

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

Academic Program Description Form for Colleges and Institutes
For the Academic Year 2025–2026

University: Al-Muthanna
College/Institute: Agriculture
Department: Soil Science and Water Resources
Date of Completion: September 1, 2025

:Signature

Assistant Dean for Scientific

Affairs:

Prof. Dr. Hanan Nahi Kadhin

:Signature

Head of Department

: Prof. Dr. Abdullah Karim Jabbar

Date: September 1, 2025

Reviewed by:

Quality Assurance and University Performance Division

Saad Kadhim Jabbar

:Director of Quality Assurance and University Performance Division

2/9/2025 :Date

Signature:

Dean's Approval

**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

2025–2026

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 3/5/2025 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.

1. Program Vision

The Department of Soil Sciences and Water Resources seeks to be one of the departments of advanced agricultural colleges in graduating competent agricultural engineers in the field of soil sciences and water resources to place them in the labor market and contribute to raising plant production by increasing soil fertility and improving its various qualities.

2. Program Mission

Leadership and excellence as a professional university that works to qualify and graduate national human resources with a high degree of competence for the labor market in the region. And to be a major source of applied scientific research that supports economic development and effective participation in social welfare.

3. Program Objectives

The program aims to prepare cadres of agricultural engineers specialized in the five soil sciences: soil chemistry, soil physics, soil biology, soil fertility, soil surveying and classification, and employ them in work in the local market and all state departments.

4. Program Accreditation

The department is working to obtain program accreditation by applying the standards launched by the Ministry

5. Other external influences

Field visits to stations and relevant state institutions

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Notes*
Institution Requirements	15	29	15.38	Basic
College Requirements	19	62.5	33.15	Basic
Department Requirements	30	97	51.45	Basic
Summer Training	1			Basic
Other				
The total	65	188.5		

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours
First/ first semester	0C13101	Analytical chemistry	30 theoretical + 45 practical
	0C13102	General physics	30 theoretical + 45 practical
	U013101	Mathematics 1	30 theoretical
	0C13103	Engineering Drawing	45 practical
	U013102	Democracy and human rights	30 theoretical
	0C13104	Principles of animal prod.	30 theoretical + 45 practical
	0C13105	Principles of field crops	30 theoretical + 45 practical
	U013103	Computer 1	30 practical
First/ second semester	0023101	Geology	30 theoretical + 45 practical
	0C23101	Organic chemistry	30 theoretical + 45 practical
	0C23102	Principles of fruit production	30 theoretical + 45 practical
	0C23103	Space and leveling	30 theoretical + 45 practical
	U023101	Computer 2	30 practical
	U023102	English language	30 theoretical
	0C23104	Agriculture economy	30 theoretical + 45 practical
	U023103	Mathematics 2	30 theoretical
	U023104	Arabic language	30 theoretical
	U023105	Crimes of Ba'ath Party	30 theoretical
	0C13201	Biochemistry	30 theoretical + 45 practical
	0013201	Principles of soil science	30 theoretical + 45 practical

Second/ first semester	0C13202	Principles of statistics	30 theoretical + 45 practical
	0013202	Microbiology	30 theoretical + 45 practical
	0C13203	Vegetables production	30 theoretical + 45 practical
	U013201	Computer 3	30 practical
	0C13204	Agricultural machin.& equip.	30 theoretical + 45 practical
Second/ second semester	0023201	Soil, water, and plant analysis	30 theoretical + 45 practical
	0C23201	Basics of plant protection	30 theoretical + 45 practical
	0023202	Soil environment&Atmospher.	30 theoretical + 45 practical
	0C23202	Principles of agri. extension	30 theoretical
	0023203	Land settlement & adjustment	30 theoretical + 45 practical
	0C23203	Plant Physiology	30 theoretical + 45 practical
	U023201	English language	30 theoretical
	U023202	Computer 4	30 practical
Third/ first semester	0013301	Soil physics	30 theoretical + 45 practical
	0013302	Soil chemistry	30 theoretical + 45 practical
	0013303	Soil fertility	30 theoretical + 45 practical
	0013304	Irrigation	30 theoretical + 45 practical
	0013305	Soil morphology	30 theoretical + 45 practical
	0C13301	Experi. Design and analysis	30 theoretical + 45 practical
	0013306	Soil and water pollution	30 theoretical + 45 practical
	U013301	English language	30 theoretical
Third/ second semester	0C23301	Economics of natural resourc.	30 theoretical
	0023301	Drainage	30 theoretical + 45 practical
	0023302	Soil mineralogy	30 theoretical + 45 practical
	0C23302	Remote Sensing	30 theoretical + 45 practical
	0023303	Soil salinity	30 theoretical + 45 practical
	0023304	Organic soil matter	30 theoretical + 45 practical
Fourth/ first semester	0013401	Soil survey and classification	30 theoretical + 45 practical
	0013402	Soil and conservation	30 theoretical + 45 practical
	0013403	Soil microbiology	30 theoretical + 45 practical
	0013404	Plant nutrition	30 theoretical + 45 practical
	0013405	Hydrology	30 theoretical + 45 practical
	U013401	English language	30 theoretically
	0013406	Graduation research project	30 practical
	0013407	Irrigation systems technolog.	30 theoretical + 45 practical
Fourth/ second semester	0023401	Fertilizer technologies	30 theoretical + 45 practical
	0023402	Land Reclamation	30 theoretical + 45 practical

	0023403	Soil management	30 theoretical + 45 practical
	0023404	Soil, water and plant relation.	30 theoretical + 45 practical
	0023405	Desertification	30 theoretical
	0023406	Graduation research project	30 practical
	0023407	Seminars	15 theoretical
	U023401	Sustainable development	30 theoretical
	U023402	Professional Ethics	15 theoretical

8. Expected learning outcomes of the program

Knowledge	
Cognitive goals	<p>Student learns about the concept of soil and its geological components.</p> <p>The student learns about the types of soil and the external influences that contributed to the formation of soil.</p> <p>The student learns about the nutrients found in the soil.</p>
Skills	
Skills objectives of the program	<p>Thinking skill</p> <p>Scientific research skills</p> <p>Teaching skills</p>
Ethics	
Evaluation	<p>Theoretical tests</p> <p>Practical tests</p> <p>Weekly reports</p>

9. Teaching and Learning Strategies

- 1- Explanation and clarification
- 2- Lecture method
- 3- Practical lessons in the lab.
- 4- Scientific trips to relevant departments and research stations and Self-learning method

10. Evaluation methods

- 1-Theoretical tests

2- Practical tests

3- Reports and studies

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Soil and water resources	Soil microbiology			2	
Professor	Soil and water resources	Soil fertility and fertilization			2	
Professor	Gardening	vegetable production			1	
Assistant Professor	Soil and water resources	Soil survey and classification			1	
Assistant Professor	agricultural economy	agricultural economy			1	
Assistant Professor	Plant/soil production	Soil chemistry			1	
Assistant Professor	Machine engineering	Agricultural machines			1	
Assistant Professor	Gardening	His saddle is green			1	
Lecturer	Soil and water resources	Soil fertility and fertilization			1	
Lecturer	Gardening	Heredity			1	
Lecturer	Vegetable production	Soil fertility			1	

assistant lecturer	Vegetable production	Soil physics			1	
assistant lecturer	Vegetable production	Soil microbiology			1	

Professional Development

Mentoring new faculty members

Guiding new, visiting, full-time and part-time faculty members by following them up by the Scientific Committee and the Department Head, attending lectures, and giving them the necessary directions.

