteenth	2 Theoretical + 3practical	Inorganic chemistry	Week Twelve: Covalent / Supporters of ionic diameters / Ionization potential or energy / Electronic affinity / Magnetic properties / Electronegativity) The thirteenth week: resonance (resonance) / ionic bond (sodium chloride) / covalent bond (Valence Binding Theory (VBT))	The meeting and lecture are scientific and theoretical	questions , discussions, and examples
		Exam of the third month			

11. Course Evaluation

Theory exam 30%, Practical Quiz 10%, Practical exam 10%, final exam 50%. Final degree from 100%.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Inorganic Chemistry Book (Dr. Muhammad Al-Saidi) 1992
Main references (sources)	General chemistry book
Recommended books and references (scientific journals, reports…)	a. Lectures B. Working papers C. Online studies
Electronic References, Websites	

Course Description Form

1. Course Name: English Language/3
2. Course Code: ENGL306
3. Semester / Year: SECOND /
2024_2025
4. Description Preparation Date:
2024/9/22
5. Available Attendance Forms: DAYLY
6. Number of Credit Hours (Total) / Number of Units (Total) 1 HOUER-1 UNIT
7. Course administrator's name (mention all, if more than one name)
Name: Muhammed Rasheed Muhammed Email: muhammed.rasheed@unoanbar. edu.iq
8. Course Objectives English Language/3

Course Objectives	

9. Teaching and Learning Strategies

Strategy	Theoretical 1 hour

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
14	1	BScs.	English Language/4	Theoretical	Daily, monthly and semester 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)	NEW HEADWAY PLUS
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	You Tub Chanel

Course Description Form

1. Course Name: English Language/4

2. Course Code: ENGL406

3. Semester / Year: SECOND

2024_2025

4. Description Preparation Date:

2024/9/22

5. Available Attendance Forms: DAYLY

6. Number of Credit Hours (Total) / Number of Units (Total) 1 HOUER-1 UNIT

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

Name: Muhammed Rasheed Muhammed
Email: muhammed.rasheed@unoanbar. edu.iq

8. Course Objectives English Language/4

Course Objectives	

9. Teaching and Learning Strategies

Strategy	Theoretical 1 hour

10. Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
14	1	BScs.	English Language/4	Theoretical	Daily, monthly and semester 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)	NEW HEADWAY PLUS
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	You Tub Chanel

Course Description Form

1. Course Name:
Soil principles
2. Course Code:
ASW201
3. Semester / Year:
2024_2025
4. Description Preparation Date:
2024/9/22
5. Available Attendance Forms:
Attendance (theoretical + practical)
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours / 3.5 units
7. Course administrator's name (mention all, if more than one name)
Name: khaleel jameel Farhan Email: khaleel. Farhan @uoanbar.edu.iq
8. Course Objectives

1. Identify the soil, which is the upper part of the eart crust. **2. Understanding the mechanism of soil formation a development.** **3.** **Identify the physical, chemical, fertility and biologi characteristics of soil for each type of soil.**	**4. Learn about analysis methods each soil characteristic.** **5. Use some laboratory equipm and field tools.**

9. Teaching and Learning Strategies	
Strategy	**1. Traditional means of explanation and clarification.** **2. Electronic means of explanation and clarification.** **3. Field work.** **4. Adopting student groups for field work to take measurements.** **5. Use of surveying devices and equipment.** **6. Show illustrative pictures of the devices and their accessories.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Rocks and Minerals	Soil principles	**A lecture with explanation a clarification**	**The exam**

2	5	Soil development and formation	Soil principles	**A lecture with explanation a clarification**	**The exam**
3	5	Soil Physical Properties (Soil Texture)	Soil principles	**A lecture with explanation a clarification**	**The exam**
4	5	Soil Structure	Soil principles	**A lecture with explanation a clarification**	**The exam**
5	5 5	Soil Air	Soil principles	**A lecture with explanation a clarification**	**The exam**
6	First month exam - theoretical and practical				
7	5	Soil water	Soil principles	**A lecture with explanation a clarification**	**The exam**
8	5	Problems with accumulation of salts the soil	Soil principles	**A lecture with explanation a clarification**	**The exam**
9	5	Colloids & Chem Soil Properties	Soil principles	**A lecture with explanation a clarification**	**The exam**
10	5	Organic Colli	Soil principles	**A lecture with explanation a clarification**	**The exam**
11	5	Preparation of saturated soil paste	Soil principles	**A lecture with explanation a clarification**	**The exam**
12	5	soil biological proper	Soil principles	**A lecture with explanation a clarification**	**The exam**
Thirteenth	Second month exam - theoretical and practical				
14	5	Important nutrients the soil and th relationship to pl growth	Soil principles	**A lecture with explanation a clarification**	**The exam**
15	5	Estimation of organic matter	Soil principles	**A lecture with explanation a clarification**	**The exam**

11. Course Evaluation

1- Rapid daily tests.
2- Theoretical tests.
3- Practical tests.
4- Research and reports.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Soil principles/ / Prof. Dr. Nour El-Din Shawqi
Main references (sources)	Soil principles/Abdullah Najm Al-Ani
Recommended books and references (scientific journals, reports…)	Soil salinity / Ahmed Haider Al-Zubaidi Soil fertility / Kazem Mashhout Soil Chemistry / Kazem Mashhout Soil survey and classification / Walid Al-Akidi Soil physics/Mahdi Ibrahim Odeh Soil principles. General Organization for Techn Education and Vocational Training. Kingdom Saudi Arabia
Electronic References, Websites	Local, regional and international scient books and journals concerned with principles of soil science, especially wit scientific and virtual libraries

Course Description Form

73.	Course Name: Biological control
74.	Course Code: APP3402
75.	Semester / Year: Semester
2024_2025	
76.	**Description Preparation Date:**
2024/9/22	
77.Available Attendance Forms: Mandatory	
78.Number of Credit Hours (Total) / Number of Units (Total): 75	
79.	Course administrator's name (mention all, if more than one name)
Name: **Hamood Muhidi Saleh AL-Luhibi** Email: ag.hamood.saleh@uoanbar.edu.iq	
80.	Course Objectives
Course Objectives	**5- Introduction to microbiology** **6- Identify the location of microorganisms among living organisms. And studying the cha** **7- Studying the structures and anatomy of microorganisms and knowing the functions of** **8- Study of microbial genetics, nucleic acid synthesis, DNA replication, RNA cloning, pro**
81.	Teaching and Learning Strategies
Strategy	1- Adopting the method of giving lectures and linking each topic with examples from 2- Giving them some simple practical exercises that are discussed by the students and With the participation of all students in the section with the professor to give the mate 3- Training students in laboratories by conducting the necessary laboratory tests for d 6-4- Summer training in supporting institutions such as the directorates of agriculture

82. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name
1	5		Stages of development of biological control

2	5		History biological control
3	5		The economics of pests
4	5		Advantages, disadvantages and mechanisms of biological control to plant diseases
5	5		Knowledge of bio-antagonism , lysis and competition between organisms
6	5		Knowledge of bio-synergistic between organisms
7	5		Know the types of agricultural pests and their damages
8	5		Knowledge of Economic threshold and injury levels
9	5		Dfine of the natural control
10	5		Knowledge of the vital methods of pests control
11	5		Know the types of insect parasites
12	5		Know the types of insect predators
13	5		Types and mechanism of Entomopathogenic bacteria & viruses
14	5		Types and mechanism of Entomopathogenic fungi , nematodes
15	5		Knowledge of insectdefenses

83. Course Evaluation

1 - Through the participation of students in the lecture, based on their prior preparation of the su
2 - Giving them an exercise as a homework and asking for it to be solved with separate papers, c
3- Giving the students a case study and dividing the students into groups to write a report about
4- Evaluation through monthly exams.

84. Learning and Teaching Resources

Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	OTHER
Special requirements (include for example, workshops, periodicals, software, websites)	Laboratories, periodicals and websites
Community-based facilities (include for example, guest Lectures ,	

internship , field studies)	
Electronic References, Webs	https://journals.flvc.org/jon/article/view/82507/79523 https://nam03.safelinks.protection.outlook.com/?url=https%3A% 4841802f22bf1380b4ae%7C0%7C0%7C637151575492939468 https://nam03.safelinks.protection.outlook.com/?url=https%3A% 1802f22bf1380b4ae%7C0%7C0%7C637151575492939546&sda

Course Description Form

85.	Course Name: General Plant
86.	Course Code:
87.	Semester / Year: years , season spring
2024_2025	
88.	**Description Preparation Date:**
2024/9/22	
89.Available Attendance Forms: Presence	
90.Number of Credit Hours (Total) / Number of Units (Total)75 (5 hours weekly)	
91.	Course administrator's name (mention all, if more than one name)
Name: assistant prof. Bushra Shaker Jassim Email: ag.bushra.shaker@uoanbar.edu.iq	

92. Course Objectives

Course Objectives • **Teaching students the basics of science rela to plant** • **Teaching students about the types of plant** • **Teach students how to treat plants with pl growth regulators**	• **Teaching students the relationship v physiology plant** • **Teaching students the applications of us plant morphology in the field of field crops** • **Teach students the type of plant**

93. Teaching and Learning Strategies

Strategy	A. Knowledge and Understanding A1- Enable students to acquire knowledge of the basics of science related to development. A2- Enable students to know the methods of controlling growth through treatment with plant growth regulators A3 - Know the means and types of plant growth regulators. A4- Enabling students to obtain knowledge and understanding of the plant's hormonal needs. A5 - Enable students to obtain knowledge and understanding of ways to improve hormonal growth.

94. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledge terminology related plant growth regula and their applications Using electronic mear	plant cell	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
2	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Prokaryotic and eukaryotic cell	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
3	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Cell wall mitochondria, chloroplast	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
4	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Plant structure growth, development	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
5	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Root and modified root	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
6	5	First Exim	Exim	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
7	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Stem and modifie stem	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
8	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Leaves and modified leaves	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
9	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Tissue systems three	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
10	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Xylem, phloem	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
11	5	Knowledge terminology related plant growth regula and their applications	Parenchyma cholenchyma, sclerenchyma	Lecture, discussion, reports, laboratories	Quick and mon exams, class acti and reports

		Using electronic mea		science movie	
12	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Cell cycle	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
13	5		Second Exim	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
14	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Transport in vascular plant	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
15	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	photosynthesis= Cellular respiration	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports

95. Course Evaluation

Quick daily exams.
-Monthly exams (two or more).
- Evaluation of the students' classroom activity
- Assessments on writing research, scientific reports and homework
-Direct oral exams
-Classroom and home activities

96. Learning and Teaching Resources

Required textbooks (curricular books, if any)	General Botany
Main references (sources)	Botany
Recommended books and references (scientific journals, reports…)	Journal of botany
Electronic References, Websites	https://www.barnesandnoble.com/b/books/biology-life-sciences/botany/ /N-29Z8q8Z18ca

Course Description Form

97.	Course Name: Nematodes
98.	Course Code: APP3310
99.	Semester / Year: Semester
2024_2025	
100.	**Description Preparation Date:**
2024/9/22	
101.	Available Attendance Forms: Mandatory
102.	Number of Credit Hours (Total) / Number of Units (Total): 75
103.	Course administrator's name (mention all, if more than one name)
Name: **Hamood Muhidi Saleh AL-Luhibi** Email: ag.hamood.saleh@uoanbar.edu.iq	
104.	Course Objectives
Course Objectives	**9- Introduction to microbiology** **10- Identify the location of microorganisms among living organisms. And studying the characteristics of microorganisms - such as cultural characteristics, phenotypic appearance. Metabolic properties** **11- Studying the structures and anatomy of microorganisms and knowing the functions of these structures. Studying microbial feeding systems, identifying culture media, growth factors, preserving microbial cultures, growth phases, and methods for estimating microbial growth.** **12- Study of microbial genetics, nucleic acid synthesis, DNA replication, RNA cloning, protein synthesis, the occurrence of genetic mutations and genetic exchange (conjugation)**
105.	Teaching and Learning Strategies
Strategy	1- Adopting the method of giving lectures and linking each topic with examples from the reality of the agricultural work situation 2- Giving them some simple practical exercises that are discussed by the students and solved during the lecture With the participation of all students in the section with the professor to give the material as a kind of interaction. 3- Training students in laboratories by conducting the necessary

	laboratory tests for diagnosis 4- Summer training in supporting institutions such as the directorates of agriculture, silos and agricultural quarantine

106. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledge of nematology, its general characteristics and the nature of its nutrition	1. Plant nematology 2. Features of nematodes 3. Nematode groups 4. Nematode feeding	Lecture	quiz
2	5	Knowing the nematology and the losses caused by nematodes	1. History 2. The economics of plant nematodes	Lecture	quiz
3	5	Knowledge of the internal and external anatomy of nematodes	1. The external shape and internal structure of the nematode 2. General composition of the body	Lecture	quiz
4	5	Knowledge of the body cavity and digestive system organs and functions	.1 .body cavity 2. Digestive system	Lecture	quiz
5	5	Knowledge of the structure and functions of the nervous and reproductive system	1. nervous system 2. Reproductive system 3. The female reproductive system	Lecture	quiz
6	5	Knowledge of the vital functions of nematodes	1. Male reproductive system 2. Biological functions of nematodes	Lecture	quiz
7	5	Learn about the movement and life cycle of nematodes	1. Nematode movement 2. The life cycle of nematodes	Lecture	quiz
8	5		1. Methods of reproduction	Lecture	quiz

		Learn about the methods of reproduction and methods of laying eggs in nematodes	2. Methods of laying eggs		
9	5	Knowing the classification of nematodes	1. Divisional orders of nematodes 2.Main groups of plant nematodes	Lecture	quiz
10	5	Knowing the mechanism of causing damage to plants and the effect of the environment on nematodes	1. Adverse effects of plant nematodes 2. Ecological relationships of plant nematodes	Lecture	quiz
11	5	Knowing the nature of the relationship of nematodes with fungi and bacteria	1. The relationship of nematodes with other organisms 2. The relationship of nematodes with fungi and bacteria	Lecture	quiz
12	5	Knowing the nature of the relationship of nematodes with viruses and other nematodes	1. The relationship of nematodes with viruses 2. The relationship of nematodes with its different species	Lecture	quiz
13	5	Knowledge of nematode control methods	Nematode control methods (preventive methods) 1. Agricultural Quarantine 2. Hygiene	Lecture	quiz
14	5	Control of nematodes	High Efficiency Roads 1. Resistant varieties 2. Agricultural cycle 3. Chemical pesticides 4. Special control	Lecture	quiz
15	5	Recognizing and diagnosing nematode diseases	Some nematode diseases	Lecture	quiz

107. Course Evaluation

1 - Through the participation of students in the lecture, based on their prior preparation of the subject.
2 - Giving them an exercise as a homework and asking for it to be solved with separate papers, collected from them in the next lecture.

3- Giving the students a case study and dividing the students into groups to write a report about that study. 4- Evaluation through monthly exams.	
108. Learning and Teaching Resources	
Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	OTHER
Special requirements (include forexam workshops, periodicals, IT softwa websites)	Laboratories, periodicals and websites
Community-based facilities (include for example, guest Lectures , internship , field studies)	
Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	OTHER

Course Description Form

1. Course Name: Fruit diseases

2. Course Code: APP3408

3. Semester / Year: Second trimester Fourth stage

2024_2025

4.Description Preparation Date:

2024/9/22

5.Available Attendance Forms: attendance

6.Number of Credit Hours (Total) / Number of Units (Total): 70 Hours

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

Name: Dr. Rashid M. Theer
Email: ag.rashid_mashref@uoanbar.edu.iq

5. Course Objectives

Course Objectives	The course aims to introduc the student to the most important diseases that affe fruits, such as diseases of apple trees, diseases of ston fruit trees, diseases of grape citrus, olives, pistachio tree palm trees, figs, pomegranates, walnuts and bananas..

6. Teaching and Learning Strategies

Strategy	A1. Understand the concept of plant disease A2. Distinguishing between fungal, bacterial, viral, nematode and other pathogens A3. The most important losses caused by fruit diseases. A4. Know the most important diseases that affect fruit trees. A5. Recognize the diseases that affect ornamental plants.

7. Course Structure

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

1	5	Apple and Pear diseases	Apple and Pear scab, Powdery Mildew. Branch Wilt, Fire Blight. Crown Ga and Bitter Pit of Apple Fru	Lecture	quiz
2	5	The fruit trees of stone cored diseases	Peach leaf curl, powdery mildew, Brown rot of stone fruits , Bacterial canker and Gummosis, and Gummosis o stone fruits trees.	Lecture	quiz
3	5	Grape diseases	Downy mildew of Grapes, Powdery Mildew, Black Rot Grapes, Root Knot, Grape vi fan leaf disease and chlorosis	Lecture	quiz
4	5	citrus diseases 1	Brown Rot Gummosis, Anthracnose disease, Citrus Slow decline, Citrus Psorosis and Citrus Blast	Lecture	quiz
5	5	citrus diseases 2	Citrus exocortis, Citrus Xylopsorosis Disease, citrus Stubborn Disease , Citrus Xanthema and brucellosis le disease	Lecture	quiz
6	5	citrus diseases 3	Mottle leaf,Yellow spot, Sun Burn of Citrus, Boron Toxic autumn blight	Lecture	quiz
7	5	Olive and tree diseases pistachio	Bird's eye spot or peacock sp knot gall and pistachio Wilt trees disease	Lecture	quiz
8	5	Palm diseases	Inflorescence Rot, Terminal Rot and False Smut disease	Lecture	quiz
9	5	Diseases of figs, pomegranates and walnu	Fig stem canker, fig mosaic, Black stem, Bacterial Walnut blight and splitting of pomegranate	Lecture	quiz
10	5	Banana diseases	Root Knot, Leaf spot and Banana rot fruit	Lecture	quiz
11	5	Post- Harvest Diseases	Green and blue Molds of citru Blue mold of apple and Blacl mold.	Lecture	quiz
12	5	diseases of ornamental plants 1	Fusarium wilt of gladiolus, powder mildew of rose Rose Rust and Gladiolus scab dise	Lecture	quiz
13	5	diseases of ornamental plants plant diseases	Crown gall, Root knot nemat The bulb and stem and Tulip breaking	Lecture	quiz
14	5	semester exam		Lecture	quiz

8. Course Evaluation

9. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Books and scientific research specialized in plant pathology
Main references (sources)	Horticulture and vegetable diseases/Dr. Sami Hosni Mikhail, Dr. Abdel Hamid Tarabieh and Mr. Jawad Al-Zarari / 1981
Electronic References, Websites	http://agrfac.mans.edu.eg/research-projectsar/agricultural-sciences-journal?showall=&start=1