Professional development of faculty members

- 1- Follow teaching and learning strategies
- 2- Evaluation of learning outcomes by the scientific committee
- 3- Professional development through holding development courses

12. Acceptance Criterion

Central admission

13. The most important sources of information about the program

- 1- The website of the college and university
- 2- University guide
- 3- Central Library
- 4- The most important books and sources for the department
- 5- The Internet

14. Program Development Plan

- 1-Teamwork: Working within the group effectively and actively.
- 2- Time management: Managing time effectively and setting priorities with the ability to work organized by appointments.

3- Leadership: The ability to direct and motivate others.

4- Independence at work.

5- Negotiation and persuasion (the student is able to influence and persuade others to discuss and reach an agreement.

6- Global skills (the student is able to speak and understand other languages and appreciate other cultures.

Program Skills Outline

Program Skills Outline																
				Required program Learning outcomes												
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	
First/ first semester		Computer basics	Basic	•	•	•	•	•	•	•	•	•	•	•	•	
		Mathematics 1	Basic		•		•									
		Human rights and concepts of freedom	Basic					•					•		•	
		Principles of animal production	Basic						•							
		General physics	Basic		•				•		•			•		
		Principles of field crops	Basic		•	•						•				•
		analytical chemistry	Basic									•				

First/ second semester		Engineering Drawing	Basic		•								•		•	
		English language 1	Basic		•			•						•		
		Arabic Language	Basic		•	•	•	•	•	•	•	•	•	•	•	
		Mathematics 2	Basic		•		•									
		Flat space	Basic					•					•		•	
		Fruit production	Basic						•							
		Principles of agricultural economics	Basic		•			•		•				•		
		organic chemistry	Basic			•	•						•			

		conditions														
		Green production	Basic													
		Principles of statistics	Basic													
		Principles of soil science	Basic													
Second/ second semester		Computer applications 4	Basic													
		Phosphorus is a plant	Basic													
		Agricultural machines and machinery	Basic													
		Concepts of	Basic													

		freedom and democracy													
		Principles of agricultural extension	Basic												
		Soil, water and plant analysis	Basic												
		Land settlement and modification	Basic												
		Principles of plant protection	Basic												
Third/ first semester		English language 3	Basic												
		Design and	Basic												

		analysis of experiments														
		Soil, water and plant pollution	Basic													
		Organic matter in the soil	Basic													
		Soil fertility	Basic													
		Soil chemistry	Basic													
		Soil physics	Basic													
Third/ second semester		irrigation	Basic													
		Natural resource economics	Basic													
		Drainage	Basic													

		Soil minerals	Basic														
		Soil salinity	Basic														
		Remote sensation	Basic														
		Soil morphology	Basic														
Fourth/ first semester		Graduation research project	Basic														
		English language 4	Basic														
		Relationship between soil, water and plants	Basic														

		Irrigation systems technologies	Basic												
		Hydrology and water resources	Basic												
		Soil survey and classification	Basic												
		Soil and water maintenance	Basic												
		Soil microbiology	Basic												
Fourth/ second semester		Graduation research project	Basic												

		Seminars	Basic													
		Desertification	Basic													
		Fertilizer technologies	Basic													
		Plant nutrition	Basic													
		Soil management	Basic													
		Land reclamation	Basic													

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

Course Description Form

1. Course Name:	
Analytical Chemistry	
2. Course Code:	
0C13101	
3. Semester / Year:	
First Semester / First Year	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Actual attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical / 2 practical / units 3	
7. Course administrator's name (mention all, if more than one name)	
Name: Lecturer. Anmar Hamoudi Kadhim Email: anmarjhayl@mu.edu.iq	
8. Course Objectives	
Course Objectives	<p>1- Introducing students to the concept of analytical chemistry, as it is one of the branches of chemistry, and what is its importance and types.</p> <p>2- Identify the methods of chemical analysis and the difference between one method and another.</p> <p>3- Learn how to conduct multiple methods of chemical analysis and what is the best way to obtain results.</p> <p>4- Learn about methods of calculation and data analysis to obtain results.</p> <p>5- Learn how to interpret the results and give the correct recommendations.</p>
9. Teaching and Learning Strategies	
Strategy	<p>1. Explain and clarify the concept of analytical chemistry.</p> <p>2. Explain the types of chemical analyzes and the differences between them.</p> <p>3. Learn about the use of chemical and mechanical methods and the use of devices to conduct analytical tests.</p> <p>4. Identify the characteristics of chemicals, their degree of danger, how to deal with them, and calculation methods.</p>

5. Learn about computational methods to obtain chemical analysis results.
6. Interpretation of results.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	4	Definition of analytical chemistry and its importance	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
2 nd	4	Classification of analytical chemistry	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
3 rd	4	Types of analytical chemistry	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
4 th	4	Analysis accounts Volumetric	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
5 th	4	Types of calibrations used in volumetric analysis	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
6 th	4	Learn about the concept of equivalence and its theories	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
7 th	4	Principles of gravimetric analysis and its requirements	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
8 th	4	Gravimetric analysis methods	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
9 th	4	Methods of deposition and isolation of materials	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
10 th	4	Sediment contamination of materials and processing methods	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
11 th	4	Basic principles of spectroscopy	Analytical Chemistry	Explanation and presentation	Examination

				Model and lecture	
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12 th	4	Spectral analysis devices and how to use them	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
13 th	4	Analysis using atomic absorption and emission	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
14 th	4	Atomic absorption devices, their types and methods of use	Analytical Chemistry	Explanation and presentation Model and lecture	Examination
15 th	4	Practical application on spectroscopic and atomic analysis devices	Analytical Chemistry	Explanation and presentation Model and lecture	Examination

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Foundations of analytical chemistry. Dr. Thabet Saeed Al-Ghabsha and Dr. Moyed Qasim Al-Abaji. Ministry of Higher Education and Scientific Research. University of Al Mosul.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic References, Websites	https://learnchemistry12.com/2018/07/analytical-magd-book.html

Course Description Form

13. Course Name:	General physics
14. Course Code:	0C13102

15. Semester / Year:					
One/First					
16. Description Preparation Date:					
26\2\2025					
17. Available Attendance Forms:					
Actual presence					
18. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		3 practical		units 3.5	
19. Course administrator's name (mention all, if more than one name)					
Name: Dr. Mohanad .T .Muften Email: mohanadturki@mu.edu.iq					
20. Course Objectives					
Course Objecti		<ul style="list-style-type: none"> • General physics studies natural states of matter, general properties of matter and mechanical properties For the material. • It includes introducing the student to the assumptions of kinetic theory, molecular dimensions and interfacial distances. Brownian motion • Students learned about Boyle's law, compressibility and elasticity • The student learns about water: its molecular structure, its hydrogen bonding, and its properties as a solvent. • Study the concept of viscosity, Newton's law of viscosity • Identify optical devices, X-rays. 			
21. Teaching and Learning Strategies					
Strategy		1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method			
22. Course Structure					
Week	H ou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method

First	5	The student gets to know the states of natural matter, the general properties of matter, and the mechanical properties of matter	General physics	Explanation, presentation of model and lecture	the exam
the second	5	The student will be familiar with assumptions of kinetic theory, molecular dimensions and interspace distances, and Brownian motion	General physics	Explanation, presentation of model and lecture	the exam
the third	5	The student gets to know molecular speeds, molecular forces, collisions between molecules, and their properties of matter	General physics	Explanation, presentation of model and lecture	the exam
the fourth	5	The student gets to know Boyle's Law, compressibility and elasticity	General physics	Explanation, presentation of model and lecture	the exam
Fifth	5	The student gets to know mechanics: laws of force and motion, the laws of motion in one dimension, and the free fall of bodies	General physics	Explanation, presentation of model and lecture	the exam
Sixth	5	The student gets to know Newton's laws of motion: the first law of motion, the second law of motion, Newton's law of universal gravitation	General physics	Explanation, presentation of model and lecture	the exam
Seventh	5	The student gets to know water: molecular structure, its hydrogen bonding, and its properties as a solvent	General physics	Explanation, presentation of model and lecture	the exam
Eighth	5	The student gets to know surface tension, contact angle, and capillary property	General physics	Explanation, presentation of model and lecture	the exam
Ninth	5	The student will learn about diffusion and the osmotic phenomenon	General physics	Explanation, presentation of model and lecture	the exam
The tenth	5	The student will learn about viscosity and Newton's law of viscosity	General physics	Explanation, presentation of model and lecture	the exam
Eleventh	5	The student gets to know the flow of fluids and fluid pressure	General physics	Explanation, presentation of model and lecture	the exam
Twelfth	5	The student will be familiar with volume and weight relationships, density of objects, and porosity	General physics	Explanation, presentation of model and lecture	the exam
Thirteenth	5	Surface area and quality	General physics	Explanation, presentation of model and lecture	the exam
fourteenth	5	For the student to become familiar with optical devices	General physics	Explanation, presentation of model and lecture	the exam
Fifteenth	5	X ray	General physics	Explanation, presentation of model and lecture	the exam