Course Description Form

109.	Course Name: Acarology
110.	Course Code: APP3407
111.	Semester / Year: Semester
2024_2025	
112.	**Description Preparation Date:**
2024/9/22	
113.	Available Attendance Forms: Mandatory
114.	Number of Credit Hours (Total) / Number of Units (Total): 75
115.	Course administrator's name (mention all, if more than one name)
Name: Khamees Abbooud Oleiwi Email: Khamees.oleiwi@uoanbar.edu.iq	
116.	Course Objectives
Course Objectives	**13- Introduction to microbiology** **14- Identify the location of microorganisms among living organisms. A d st characteristics of microorganisms – such as cultural characteristics, phenot pic a Metabolic properties** **15- Studying the structures and anatomy of microorganisms and knowing the f nctio structures. Studying microbial feeding systems, identifying culture media, grow preserving microbial cultures, growth phases, and methods for estimating mi robia** **16- Study of microbial genetics, nucleic acid synthesis, DNA replication, RNA cloni synthesis, the occurrence of genetic mutations and genetic exchange (conjug ation)**
117.	Teaching and Learning Strategies
Strategy	1- Adopting the method of giving lectures and linking each topic with exampl s fro reality of the agricultural work situation 2- Giving them some simple practical exercises that are discussed by the stude nts a during the lecture With the participation of all students in the section with the professor to give t e m a kind of interaction. 3- Training students in laboratories by conducting the necessary laboratory tes s fo diagnosis

	7-4- Summer training in supporting institutions such as the directorates of agricul and agricultural quarantine

118. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning m
1	Theory and Pract.		Introduction – Division of the history of ecology . What the Mites? The reasons that made the Mites turn from a secondary pest into a major pest	Giving le
2	Theory and Pract.		Economic Importance of Mites. The importance of the mites for the plant. The importance of the mites for stored foodstuffs. Mites broker in the transmission of plant pathogens. Factors Affecting Mites Existence. Factors Affecting Mites Distribution.	Giving le
3	Theory and Pract.		Taxonomic Status. Dispersion. Habit & habitats. Free living mites. A- Predators Species. B- Phytophagous sp. Parasitic Mites.	Giving le
4	Theory and Pract.		The manifestations of life. Respiratory. Sensory. Locomotion. The life of Mites in general. Feeding. Reproduction of Mites. Oviposition. Life History.	Giving le
5	Theory and Pract.		Mites and Host plants. Host Preference. Host Competition. Effect of some factors affecting the seasonal activity of plant Mites. Temperature Humidity Rain Light Food Natural enemies Water Regulation in Phytophagous Mites Water Regulation in Movable stages.	Giving le
6	Theory and Pract.		Study of some important families of the Phytophagous mites in Iraq. Some Economical and Biological Aspects of Tetranychidae Dispersion . *Oligonychus afrasiaticus* (McG.) (Acari :Tetranychidae) *Tetranychus urticae* (Koch) (Acari:Tetranychidae)	Giving le

7	Theory and Pract.		Family : Tenuipalpidae. Pomegranate False Red Mite Family : Tarsonemidae *Polyphagotarsonemus latus* (B)	G ving le
8	Theory and Pract.		Family: Eriophyidae. The Economic Importance of the Eriophyidae Malformation Transmission of viruses causing plant diseases Remove cell contents and inject the toxins Rust Miners	G ving le
9	Theory and Pract.		Acaricides. Principles of Classifying Acaricides. According to Toxicity . According to the Treated Surface Coverage. Systemic pesticides are divided according to their degradation.	G ving le
10	Theory and Pract.		According to The Mode of Entery. According to The mode of action. According to The Origin. According to the Chemical Structure.	G ving le
11	Theory and Pract.		Inorganic Acaricides. Fluride compounds. Fluride mode of Action. Sulphure Use of Sulphur. Sulphur Mode of Action.	G ving le
12	Theory and Pract.		Natural organic Acaricides. OiLs Oils Mode of Action . Synthetic Organic Acaricides Mode of Action of Organophosphorus Acaricides Mode of Action of Carbamate Acaricides.	G ving le
13	Theory and Pract.		Pest resistance to the application of chemical pesticides History The concept of resistance and its types Resistance Vigor Tolerance Susceptibility	G ving le
14	Theory and Pract.		Detection of resistance strain Causes of pest resistance for pesticide action Species of resistance	G ving le
15	Theory and Pract.		How resistance arises Speed of resistance appearance Solutions to the problem of resistance Objectives of the PRM system	G ving le

119. Course Evaluation

1 - Through the participation of students in the lecture, based on their prior preparation of the subject.
2 - Giving them an exercise as a homework and asking for it to be solved with separate papers, collected from them in the next lecture.
3- Giving the students a case study and dividing the students into groups to write a report about study.

4- Evaluation through monthly exams.	
120. Learning and Teaching Resources	
Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	OTHER
Special requirements (include forexamp workshops, periodicals, IT software, websites)	Abu alhab ,1982.economic mites.ira q Almallah .2013.apliication and principal in a caro
Community-based facilities (include for example, guest Lectures , internship , field studies)	https://download-learning-pdf-ebooks.com/1521- -libr https://books-library.net/free-965590537-d wnl https://faculty.uobasrah.edu.iq/uploads/teaching/1 971 https://www.et3lemdelivery.com/2018/11/Intr duct Entomology-pdf.html
Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	OTHER

Course Description Form

121.	Course Name: Insect environment
122.	Course Code: APP3405
123.	Semester / Year: Semester
2024_2025	
124.	**Description Preparation Date:**
2024/9/22	
125.	Available Attendance Forms: Mandatory
126.	Number of Credit Hours (Total) / Number of Units (Total): 75
127.	Course administrator's name (mention all, if more than one name)
Name: khamees Abbood Oleiwi Email: Khamees.oleiwi@uoanbar.edu.iq	
128.	Course Objectives

Course Objectives	**17- Introduction to microbiology** **18- Identify the location of microorganisms among living organisms. And s udyin appearance. Metabolic properties** **19- Studying the structures and anatomy of microorganisms and knowing th func growth factors, preserving microbial cultures, growth phases, and methods or es** **20- Study of microbial genetics, nucleic acid synthesis, DNA replication, NA c (conjugation)**

129.	Teaching and Learning Strategies
Strategy	1- Adopting the method of giving lectures and linking each topic with exampl s fro 2- Giving them some simple practical exercises that are discussed by the stude nts a With the participation of all students in the section with the professor to give t e ma 3- Training students in laboratories by conducting the necessary laboratory tes s for 4- Summer training in supporting institutions such as the directorates of agricu ture

130. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning meth

1	5	Knowledge of insect ecology	Ecology History and studies of ecology Plant Ecology Animal Ecology Specialized Environmental Studies Environment Physical environment Biotic environment Environmental classification Community Units Links between members of the same type	Le ture
2	5	Know the environmental factors that determine the growth and reproduction of insects	Specific environmental factors for insect growth and reproduction Physical factors Temperature **Effect of temperature on propagation **Effect of temperature on growth speed **Effect of heat on insects' dormancy **Effect of temperature on productivity **Deadly effect of temperatures outside range	Le ture
3	5	*** The deadly effect of low temperatures	***Deadly effect for low temperatures *** Deadly effect for freezing ***Deadly effect of high temperatures Moisture or Relative humidity Precipitation moisture The significant negative effects of relative humidity are beyond the tolerance limits	Le ture
4	5	Know the effect of some physical factors	*Effect of heat and humidity together Atmospheric gases light Effect of light on insect activity **Effect of light on the silence of insects **Effect of light intensity on insect movement **Effect of light on laying eggs in insects **Effect of light on growth in insects ** Effect of light in general	Le ture
5	5	Know the effect of wind and fire on the insect community	Wind Fire Surface fire Crown fire	Le ture
6	5	Know the effect of atmospheric	Atmospheric pressure Earth Gravity Microclimate	Le ture

		pressure, gravity and location on insect activity	Second: Place *the soil *Breeding insects and multiple places Third: Food Fourth: Other living organisms	
7	5	Identify the effect of food on the behavior and livelihood of insects	Food Elements of food structure Pyramids of the environment Food preference Food sources Quality food	Le ture
8	5	To know the effect of the type of food on the life of insects	Effects of food quality on insects *Effect of food quality to Survival *Effect of food quality on productivity *Effect of food quality on growth speed Nutrition behavior Food chain Food web	Le ture
9	5	Learn about productivity in insects and their levels	Productivity Levels Productivity Dispersal Dispersal Forms Mechanical of Dispersal Causes of Dispersal	Le ture
10	5	To identify the effect of spreading on the population of insects and its forms	Effect of insect spread on its numbers and environment *Effect of Emigration on the Emigrants and its environment Effect of Imigration on the Imigrants and its environment Effect of Trans- migration on the Trans migrants and its environment Examples of migratory insects	Le ture
11	5	Know the types of distribution in insects	Distribution distribution Random Uniform distribution Clumped distribution Aggregation	Le ture
12	5	Knowledge of the process of natural selection in insects	Natural selection and natural balance Natural Selection Causes of natural selection Sexual Selection	Le ture
13	5	Learn about the natural balance of insects in their environment	Natural Balance Factors that have helped insects resist and tolerate different environmental conditions *Fast mobility *Adaptability	Le ture

14	5	Understand the theories of dormancy in insects	Diapause Physiological phenomena of insects entering dormancy Break the dormancy phase	Le ture
15	5	Identify the structure of insects and their impact on survival	* Exoskeleton *Small Size *Metamorphosis *High Fecundity Factors affecting the vitality and reproduction of insects	Le ture

131. Course Evaluation

1 - Through the participation of students in the lecture, based on their prior preparation of t e su
2 - Giving them an exercise as a homework and asking for it to be solved with separate pap ers,
3- Giving the students a case study and dividing the students into groups to write a report a out
4- Evaluation through monthly exams.aily oral, monthly, or written exams, reports .... etc

132. Learning and Teaching Resources

Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	OTHER
Special requirements (include example workshops, periodicals, software, websites)	Scientific foundations in insect ecology For Abdul Baqi Muhammad Husayn Ali, Suad Abdu lah Insect Ecology, Second Edition: An Ecosystem Appr oach charis yusuf https://link.springer.com
Community-based facilities (include for example, guest Lectures , internship , field studies)	https://www.researchgate.net/publication/276175496_Inse https://www.academia.edu/8401778/Insect_Ecology_Seco https://www.blackwellpublishing.com/content/bpl_im ages https://www.mlsu.ac.in/econtents/1214_Insect%20E
Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	OTHER

Course Description Form

133.	Course Name: Medical and veterinary insects
134.	Course Code: APP3213
135.	Semester / Year: Semester
2024_2025	
136.	**Description Preparation Date:**
2024/9/22	
137.	Available Attendance Forms: Mandatory
138.	Number of Credit Hours (Total) / Number of Units (Total): 75
139.	Course administrator's name (mention all, if more than one name)
Name: Khamees Abbooud Oleiwi Email: Khamees.oleiwi@uoanbar.edu.iq	
140.	Course Objectives
Course Objectives	**21- Introduction to microbiology** **22- Identify the location of microorganisms among living organisms. And studying the characteristics of microorganisms – such as cultural characteristics, phenotypic appearance. Metabolic properties** **23- Studying the structures and anatomy of microorganisms and knowing the functions of these structures. Studying microbial feeding systems, identifying culture media, growth factors, preserving microbial cultures, growth phases, and methods for estimating microbial growth.** **24- Study of microbial genetics, nucleic acid synthesis, DNA replication, RNA cloning, protein synthesis, the occurrence of genetic mutations and genetic exchange (conjugation)**
141.	Teaching and Learning Strategies
Strategy	1- Adopting the method of giving lectures and linking each topic with examples

	from the reality of the agricultural work situation 2- Giving them some simple practical exercises that are discussed by the students and solved during the lecture With the participation of all students in the section with the professor to give the material as a kind of interaction. 3- Training students in laboratories by conducting the necessary laboratory tests for diagnosis 8-4- Summer training in supporting institutions such as the directorates of agriculture, silos and agricultural quarantine

142. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	History of medical and veterinary entomology	The importance of medicinal and veterinary entomology	Lecture+Collect models of medical and veterinary insects	1
2	5	Arthropods as vectors of insect etiologies	Mouth parts in insects of medical and veterinary interest, and the mouth parts are piercing absorbent	Lecture+Collect models of medical and veterinary insects	2
3	5	The Relationship of medical insects to pestilence	Mechanical ,biologyical ,proliferative role in evolution ,proliferative role in division ,non-proliferative role in division ,ovarian transport	Lecture+Collect models of medical and veterinary insects	3
4	5	Vectors and their relationship with the pathogen	The strategy transmitted by the pathogen –the effects of the pathogen on the vector –families and species	Lecture+practical lesson	4
5	5	Sucking lice and medical importance	Species-head lice –body lice –pubic lice-life lice-diseases that ransmit them	Lecture+practical lesson	5
6	5	Lice-borne diseases	Trench fever-epidemic retrograde fever –life cycle- symptoms casused in humans	Lecture+Practical lesson	6
7	5	Animal sucking lice	Kinds of lif cycle and control	Lecture+Practical lesson	7
8	5	Animal rodent lice	Bird lice-cattle lice –life cycle –medical and control im portance	Lecture+Practical lesson	8
9	5	Rank of cricket	The diseases it carries ,life cycle,control,bedbugs,species,importanc,habits ,and life cycle	Lecture	9
10	5	Nipples and Nipples	Medical importance ,dream of scaling chickens , dream of feathering in poultry,dream of controlling wet scabies and other types	Lecture+practical lesson	10

11	5	Flias and their types	The importance of medicine ,life cycle ,and struggle	Lecture+practical lesson	1
12	5	Mosquito	General characteristics –life cycle –and factors that influence mosquito distributionbiologic characteristics –diffusion –mosquito response	Lecture+practical lesson	1
13	5	The medical importance of mosquitoes	Age of the insect,lethargy,malaria ,symptoms,and their types	Lecture+practical lesson	1
14	5	Tsetse flies	Dietary behavior and habits , medical and veterinary significance,animal and man-caused diseases ,and the cycle of disease	Lecture+Practical lesson	14
15	5	Naughty flies and biters	Houseflies ,face flies,battering flies ,garbage and waste flise,meat flies ,stable flies ,horn flies, horse flise ,importance and control flies	Lecture+Practical lesson	15

A. Course Evaluation

1 - Through the participation of students in the lecture, based on their prior preparation of the subject.
2 - Giving them an exercise as a homework and asking for it to be solved with separate papers, collected from them in the next lecture.
3- Giving the students a case study and dividing the students into groups to write a report about that study.
4- Evaluation through monthly exams.

143. Learning and Teaching Resources

Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	Other
Special requirements (include forexampl workshops, periodicals, IT software, websites)	**Google chrome**
Community-based facilities (include for example, guest Lectures , internship , field studies)	
Required reading: · CORE TEXTS · COURSE MATERIALS OTHER	Other

Course Description Form

144. Course Name:

Farm machinery and plant protection equipment

145. Course Code:

ASW209

146. Semester / Year:

2024_2025

147. Description Preparation Date:

2024/9/22

148. Available Attendance Forms:

By attendance

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

5/3

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

Name: Dr. Ghazwan Husam Tawfeeq
Email: ag.ghazwan.hussam@uoanbar.edu.iq

151. Course Objectives

Identifying the design and application engineering fundamentals of agricultural tracto which enables students of the Department of Plant Protection to deal with the use a working methods of machines found in agricultural fields.

152. Teaching and Learning Strategies

1. To learn about the basic principles of repair and maintenance of engines and means power transmission.
2. To learn about the basic principles of plant protection equipment and maintena methods.
3. To learn about the engineering basics of machines, the development of their manufactu and methods of dealing with these devices and equipment.

4. Course Structure

Week	hrs./week	Subject	Education output	Education method	Assessment method
1	Theoretical part (3hrs) Practical part (2hrs)	Details and definition of tractors and farm work	Identify topics	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam

2	Theoretical part (3hrs) Practical part (2hrs)	Classification of tractors according to manufacturing and design concepts	Types of agricultural tractors	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
3	Theoretical part (3hrs) Practical part (2hrs)	Definition and explanation of the components of the agricultural tractor	Main tractor parts	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
4	Theoretical part (3hrs) Practical part (2hrs)	Engine classification, definition, and explanation of its components	Engines and their types	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
5	Theoretical part (3hrs) Practical part (2hrs)	The method of ignition of fuel types and their effect on the performance of each type	Cycle of movement of pistons in an engine	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
6	Theoretical part (3hrs) Practical part (2hrs)	Benefits of oil and components of the system	Engine lubrication device	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
7	Theoretical part (3hrs) Practical part (2hrs)	Types of engine cooling, their parts and operation	Engine cooling system	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
8	Theoretical part (3hrs) Practical part (2hrs)	First monthly exam	First monthly exam		
9	Theoretical part (3hrs) Practical part (2hrs)	Safety methods for using pesticides	Safety methods for using pesticides	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
10	Theoretical part (3hrs) Practical part (2hrs)	Introduction to plant protection equipment	Definition of crop protection and its tools	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
11	Theoretical part (3hrs) Practical part (2hrs)	Manual pesticide sprayers	Installation and operation of the sprayers	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam

12	Theoretical part (3hrs) Practical part (2hrs)	Pesticide sprayers attached to the agricultural tractor	Installation and operation of suspended and retractable sprayers.	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
13	Theoretical part (3hrs) Practical part (2hrs)	Helicopters used for pesticide spraying purposes.	Installation and operation of parts	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam
14	Theoretical part (3hrs) Practical part (2hrs)	Use of the positioning system and methods of using it in agricultural tractors.	Smart and advanced devices to treat crops	Curriculum + assignment + video + data presentation + practical	Class discussion and daily exam

5. 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

6. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Agricultural tractors and the fundamentals of orchard mechanization. Written by Professor Dr. Abdul Rahman Ayoub Al-Sabbagh. 2. Basics of tractors and agricultural equipme Written by Mr. Lotfi Hussein Muhammad A
Main references (sources)	كتاب ميكانيكا وهندسة الات زراعية PDF (mechaniclub.com)
Recommended books and references (scientific journals, reports…)	Agricultural mechanization in development. Guidelines for strategy formulation (fao.org)
Electronic References, Websites	Guide-to-good-ploughing.pdf (agrii.co.uk)

Course Description Form

1. Course Name:
Fundamentals of Agricultural Extension
2. Course Code:
3. Semester / Year:
2024_2025
4. Description Preparation Date:
2024/9/22
5. Available Attendance Forms:
regularity (attendance)
6. Number of Credit Hours (Total) / Number of Units (Total)
75 Hour / 3.5unit
7. Course administrator's name (mention all, if more than one name)
Name: Mustafa Subhi Abd AL-Gabbar Email: **mustafa.subhi@ uoanbar.edu.iq**
8. Course Objectives

Course Objectives	Providing the student with basic knowledge of agricultural extension concepts Providing the student with the general concepts and principles of agricultural extension, Providing the student with the objectives of agricultural extension, Providing the student and introducing him to how to plan agricultural extension programs

9. Teaching and Learning Strategies	
Strategy	A theoretical clarification of the vocabulary of the subject, using da to understand the scientific subject Using graphs in scientific material, student participation in lecture

	Conduct daily and monthly tests.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledge and understanding Skillfor the subject	brief history	theoretically Practical vocabulary Subject	Examination, reporting
2	5	Knowledge and understanding Skill for the subject	Introduction to agricultural extension	theoretically Practical vocabulary Subject	Examination, reporting
3	5	Knowledge and understanding Skill for the subject	The importance of agricultural extension	theoretically Practical vocabulary Subject	Examination, reporting
4	5	Knowledge and understanding Skill for the subject	Principles of agricultural extension	theoretically Practical vocabulary Subject	Examination, reporting
5	5	Knowledge and understanding Skill for the subject	The importance of having principles of guidance work	theoretically Practical vocabulary Subject	Examination, reporting
6	5	Knowledge and understanding Skill for the subject	Mention the principles and the importance of each of them	theoretically Practical vocabulary Subject	Examination, reporting
7	5	Knowledge and understanding Skill for the subject	Objectives of extension work	theoretically Practical vocabulary Subject	Examination, reporting
8	5	Knowledge and understanding Skill for the subject	Introducing the process of communicating with audiences	theoretically Practical vocabulary Subject	Examination, reporting
9	5	Knowledge and understanding Skill for the subject	Factors affecting communication effectiveness	theoretically Practical vocabulary Subject	Examination, reporting

10	5	Knowledge and understanding Skill for the subject	Rural leadership	theoretically Practical vocabulary Subject	Examination, reporting
11	5	Knowledge and understanding Skill for the subject	Adoption and spread of modern technologies in agriculture	theoretically Practical vocabulary Subject	Examination, reporting
12	5	Knowledge and understanding Skill for the subject	Planning extension programs	theoretically Practical vocabulary Subject	Examination, reporting
13	5	Knowledge and understanding Skill for the subject	Agricultural extension methods and extension tools	theoretically Practical vocabulary Subject	Examination, reporting
14	5	Knowledge and understanding Skill for the subject	Evaluation of extension programs	theoretically Practical vocabulary Subject	Examination, reporting
15	5	Knowledge and understanding Skill for the subject	Agricultural extension in Iraq and its stages of development	theoretically Practical vocabulary Subject	Examination, reporting

11. Course Evaluation

Daily exam, submission of reports, semester exam, final exam (total score 100)

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Fundamentals of Agricultural Extensic
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: Computer applications 1
2. Course Code:
3. Semester / Year: First/
2024_2025
4. Description Preparation Date:
2024/9/22
5. Available Attendance Forms: Personal presence
6. Number of Credit Hours (Total) / Number of Units (Total) 48/ 3
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Pro. Dr. Ahmed Abdulrahman Majid Email: ag.ahmed.abd-rahmman@uoanbar.edu.iq
8. Course Objectives

Course Objectives	**1. Learn about computer terms and definitions** **2. University degree in computer history and language** **3. Knowing the computer's components, types, and uses.** **4. Entering the world of viruses and knowing how to benefit from them on the computer.** **5. Working on the computer through the Windows interface**

9. Teaching and Learning Strategies

Strategy	**Knowledge and understanding** Learn about the capabilities of printing, inserting images, tables, storing, and writing formatting. **Subject-specific skills:** Students can develop skills by gaining sufficient experience to produce Microsoft Word files in a sophisticated and artistic style. **Teaching and learning methods:** The student relies for his understanding and learning on in-person lectures during this academic year **Evaluation methods:** Through daily and monthly exams, homework, oral exams, attendance, and various activities **thinking skills:** The student relies on linking the topics of the lectures in order to provide a model answer that can benefit him in the monthly exams. **General and transferable skills (other skills related to employability and personal development).** The student can study the curriculum topics in a practical way to understand and comprehend the curriculum lectures through his visit to the laboratory.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	3		Computer basics	(theoretical)	Daily exam
2	3		Electronic computer (computer)	(theoretical)	Daily exam + homework
3	3		Classification of computers based on operating system	(theoretical)	Daily exam + homework
4	3		Computer's components	(theoretical)	Monthly exam
5	3		Computer box	(theoretical)	Daily exam
6	3		Ports	(theoretical)	Daily exam + homework
7	3		Number systems	(theoretical)	Daily exam + homework
8	3		Computer security and software licenses	(theoretical)	Monthly exam
9	3		Electronic hacking	(theoretical)	Daily exam
10	3		Operating Systems	(practical)	Daily exam + homework
11	3		Windows operating system	(practical)	Daily exam + homework
12	3		Taskbar	(practical)	Monthly exam
13	3		Performing operations on windows	(practical)	Daily exam
14	3		control Board	(practical)	Daily exam + homework
15	3		Add an account	(practical)	Daily exam + homework
16	3		Installing programs	(practical)	Monthly exam

11. Course Evaluation
Monthly exam 60%, daily exam 20%, homework 10%, attendance 10%.

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Computer applications book Microsoft Word
Main references (sources)	**My practical experience is in the computer field**
Recommended books and references (scientific journals, reports…)	-
Electronic References, Websites	-

Course Description Form

153.	Course Name: Principals of Microbiology
154.	Course Code: AF19201
155.	Semester / Year: Semester
2024_2025	
156.	**Description Preparation Date:**
2024/9/22	
157.	Available Attendance Forms: Mandatory
158.	Number of Credit Hours (Total) / Number of Units (Total): 75
159.	Course administrator's name (mention all, if more than one name)
Name: Ali Ameen Yaseen Email: ag.ali.ameen@uoanbar.edu.iq	
160.	Course Objectives
Course Objectives	**25- Introduction to microbiology** **26- Identify the location of microorganisms among living organisms. And studying the characteristics of microorganisms - such as cultural characteristics, phenotypic appearance. Metabolic properties** **27- Studying the structures and anatomy of microorganisms and knowing the functions of these structures. Studying microbial feeding systems, identifying culture media, growth factors, preserving microbial cultures, growth phases, and methods for estimating microbial growth.** **28- Study of microbial genetics, nucleic acid synthesis, DNA replication, RNA cloning, protein synthesis, the occurrence of genetic mutations and genetic exchange (conjugation)**
161.	Teaching and Learning Strategies
Strategy	1-Develop teaching programs in coordination with higher departments. 9- Developing teaching curricula similar to the work environment. 10- Sending students to departments and directorates for conducti summer application. 11- Assigning students to conduct research and reports.