23. Course Evaluation	
1-Theoretical tests	25
2- Practical tests	15
3- Reports and studies	10
4- Final exam	50
24. Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	Daniel Schaum: A series of Schaum's summaries of theories and problems in university physics
Main references (sources)	1- Principles of general physics _ Dr. Aqeel Mahdi Kazem 2- Dr. Rahim Abdelkatal: University Physics, Part 1, Mechanics and Properties of Matter, Wave Motion, and Heat
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Internet Physics Pdf Book

Course Description Form

25. Course Name:	
Mathematic 1	
26. Course Code:	
U013101	
27. Semester / Year:	
First Semester / First Year	
28. Description Preparation Date:	
1/9/2025	
29. Available Attendance Forms:	
Actual attendance	
30. Number of Credit Hours (Total) / Number of Units (Total)	
2 Theoretical / 2 Units	
31. Course administrator's name (mention all, if more than one name)	
Name: Lecturer. Anmar Hamoudi Kadhim Email: anmarjhayl@mu.edu.iq	
32. Course Objectives	

Course Objectives	1- Possessing the skill of thinking and having the ability to find solutions using the correct laws and mathematical operations. 2- Learn about methods of calculating matrices and functions and their types. 3- Identify applications related to matrices and types of functions. 4- Learn how to draw a function 5- Using new mathematical methods to perform solutions.
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33. Teaching and Learning Strategies

Strategy	1. Explaining and clarifying the mathematical concept and stating the laws related to it. 2. Give some examples related to the topic. 3. Involve students during the lecture in solving examples and problems using mathematical laws. 4. Giving them homework and exercises related to the topic that was discussed in the lecture. 5. Conduct daily tests for students in addition to monthly tests.
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34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	2	Matrix	Mathematic 1	Explanation and presentation Model and lecture	Examination
2 nd	2	Types of Matrix	Mathematic 1	Explanation and presentation Model and lecture	Examination
3 rd	2	Computational methods use In solving matrices	Mathematic 1	Explanation and presentation Model and lecture	Examination
4 th	2	Applications in solving functions and finding matrix inverses	Mathematic 1	Explanation and presentation Model and lecture	Examination
5 th	2	Mathematical functions	Mathematic 1	Explanation and presentation Model and lecture	Examination
6 th	2	Function components	Mathematic 1	Explanation and presentation	Examination

				Model and lecture	
7 th	2	Types of Mathematical function	Mathematic 1	Explanation and presentation Model and lecture	Examination
8 th	2	Differential relations used In the function	Mathematic 1	Explanation and presentation Model and lecture	Examination
9 th	2	Higher ranks of Function	Mathematic 1	Explanation and presentation Model and lecture	Examination
10 th	2	Partial derivatives	Mathematic 1	Explanation and presentation Model and lecture	Examination
11 th	2	Function applications	Mathematic 1	Explanation and presentation Model and lecture	Examination

12 th	2	Increasing, decreasing, and endings Great and small	Mathematic 1	Explanation and presentation Model and lecture	Examination
13 th	2	Concavity and convexity curves in the function	Mathematic 1	Explanation and presentation Model and lecture	Examination
14 th	2	Drawing functions	Mathematic 1	Explanation and presentation Model and lecture	Examination
15 th	2	Solved problems and examples of graphing the function	Mathematic 1	Explanation and presentation Model and lecture	Examination

35. Course Evaluation

1-Theoretical tests 30

2- Daily tests 10

3- Homework 10

4- Final exam 50

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)

1- George B. Thomas, 2003. Calculus and Analytic Geometry.

Main references (sources)

1- Theories and problems in advanced

	calculus. 2008. Murray R. SPIEGEL. Eighth Arabic edition. International House for Cultural Investments. Egypt. 2- 3000 solved problems in calculus. Elliot Mendelsohn. International Academy. Beirut, Lebanon.
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic References, Websites	

Course Description Form

37.	Course Name:		
Engineering Drawing			
38.	Course Code:		
0C13103			
39.	Semester / Year:		
First semester / First			
40.	Description Preparation Date:		
26\2\2025			
41. Available Attendance Forms:			
Actual presence			
42. Number of Credit Hours (Total) / Number of Units (Total)			
theoretical	practical	2	units 1
43.	Course administrator's name (mention all, if more than one name)		
Name: Assistant Professor Dr. Ahmed Merza Abood Email : ahmedme@mu.edu.iq			
44.	Course Objectives		
Course Objecti	1- Teaching students, the basic concepts related to access to the simple basics of an engineering drawing for students of the College of Agriculture. 2- Development the ability of preparing engineering designs for agricultural projects, 3- Student be able to read various engineering drawings and implement them in		

	Reality.
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45. Teaching and Learning Strategies

Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	The student gets to know the tools of engineering drawing and its uses.	1	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	2	The student gets to know types of lines and dimensions	2	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the third	2	The student gets to know the curves.	3	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the fourth	2	Student able to recognize the ellipse	4	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	2	Student able to recognize sections in engineering drawing	5	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Sixth	2	The student will be familiar with the	6	Explanation,	The exam,

		vertical projection of points, straight lines, and flat surfaces		presentation of model and lecture	Quizzes, Reports, and activities in class
Seventh	2	The student will be familiar with the vertical projection of points, straight lines, and flat surfaces	7	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eighth	2	student will know the complete sections	8	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2	student will recognize the semi-section area	9	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

Tenth	2	The student gets to know the sector parallel to the basic levels and its applications	10	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	2	For the student to become familiar with exercises on the complete section and the semi-section	11	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Twelfth	2	Student becomes familiar with three-dimensional drawing and its conditions	12	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Thirteenth	2	Student becomes familiar with the solid drawing of three-dimensional drawing.	13	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
fourteenth	2	student gets to know the isometric drawing.	14	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Fifteenth	2	Student becomes familiar with drawing parallel surfaces.	15	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class

47. Course Evaluation	
1- Monthly tests	30
2- Daily tests	10
3- Daily duties and attendance	10
48. Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	Engineering drawing for students of the College of Agriculture (Dr. Eng. Natiq Sabri - University of Mosul 1995)
Main references (sources)	Engineering drawing (Professor Abdul Rasul Al-Khafaf University of Technology 1990)
Recommended books and references (scientific journals, reports...)	Engineering drawing books for all engineering disciplines - Noor Library
Electronic Websites	Referenc https://www.gulf-up.com/uz2pnxd1v0st

49. Course Name:
human rights
50. Course Code:
U013102
51. Semester / Year:
First/first
52. Description Preparation Date:
1\9\2025
53. Available Attendance Forms:
In person + electronic
54. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total) 30 hours
55. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Muhammad Radwan Mahmoud Email: modrn@mu.edu.iq
56. Course Objectives