	12- Assigning students to go to the library and collect sources on the topic. Implementing practical lessons in laboratories, each according to their currency

162. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theory and Pract.		Introduction to microbiology	Giving lectures	Quiz+ activities
2	Theory and Pract.		The location of microorganisms among living organisms.	Giving lectures	Quiz+ activities
3	Theory and Pract.		Characteristics of microorganisms	Giving lectures	Quiz+ activities
4	Theory and Pract.		Structure of bacteria and functions of their parts.	Giving lectures	Quiz+ activities
5	Theory and Pract.		Nutrition of microorganisms. Bacterial nutrition	Giving lectures	Quiz+ activities
6	Theory and Pract.		Growth and reproduction of bacteria. Isolation of bacteria in pure culture,	Giving lectures	Quiz+ activities
7	Theory and Pract.		preservation of bacterial cultures, cell cycle, growth phases, estimation of bacterial growth,	Giving lectures	Quiz+ activities
8	Theory and Pract.		Mycoplasma, Phytoplasma, Rickettsia	Giving lectures	Quiz+ activities
9	Theory and Pract.		- Microbial genetics, nucleic acid synthesis, DNA replication, RNA replication, protein synthesis, heterogeneity in bacteria, genetic mutations, genetic exchange (conjugation),	Giving lectures	Quiz+ activities
10	Theory and Pract.		- Viruses... their discovery, physical properties, and chemical composition. Virus division	Giving lectures	Quiz+ activities

11	Theory and Pract.		- Fungi. External appearance, parasitism, fungal cell structure, changes in the vegetative structure of the fungus,	Giving lectures	Quiz+ activities
12	Theory and Pract.		- Algae: Botozoa: Soil microorganisms. Food—sources of food contamination, control of sources of contamination,	Giving lectures	Quiz+ activities
13	Theory and Pract.		- Microorganisms in milk and its products, microorganisms in vegetables and fruits. Damage	Giving lectures	Quiz+ activities
14	Theory and Pract.		- Control of microorganisms.	Giving lectures	Quiz+ activities
15	Theory and Pract.		Third month exam	Giving lectures	Quiz+ activities

163. 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

164. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principals of Microbiology Dr. Khalaf Soofi Al-Delaimy
Main references (sources)	Relying on recent scientific research and publications issued by reputable international publishing houses and journals
Recommended books and references (scientific journals, reports…)	Scientific journals related to the field of microbiology
Electronic References, Websites	https://www.researchgate.net/ https://scholar.google.com/schhp?hl=ar

Course Description Form

165. Course Name:
Principle of Statisitcs
166. Course Code:
167. Semester / Year:
2024_2025
168. Description Preparation Date:
2024/9/22
169. Available Attendance Forms:
- Electronic Classes and - Classrooms
170. Number of Credit Hours (Total) / Number of Units (Total)
30
171. Course administrator's name (mention all, if more than one name)
Name: Dr Mohammed Hamdan Al-Issawi Email: ag.mohammed.hamdan@uoanbar.edu.iq
172. Course Objectives

Course Objectives	**Introducing** students to th **Training** students to apply **Enable** the student t follo summarizing, and d splay measures for the data **Enable** the student to form **Enable** the student to make appropriate conclusions an

173. Teaching and Learning Strategies	
Strategy	• Providing students knowledge on the s • The ability to collec • The ability to meas

174. Course Structure

Week						Hours	Required Learning Outcomes	Unit nam
1	2	Introduction to Statistics	Definition of statistics uses of statistics, its division, the nature ar division of data, variables and their division	Lectures	Exam			
2	2	Statistical symbols	Read statistical symbo and understand functions written in statistical symbols	Lectures	Exam			
3	2	Data collection and tabular presentation	Data collection, Frequency distributio Frequency distributio table, Creating a frequency table, Class length, Class center, True limits, Relative	theoretical practical lectures	Exam			
4	2	Graphic representation	Graph of Frequency Distributions with Histogram, Polygon, and Frequency Curve	theoretical practical lectures	Exam			
5	2	Measures of Central Tenden	Arithmetic mean, median, and mode	theoretical practical lectures	Exam			
6	2	Measures of Dispersion or Variation	Range, mean deviatio variance, standard deviation, and coefficient of variatio	theoretical practical lectures	Exam			
7	2	Correlation coefficient	Simple correlation, th relationship between two independent variables, the correlat significance test	theoretical practical lectures	Exam			
8	2	Regression coefficient	Simple linear regression, finding th relationship between two variables, one independent and the other dependent, predicting the value o the dependent variabl in terms of	theoretical practical lectures	Exam			
9	2	Principles ofprobability theory	Permutations and combinations	theoretical practical lectures	Exam			

10	2	Discrete Probability Distributions	binomial distribution	theoretical a practical lectures	Exam
11	2	Continuous Probability Distributions	Normal distribution, standard normal distribution curve	theoretical a practical lectures	Exam
12	2	Continuous Probability Distributions	Areas under the norm distribution curve, applications	theoretical a practical lectures	Exam
13	2	Chi-square test	Independence, conser	theoretical a practical lectures	Exam
14	2	Hypothesis test	Hypothesis formulatic and testing, null hypothesis and alternative hypothesis probability level, T-te Z-test	theoretical a practical lectures	Exam
15	2	Analysis Variance	Variance analysis tab	theoretical a practical lectures	Exam

175. Course Evaluation

Term Tests: 15
Lab: 20
Quizzes: 10
Project: 5
Final: 50

176. Learning and Teaching Resources

Required textbo (curricular books any)	Course books Other
Main referen (sources)	The book (Introduction to Statistics), written by Dr. Khasha Mahmoud Al-Rawi, Col ege o Mosul, 1989.
Recommended books and references (scientific journals, reports…)	Medical, Ahmed Abdel Samie. 2007. Principles of Statistics, Amman. The starting h use. David, M. Lane. Introduction to Statistics. Online Edition.
Electronic References, Websites	https://www.scribbr.com/methodology/experimental-design/