	<p>1-The student's awareness of the historical development of human rights through explaining development and the various stages that occurred It has passed through to the present time.</p> <p>2- Introducing the student to human rights in the heavenly religions and emphasizing the role of the Islamic religion that has been preserved These rights are distinct.</p> <p>3- Educating the Iraqi student about his civil, political, economic, social and cultural rights.</p> <p>4 - The student will learn about the role of the United Nations and its beginnings in support and shaping the principles of human rights Then its development and the establishment of various human rights organizations.</p> <p>5- That the student will be able to know the rights and freedoms stipulated in the Iraqi Constitution of 2005</p> <p>6- That the student is able to defend his rights after possessing a culture of human rights.</p>
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57. Teaching and Learning Strategies

Strategy	<p>Strategic teaching and learning methods</p> <p>Audio methods (teaching explanation of the topic)</p> <p>Style of writing on the blackboard</p> <p>The method of direct dialogue between the teacher and the student, with the student's evaluation in class participation</p>
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58. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Introduction: What human rights are. Chapter One: The history of human rights	1	Explanation, presentation of model and lecture	Discussing and exams
the second	2	History of human rights in Iraqi civilizations and in Greek civilization and civilization Roman, Persian and Egyptian	2	Explanation, presentation of model and lecture	Discussing and exams
the third	2	Human rights in religions Jewish and Christian heaven And Islam	3	Explanation, presentation of model and lecture	Discussing and exams
the fourth	2	History of human rights in Middle Ages feudalism The church and the royal institution	4	Explanation, presentation of model and lecture	Discussing and exams
Fifth	2	Human rights in legislation Rights Revolutions of the West and the East	5	Explanation, presentation of model and lecture	Discussing and exams
Sixth	2	Human rights and definition And the definition	6	Explanation, presentation of model and lecture	Discussing and exams

Seventh	2	First month exam	7	Explanation, presentation of model and lecture	Discussing and exams
Eighth	2	Forms of human rights	8	Explanation, presentation of model and lecture	Discussing and exams
Ninth	2	Civil human rights And political	9	Explanation, presentation of model and lecture	Discussing and exams

Tenth	2	Economic human rights Social and cultural	10	Explanation, presentation of model and lecture	Discussing and exams
Eleventh	2	Modern human rights	11	Explanation, presentation of model and lecture	Discussing and exams
Twelfth	2	Human rights in the declaration Universal 1948	12	Explanation, presentation of model and lecture	Discussing and exams
Thirteenth	2	Non-governmental organizations And human rights	13	Explanation, presentation of model and lecture	Discussing and exams
fourteenth	2	Human rights in the constitution Iraqi in 2005	14	Explanation, presentation of model and lecture	Discussing and exams
Fifteenth	2	Second month exam	15	Explanation, presentation of model and lecture	Discussing and exams

59. Course Evaluation

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

60. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1-Human Rights, written by: Hafez Alwan Hamadi Al-Dulaimi 2- Universal human rights between theory and practice written by Jack Donnelly. 3-Human Rights, Children and Democracy, written by: Mah Saleh Allawi Al-Jubouri and others
Main references (sources)	The Philosophy of Human Rights, written by Ansam Amer . Sudani. Human Rights in the Western Religious Heritage and Islam, written by: Muhammad Jalaa Idris and Amal Muhammad Abd al-Rahman Rabie
Recommended books and references (scientific journals, reports...)	Iraqi -reviewed journals /https://www.elsevier.com
Electronic Websites	1-United Nations website:

	https://www.un.org/ar/global issues/human-rights - Website of the Office of the High Commissioner, United Nations High Commissioner for Human Rights https://www.ohchr.org/ar/hr-bodies/hrc/
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Course Description Form

61. Course Name:	
Principles of animal production	
62. Course Code:	
0C13104	
63. Semester /	
Year: the first 2025	
64. Description Preparation Date	
:2025/1/18	
65. Available Attendance Forms:	
weekly	
66. Number of Credit Hours (Total) / Number of Units (Total)	
30 hrs (3 unit)	
67. Course administrator's name (mention all, if more than one name)	
Name: Hassan Awied Fazaa Email: hassanawied@mu.edu.iq	
68. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Identify the general economic aspects • Identify the economic aspect of agricultural projects and calculate economic feasibility • Analysis of cost and revenue items for the agricultural project • Identify the role of the agricultural sector in the economic structure of state
69. Teaching and Learning Strategies	
Strategy	

70. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first.	3		*Overview of livestock production	Theoretical lecture	Theoretical exam
second.	3		*Classification of ruminants		
third.	3		*Livestock producing milk and meat		
fourth.	3		*Sheep meat and wool		
Fifth.	3		*International and local types of goats		
six.	3		*Buffalo breeding		
Seventh.	3		* Poultry classification		
Eight.	3		* Some methods of raising fish		
Ninth.	3		*Farm animal nutrition		
tenth.	3		Fish feeding*		
eleventh	3		* Some types of fish in Iraq		

71. 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

72. Learning and Teaching Resources

Required textbooks (curricular books, if any)	* Principles of animal production * principles of fish farming
Main references (sources)	1-The basics of sheep and goat production, Dr. Ja Elia Al-Qass 2-Fish farming, Dr. Qamar Al-Daham 3- Milk cattle production, Dr. Naguib Tawfiq
Recommended books and references (scientific journals, reports...)	scientific journals
Electronic References, Websites	Internet websites

Course Description Form

73. Course Name:	
Basics of field crops	
74. Course Code:	
0C13105	
75. Semester / Year:	
First / first	
76. Description Preparation Date:	
27\2\2025	
77. Available Attendance Forms:	

In person + electronic

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

Number of Credit Hours (Total) 75 hours

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

Name: Prof. Dr. Shaimaa Ibrahim Mahmood AL Refai

Email: Shaimaaibrahim@mu.edu.iq

80. Course Objectives

Course Objectives

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

1- The course examines the identification of the most important grain crops in Iraq and the world

2-It includes studying the scientific methods used in growing grain crops

3 -Study the appropriate environmental conditions for growing each important field crop

4- Defining the most important ways to increase productivity for each field crop

5-Study the problems related to pests and diseases of each field crop

81. Teaching and Learning Strategies

Strategy

Strategic teaching and learning methods

Audio methods (teaching explanation of the topic)

Style of writing on the blackboard

The method of direct dialogue between the teacher and the student, with student's evaluation in class participation

Conduct experiments.

82. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first week	2Theoretical 3 Practical		Field crops: their definition, Its development, its creators		Exams , reports, discussions Quizzes

second week	2Theoretical 3 Practical		Environmental factors in Iraq and in The world and its relationship to crop growth Field, location and surface, climate Soil, water resources		Exams , reports, discussions
the third week	2Theoretical 3 Practical		division of field crops, According to the life cycle		Exams , reports, discussions
fourth week	2Theoretical 3 Practical		Temperature, factors affecting Heat, temperature relationship With crops, crop adaptation To reduce the effect of temperatures And temperature damage		Exams , reports, discussions
The fifth week	2Theoretical 3 Practical		For light, the importance of light for plants, Adaptation of plants to light, importance Light in seed germination		Exams , reports, discussions
the sixth week	2Theoretical 3 Practical		First monthly exam		Exams , reports, discussions
Seventh week	2Theoretical 3 Practical		Water, water in the soil and its extent Crops benefit from it, balance internal water of the plant, Water consumption, efficient Water use, effect of water deficiency On crops, drought damage		Exams , reports, discussions
The eighth week	2Theoretical 3 Practical		Soil, soil texture, composition Soil, soil components, matter Soil organics, soil water, Soil air, harmful effect Soil salts on crops		
Week nine	2Theoretical 3 Practical		Air, air pollution, wind effect Crops, soil erosion by Crop winds		Exams , reports, discussions
The tenth week	2Theoretical 3 Practical		Mutual benefit, competition, opposition		Exams , reports, discussions
Week eleven	2Theoretical 3 Practical		Seeds and their importance, composition and maturity Seed dormancy, diagnosis Seed grading screening, storage Seeds, marketing		Exams , reports, discussions
The twelfth week	2Theoretical 3 Practical		Weeds and ways to combat them		Exams , reports, discussions
The	2Theoretical		The updated one		Exams ,

thirteenth week	3 Practical		Agricultural courses		reports, discussions
The fourteenth week	2Theoretical 3 Practical		The updated one Breeding and improving field crops Major crops in the world And Iraq		Exams , reports, discussions
The fifteenth week			The second monthly exam		

83. 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

84. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principles of field crops Dr.. Majeed Mohsen Ansari Dr. Abdel Hamid Ahmed Al-Younis Dr.. Ghanem Saadallah Hasawi Dr. Wafqi Sha Al-Shamaa
Main references (sources)	From methodological books, help books, Internet, and scientific research
Recommended books and references (scientific journals, reports...)	Iraqi Scientific journals in basic specializations
Electronic References, Websites	Al-Muthanna University e-learning website https://agr.mu.edu.iq/

Course Description Form

85. Course Name:	Computer applications I
86. Course Code:	U013103
87. Semester / Year:	FIRST/FIRST
88. Description Preparation Date:	29\2\2025
89. Available Attendance Forms:	Actual presence
90. Number of Credit Hours (Total) / Number of Units (Total)	30 HRS /2

91. Course administrator's name (mention all, if more than one name)					
Name: Dr. Karrar Hameed Abdulkareem Email: khak9784@mu.edu.iq					
92. Course Objectives					
Course Objecti	<ul style="list-style-type: none"> • The student gets to know Microsoft access in details. • The student should know advantages of using Microsoft access in real life. • The student should apply many commends and processes on Microsoft access. 				
93. Teaching and Learning Strategies					
Strategy	1-Explanation and clarification. 2- Practical lessons. 3- Self-learning method.				
94. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluati on method
First	2	Introduction to Microsoft access	Microsoft access	Explanation, presentation of model and lecture	Exam
second	2	Access main interface	Microsoft access	Explanation, presentation of model and lecture	Exam
third	2	Tabs and groups	Microsoft access	Explanation, presentation of model and lecture	Exam
fourth	2	Tabs and groups	Microsoft access	Explanation, presentation of model and lecture	Exam
Fifth	2	Tabs and groups	Microsoft access	Explanation, presentation of model and lecture	Exam
Sixth	2	Practical Example	Microsoft access	Practical session	Exam
Seventh	2	Practical Example	Microsoft access	Practical session	Exam
Eighth	2	Tables	Microsoft access	Explanation, presentation of model and lecture	Exam
Ninth	2	Practical Example	Microsoft	Practical Example	Exam
Tenth	2	Queries	Microsoft access	Explanation, presentation of	Exam

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

95. Course Evaluation

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

96. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	
Main references (sources)	<p>1- Microsoft Access 2010 book (UNIVERSITY OF VIRGINIA HEALTH SYSTEM).</p> <p>2- Lectures of Microsoft Access 2010 prepared by Eng.M.Abou Elale.</p>
Recommended books and references (scientific journals, reports...)	
Electronic Websites	<p>https://support.microsoft.com/arsa/office/%D8%A7%D9%84%D9%85%D9%87%D8%A7%D9%85-%D8%A7%D9%84%D8%A3%D8%B3%D8%A7%D8%B3%D9%8A%D8%A9-%D9%81%D9%8A-access-2010-268acfed-2484-4822-acb30e58045588</p>

Course Description Form

97. Course Name:
Geology

98. Course Code:					
0023101					
99. Semester / Year:					
SECOND/FIRST					
100. Description Preparation Date:					
26\2\2025					
101. Available Attendance Forms:					
Actual presence					
102. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		3 practical		units 3.5	
103. Course administrator's name (mention all, if more than one name)					
Name:As. Prof. Ahmed K. Fazaa Email ahmad.kadem @mu.edu.iq					
104. Course Objectives					
Course Objecti		<ul style="list-style-type: none"> • The student gets to know the classification and types of fertilizers and the importance • • For the student to learn about methods of adding fertilizers • • The student should separate the positive and negative aspects of fertilizers and its harm to plants • • For the student to recognize pollution from chemical fertilizers • • The student should evaluate soil fertility • 			
105. Teaching and Learning Strategies					
Strategy		1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method			
106. Course Structure					
Week	H ou	Required Learning Outcomes	Unit or subject	Learning method	Evaluatio n method

	rs		name		
First	2	The student gets to know the concept of saline soils	Soil Salinity	Explanation, presentation of model and lecture	the exam
the second	2	For the student to know the sources of Soil	Geology	Explanation, presentation of model and lecture	the exam
the third	2	The student will be familiar with the means of Formation soil	Geology	Explanation, presentation of model and lecture	the exam
the fourth	2	The student will be familiar with the Rocks formation	Geology	Explanation, presentation of model and lecture	the exam
Fifth	2	The student will be familiar with the conditions of soil formation	Geology	Explanation, presentation of model and lecture	the exam
Sixth	2	student gets to know the types of Rocks	Geology	Explanation, presentation of model and lecture	the exam
Seventh	2	For the student to recognize the aspects of the earth systems	Geology	Explanation, presentation of model and lecture	the exam
Eighth	2	The student will be familiar with the indicators for determining the effect of Geology	Geology	Explanation, presentation of model and lecture	the exam
Ninth	2	The student will be familiar with the means of increasing the ability of Field Geology	Geology	Explanation, presentation of model and lecture	the exam
The tenth	2	The student will be familiar with the factors determining the quality of irrigation water and the indicators used to determine the quality of irrigation water	Geology	Explanation, presentation of model and lecture	the exam
Eleventh	2	The student will be familiar with irrigation water classification systems	Geology	Explanation, presentation of model and lecture	the exam
Twelfth	2	The student will learn about Ground Water	Geology	Explanation, presentation of model and lecture	the exam
Thirteenth	2	For the student to become familiar with problems of limestone soils	Geology	Explanation, presentation of model and lecture	the exam
fourteenth	2	The student will be familiar with the means of increasing the ability of plants to tolerate salinity	GEOLOGY	Explanation, presentation of model and lecture	the exam
Fifteenth	2		Soil Salinity	Explanation, presentation of model and lecture	the exam

107. Course Evaluation	
1-Theoretical tests	25
2- Practical tests	15
3- Reports and studies	10
4- Final exam	50
108. Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	1- geology Book.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Soil Science Society Of America

Course Description Form

109.	Course Name:
	organic chemistry
110.	Course Code:
	OC23101
111.	Semester / Year:
	The first stage/spring semester
112.	Description Preparation Date:
	1/9/2025
113.	Available Attendance Forms:
	Presence
114.	Number of Credit Hours (Total) / Number of Units (Total)
	2 theoretical hours and 3 practical hours. Number of units: 3
115.	Course administrator's name (mention all, if more than one name)
	Name: Prof. Dr. Jassim Kassim Menati Email: jasimiraqe@mu.edu.iq

116. Course Objectives

Course Objectives	<ul style="list-style-type: none"> • 1 Providing students with general information about organic chemistry • 2 Introducing students to alkanes • 3 Introducing students to alkenes • 4 Explanation of alkynes for students
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117. Teaching and Learning Strategies

Strategy	1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories
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118. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Introduction to organic chemistry	A lecture	Quiz
2	2	Theoretical lecture	Alkanes	A lecture	Quiz
3	2	Theoretical lecture	Alkenes	A lecture	Quiz
4	2	Theoretical lecture	Alkynes	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Aliphatic cyclic compounds	A lecture	Quiz
7	2	Theoretical lecture	Formation of the aromatic ring - activity and direction - preparation - interactions	A lecture	Quiz
8	2	Theoretical lecture	Aromatic compounds	A lecture	Quiz
9	2	Theoretical lecture	Amines	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Aliphatic and aromatic halides	A lecture	Quiz
12	2	Theoretical lecture	Alcohols, phenols and ethers	A lecture	Quiz
13	2	Theoretical	Aldehydes and ketones	A lecture	Quiz

		lecture			
14	2	Theoretical lecture	Carboxylic acids	A lecture	Quiz
15	2	Theoretical lecture	Derivatives of carboxylic acids	A lecture	Quiz
119. Co2urse Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
120. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Organic chemistry Abdul-Alah Al-Abdo and Ali Sulaiman Yoss		
Main references (sources)					
Recommended books and references (scientific journals, reports...)			Journal of Organic Chemistry		
Electronic References, Websites			https://publications.iupac.org/compendium/index.html		

Course Description Form

121. Course Name:	Fruit production				
122. Course Code:	OC23102				
123. Semester / Year:	Second/ First				
124. Description Preparation Date:	26\2\2025				
125. Available Attendance Forms:	Actual presence				
126. Number of Credit Hours (Total) / Number of Units (Total)	2 theoretical 3 practical units 3.5				
127. Course administrator's name (mention all, if more than one name)	Name: Dr. Mohanad .T .Muften Email: mohanadturki@mu.edu.iq				
128. Course Objectives					
Course Objecti	• Enable students to distinguish between types of fruits according to their ar				

	<p>of growth and distribution</p> <ul style="list-style-type: none"> • Enabling students to identify the most important types of fruits that fruit plants have • Introducing the student to the concept of floatation, types of flowers, and the relationship to pollination and parthenogenetic fruiting in plants • Introducing the student to vaccination and installation, the dates for performing it, the principles, and why we resort to vaccination and installation according to the principles
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129. Teaching and Learning Strategies

Strategy	<p>1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method</p>
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130. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Nutritional and economic importance	Fruit production	Explanation, presentation of model and lecture	the exam
the second	5	Factors affecting fruit trees	Fruit production	Explanation, presentation of model and lecture	the exam
the third	5	Division of fruit trees	Fruit production	Explanation, presentation of model and lecture	the exam
the fourth	5	Care, storage and marketing of fruit for fruit trees	Fruit production	Explanation, presentation of model and lecture	the exam
Fifth	5	Fruit softening and its role in improving their properties	Fruit production	Explanation, presentation of model and lecture	the exam
Sixth	5	Multiplication of fruit trees	Fruit production	Explanation, presentation of model and lecture	the exam
Seventh	5	Vegetative propagation of fruit trees	Fruit production	Explanation, presentation of model and lecture	the exam
Eighth	5	Create orchids	Fruit production	Explanation, presentation of model and lecture	the exam

Ninth	5	Apples / pears - apples	Fruit production	Explanation, presentation of model and lecture	the exam
The tenth	5	Stone stones / apricots - peaches	Fruit production	Explanation, presentation of model and lecture	the exam
Eleventh	5	Pomegranate	Fruit production	Explanation, presentation of model and lecture	the exam
Twelfth	5	The Fig	Fruit production	Explanation, presentation of model and lecture	the exam
Thirteenth	5	Olive	Fruit production	Explanation, presentation of model and lecture	the exam
fourteenth	5	Date palm	Fruit production	Explanation, presentation of model and lecture	the exam
Fifteenth	5	The grape	Fruit producti	Explanation, presentation of model and lecture	the exam

131. Course Evaluation

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

132. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Faslja Fruit Trees\Hassan Jundia - Evergreen Fruit\Makki Alw Al-Khafaji, Suhail Aliwi Atrah, and Alaa Abdel-Razzaq
Main references (sources)	Fruit production for departments not specialized in horticulture - Dr. Ali Hussein Abdullah Al-Douri / Dr. Adel Khader Saeed Raw
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Internet

Course Description Form

133. Course Name:

Surveying					
134. Course Code:					
OC23103					
135. Semester / Year: 2025-2025					
Second / first					
136. Description Preparation Date:					
1-9-2025					
137. Available Attendance Forms:					
Attended					
138. Number of Credit Hours					
(60) / Number of Units (3)					
139. Course administrator's name (mention all, if more than one name)					
Name: JAWAD KADHIM AL ARIDHEE Email: jawadaridhee@mu.edu.iq					
140. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • to determine, measure and represent land, three-dimensional objects, point-fields and trajectories; • to assemble and interpret land and geographically related information, • to use that information for the planning and efficient administration of the land the sea and any structures thereon; and • to conduct research into the above practices and to develop them 		
141. Teaching and Learning Strategies					
Strategy		1-Explaining the importance of using space and training students to benefit from agricultural aspect 2- Explaining the modern and advanced method in agriculture of finding points of high and low and thus leveling agricultural lands			
142. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Definition of the surveying,		Theoretical +	test

		the types of surveys, the requirements of a good survey and its the importance in agriculture		practical lecture	
2	4	Tape measurement-conditions for selecting stations- field book arrangement		Theoretical + practical lecture	test
3	4	Measurement systems		Theoretical + practical lecture	test
4	4	Mistakes& Errors in serving		Theoretical + practical lecture	test
5	4	Drawing scale		Theoretical + practical lecture	test
6	4	Areas-regular & irregular shapes		Theoretical + practical lecture	test
7	4	Leveling terminology , types of adjustment, uses of the leveling device		Theoretical + practical lecture	test
8	4	Types of levelling , the phenomena of curvature and fracture and their treatment.		Theoretical + practical lecture	test
9	4	Methods of calculating point levels and elevation difference- direct and indirect		Theoretical + practical lecture	test
10	4	Making longitudinal sections		Theoretical + practical lecture	test
11	4	Calculating point levels , measuring distances ,drawing them on graph paper		Theoretical + practical lecture	test
12	4	Calculating the areas and volumes		Theoretical + practical lecture	test
13	4	Topographic maps		Theoretical + practical lecture	test
14	4	Contour lines		Theoretical + practical lecture	test
15	4	Theodolite device		Theoretical + practical lecture	test

143. 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					
144. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Surveying		
Main references (sources)			Basic Farm Machinery .J.M.shippen,C.R.E and C.H.Clover		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

145. Course Name:
Computer fundamentals 2
146. Course Code:
U023101
147. Semester / Year:
Second / First
148. Description Preparation Date:
7\3\2025
149. Available Attendance Forms:
Actual presence
150. Number of Credit Hours (Total) / Number of Units (Total)
2 / 2
151. Course administrator's name (mention all, if more than one name)
Name: Dr. Karrar Hameed Abdulkareem Email: khak9784@mu.edu.iq
152. Course Objectives
Course Objecti • The student gets to know computer fundamentals in details.

	<ul style="list-style-type: none"> • The student should know advantages of using computer device and main parts of device in real life. • The student should apply many commands and processes on windows 7.
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153. Teaching and Learning Strategies

Strategy	1-Explanation and clarification. 2- Practical lessons. 3- Self-learning method.
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154. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Introduction to Computer Fundamentals and computer generations	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
second	2	Abilities and uses of computer Device	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Third	2	Computer parts	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
fourth	2	Computer parts	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Fifth	2	Computer parts	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Sixth	2	Practical Example	Computer Fundamentals	Practical session	the exam
Seventh	2	Practical Example	Computer Fundamentals	Practical session	the exam
Eighth	2	Introduction to windows 7	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Ninth	2	User interface and relative processes	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Tenth	2	Computer components (partitions, folders, and files)	Computer Fundamentals	Practical session	the exam
Eleventh	2	Practical Example	Computer Fundamentals	Practical session	the exam
Twelfth	2	Start menu and taskbar	Computer Fundamentals	Explanation, presentation of model and lecture	the exam
Thirteenth	2	Control panel	Computer Fundamentals	Explanation, presentation of	the exam

				model and lecture	
fourteenth	2	Practical Example	Computer Fundamentals	Practical session	the exam
Fifteenth	2	Practical Example	Computer Fundamentals	Practical session	the exam
155. Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
156. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)					
Main references (sources)		<ul style="list-style-type: none"> - Basic Computer course book (Free University of Bolzano Bozen – Dr. Paolo Coletti – Edition 8.0 (1 March 2016)). - Introduction to the computer, prepared by Ahmad Muhammad Ibrahim. 			
Recommended books and references (scientific journals, reports...)					
Electronic Websites	References	https://support.microsoft.com/ar-sa/office/%D8%A7%D9%84%D9%85%D9%87%D8%A7%D9%85-%D8%A7%D9%84%D8%A3%D8%B3%D8%A7%D8%B3%D9%8A%D8%A9-%D9%81%D9%8A-access-2010-268acfed-2484-4822-acb1-c30e58045588			

Course Description Form

157.	Course Name:
English Language	
158.	Course Code:
U023102	
159.	Semester / Year:
Second semester/ The first	
160.	Description Preparation Date:
26\2\2025	
161.	Available Attendance Forms:

Actual presence

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

theoretical 2 practical units 1

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

Name: Assistant Professor Dr. Ahmed Merza Abood

Email : ahmedme@mu.edu.iq

164. Course Objectives

Course Objecti	<ul style="list-style-type: none">- Teaching students, the basic concepts related to access to the simple basics of introduction to the English language for students of the College of Agriculture.- The student gets to know the concept of the English language.- Enabling students to know how to deal with the English language
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165. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none">1-Explanation and clarification2- Lecture method3- Student groups4- Practical lessons5- Scientific trips6 - Self-learning method
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166. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluati on method
First	2	Hello: - (am/is/are, your,my) - This is - How are you? - Good morning - What's this in English? - Numbers 1-10, Plurals	1	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	2	Your world: - Countries	2	Explanation, presentation of	The exam, Quizzes,

		<ul style="list-style-type: none"> -He/she/they, his/her -Where's he from? - Fantastic/awful/beautiful - Numbers 11-30 		model and lecture	Reports, and activities in class
the third	2	All about you: <ul style="list-style-type: none"> - Jobs - am/are/is - Negatives and questions - Personal information - Social expressions 	3	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the fourth	2	Family and friends: <ul style="list-style-type: none"> - Our/their - Possessive's - The family - has/have - The alphabet 	4	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	2	The way I live: <ul style="list-style-type: none"> - Sports/food/drinks -Present simple-I/you/we/they - a/an - Languages and nationalities - Numbers and prices 	5	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Sixth	2	Every day: <ul style="list-style-type: none"> - The time - Present simple-he/she - Always/sometimes/never - Words that go together - Days of the week 	6	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	2	My favourites: <ul style="list-style-type: none"> - Questions words - Me/him/us/them - This /that - Adjectives - Can I ...? 	7	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eighth	2	Where I live: <ul style="list-style-type: none"> - Rooms and furniture - There is/are - Prepositions - Directions 	8	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2	Times past: <ul style="list-style-type: none"> - Saying years - Was/where born - Past simple-irregular verbs - Have/do/go - When's your birthday 	9	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Tenth	2	We had a great time: <ul style="list-style-type: none"> - Past simple-regular and irregular - Questions and negatives - Sport and leisure - Going sightseeing 	10	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	2	I can do that: <ul style="list-style-type: none"> - Can/can't - Adverbs - Adjective 	11	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and

		- Noun - Everyday problems			activities in class
Twelfth	2	Please and thank you: - I'd like-some/any - In a restaurant - Signs all around	12	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Thirteenth	2	Here and now: - Colours and clothes - Present continuous - Opposite verbs - What's the matter?	13	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
fourteenth	2	It's time to go: - Future plans - Grammar revision - Vocabulary revision - Social expressions	14	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Fifteenth	2	Reviewing	15	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class

167. Course Evaluation

1-Theoretical tests	35
2- Quizzes, Reports, and Class's Activities	15
4- Final exam	50

168. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Beginner Student's Book: New Headway Plus (John and Soars) Oxford University Press
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic Websites	Internet network

Course Description Form

169. Course Name:

Principles of agricultural economics

170. Course Code:	
OC23104	
171. Semester / Year:	
Second / first	
172. Description Preparation Date:	
1/9/2025	
173. Available Attendance Forms:	
174. Number of Credit Hours (Total) / Number of Units (Total)	
Actual attendant	
175. Course administrator's name (mention all, if more than one name)	
Name: sadeq Hadi Hussein	
Email: Sadeq.hadi@mu.edu.iq	
176. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> - Active participation in the classroom - Submit assignments from last week - Weekly participation
177. Teaching and Learning Strategies	
Strategy	<ol style="list-style-type: none"> 1- Interest and knowledge of agricultural economics 2- Defining the difference between general economics and agricultural economics 3- Teaching students about the role of agricultural economics in supporting the economic development of the country
178. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Introduction to agricultural economics	The agricultural economy	Explanation presentation the model and lecture	Exams
second	5	The concept of the production function			
third	5	Diminishing returns and production stages			
fourth	5	The demand . Law of demand Factors affecting demand			
Fifth	5	Price elasticity of demand			
Sixth	5	Supply - Law of Supply Factors affecting supply			
Seventh	5	Price elasticity of supply	The agricultural economy	Explanation, presentation of model and lecture	Exams
Eighth	5	Price and equilibrium price			
Ninth	5	Production costs			
Tenth	5	Agricultural prices			
Eleventh	5	Economic derivatives of cost functions			
Twelveth	5	Ways to reduce cost Principle of equal marginal returns The principle of opportunity costs			
			The agricultural economy	Explanation, presentation of model and lecture	Exams

179. Course Evaluation					
1- Theoretical tests	25				
2- Practical tests	15				
3- Reports and studies	10				
4- Final exam	50				
180. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Agricultural Economics - Abdul Wahab Matar Al-Dahri Economic Theory - Ahmed Zubair Geata The Economics of Agricultural Production - David Debretton - Translated by Salem Younis Al-Naimi			
Main references (sources)					
Recommended books and references (scientific journals, reports...)		Iraqi academic scientific journals			
Electronic References, Websites		Internet websites			

Course Description Form

181. Course Name:
Mathematic 2
182. Course Code:
U023103
183. Semester / Year:
Second Semester / First Year
184. Description Preparation Date:

1/9/2025					
185. Available Attendance Forms:					
Actual attendance					
186. Number of Credit Hours (Total) / Number of Units (Total)					
2 Theoretical / 2 Units					
187. Course administrator's name (mention all, if more than one name)					
Name: Lecturer. Anmar Hamoudi Kadhim					
Email: anmarjhayl@mu.edu.iq					
188. Course Objectives					
Course Objectives			<p>1- Possessing the skill of thinking and having the ability to find solutions using the correct laws and mathematical operations.</p> <p>2- Learn about methods of calculating matrices and functions and their types.</p> <p>3- Identify applications related to matrices and types of functions.</p> <p>4- Learn how to draw a function</p> <p>5- Using new mathematical methods to perform solutions.</p>		
189. Teaching and Learning Strategies					
Strategy		<p>1. Explaining and clarifying the mathematical concept and stating the laws related to it.</p> <p>2. Give some examples related to the topic.</p> <p>3. Involve students during the lecture in solving examples and problems using mathematical laws.</p> <p>4. Giving them homework and exercises related to the topic that was discussed in the lecture.</p> <p>5. Conduct daily tests for students in addition to monthly tests.</p>			
190. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	2	Cardinal functions and integration	Mathematic 1	Explanation and presentation Model and lecture	Examination
2 nd	2	Laws of indefinite integration for algebraic functions	Mathematic 1	Explanation and presentation Model and lecture	Examination
3 rd	2	Laws of indefinite integration for trigonometric	Mathematic 1	Explanation and presentation Model and	Examination

		functions		lecture	
4th	2	Laws of indefinite integration for exponential functions	Mathematic 1	Explanation and presentation Model and lecture	Examination
5th	2	Retail integration	Mathematic 1	Explanation and presentation Model and lecture	Examination
6th	2	Definite integral and its basic theorem	Mathematic 1	Explanation and presentation Model and lecture	Examination
7th	2	Calculate the area under the curve of a function using definite integration	Mathematic 1	Explanation and presentation Model and lecture	Examination
8th	2	The concept of the purpose of the function	Mathematic 1	Explanation and presentation Model and lecture	Examination
9th	2	Definitions of the purpose of the function and its theorems	Mathematic 1	Explanation and presentation Model and lecture	Examination
10th	2	The continuity of the function at a given point	Mathematic 1	Explanation and presentation Model and lecture	Examination
11th	2	Some theorems of continuity	Mathematic 1	Explanation and presentation Model and lecture	Examination

12th	2	Algebraic operations on continuous functions	Mathematic 1	Explanation and presentation Model and lecture	Examination
13th	2	Continuity at a number And continuity in the field	Mathematic 1	Explanation and presentation Model and lecture	Examination
14th	2	Continuous functions and solving equations	Mathematic 1	Explanation and presentation Model and lecture	Examination

15 th	2	Solved problems and examples of continuity	Mathematic 1	Explanation and presentation Model and lecture	Examination
191. Course Evaluation					
1-Theoretical tests 30 2- Daily tests 10 3- Homework 10 4- Final exam 50					
192. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			1- George B. Thomas, 2003. Calculus and Analytic Geometry.		
Main references (sources)			1- Theories and problems in advanced calculus. 2008. Murray R. SPIEGEL. Eighth Arabic edition. International House for Cultural Investments. Egypt. 2- 3000 solved problems in calculus. Elliot Mendelsohn. International Academy. Beirut, Lebanon. 3- Dr. Ahmed Abdel-Aali. " Calculus " . The second part. 2003. New Book Publishing House.		
Recommended books and references (scientific journals, reports...)			Iraqi academic scientific journals		
Electronic References, Websites					

Course Description Form

193.	Course Name:	Arabic Language
194.	Course Code:	U023104
195.	Semester / Year:	Second semester / first
196.	Description Preparation Date:	1/9/2025
197.	Available Attendance Forms:	Actual attendant
198.	Number of Credit Hours (Total) / Number of Units (Total)	

2 theoretical and total hours Number of units: 30 hrs					
199. Course administrator's name (mention all, if more than one name)					
Name: Assistant lecturer: Amer Musa Kazem Email: amermousak@mu.edu.iq					
200. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> Teaching the student grammar and parsing, as well as rhetoric in the Holy Quran. 		
201. Teaching and Learning Strategies					
Strategy		1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories			
202. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Rhetoric in the Holy Quran	A lecture	Quiz
2	2	Theoretical lecture	Interpretation of twenty verses	A lecture	Quiz
3	2	Theoretical lecture	Arabic / Grammar and parsing	A lecture	Quiz
4	2	Theoretical lecture	The subject and the predicate	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Copiers	A lecture	Quiz
7	2	Theoretical lecture	Imperfect verbs	A lecture	Quiz
8	2	Theoretical lecture	Effects	A lecture	Quiz
9	2	Theoretical lecture	Preparation	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Hamza and dictates	A lecture	Quiz
12	2	Theoretical lecture	Rules for writing ta'	A lecture	Quiz
13	2	Theoretical lecture	Ages of Arabic literature	A lecture	Quiz
14	2	Theoretical lecture	Old poetry	A lecture	Quiz
15	2	Theoretical lecture	Writing common mistakes	A lecture	Quiz

203. 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	
204. Learning and Teaching Resources	
Required textbooks (curricular books any)	Arabic language Rafid Sabbah
Main references (sources)	From methodological books, help books, the Internet, and scientific research
Recommended books and references (scientific journals, reports...)	Scientific journals in basic specializations
Electronic References, Websites	https://www.wuduh1.com/2025/10/books-arabic.html

Course description form for the second stage.

205. Course Name:	Biochemistry
206. Course Code:	0C13201
207. Semester / Year:	Second semester / The second
208. Description Preparation Date:	26\2\2025
209. Available Attendance Forms:	Actual presence
210. Number of Credit Hours (Total) / Number of Units (Total)	theoretical 2 practical 3 units 3
211. Course administrator's name (mention all, if more than one name)	Name: Professor Dr. Jassim Qasim Manati Email : jasimiraqe@mu.edu.iq
212. Course Objectives	Course Objecti • Introducing the student to the importance of biochemistry

	<ul style="list-style-type: none"> • Study of carbohydrates • Study of amino acids • Study of lipids • Study of nucleic acids
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213. Teaching and Learning Strategies

Strategy	Audio methods (teaching explanation of the topic) Style of writing on the blackboard The method of direct dialogue between the teacher and the student with the student's evaluation in class participation
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214. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Theoretical lecture	Carbohydrates - their definition - their sections	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	2	Theoretical lecture	Monosaccharides	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the third	2	Theoretical lecture	Low polysaccharides	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the fourth	2	Theoretical lecture	Polysaccharides	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	2	Exam	Exam	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Sixth	2	Theoretical lecture	Amino acids - their divisions - their interactions	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	2	Theoretical lecture	Proteins - their	Explanation,	the exam, Quizzes,

			composition, structure, and divisions	presentation of model and lecture	Reports, and activities in class
Eighth	2	Theoretical lecture	Fatty acids - their divisions - their interactions	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2	Theoretical lecture	Simple lipids - their structure - their divisions	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

Tenth	2	Theoretical lecture	Exam	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	2	Theoretical lecture	Compound and derived lipids - their composition - their divisions	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Twelfth	2	Theoretical lecture	Nucleic acids, their importance	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Thirteenth	2	Theoretical lecture	Its composition and sections	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
fourteenth	2	Theoretical lecture	Enzymes, their characteristics	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Fifteenth	2	Theoretical lecture	Factors affecting it	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class

215. Course Evaluation

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

216. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Foundations of biochemistry Ali Al-Daoudi
Main references (sources)	Integrated biochemistry Hohn W. Pelley
Recommended books and references (scientific journals, reports...)	List of chemistry journals
Electronic Websites	https://www.chemistry1science.com/2018/08/2-pdf_44.html

Course Description Form

217. Course Name:	Soil principles
218. Course Code:	0013201
Semester / Year:	219.
First / second	First / second
220. Description Preparation Date:	1/9/2025
221. Available Attendance Forms:	Actual presence
222. Number of Credit Hours (Total) / Number of Units (Total)	2 theoretical 2 practical , units 3
223. Course administrator's name (mention all, if more than one name)	Name: Prof. Dr. raheem alwan halool Email: Rahim_alwan@mu.edu.iq
224. Course Objectives	
The student gets to know soil science	<ul style="list-style-type: none"> • The student gets to know soil science • The student should classify the factors processes of soil formation

	<ul style="list-style-type: none"> • The student should separate the various factors in the formation of soil • For the student to learn about how soil is formed and developed • For the student to evaluate the different types of soil
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225. • The student should classify the factors and processes of soil formation

Strategy	<ol style="list-style-type: none"> 1- Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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226. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first	5	<p>The student will be familiar with an introduction to soil science and the emergence and development of soils</p>	Soil principles	Explanation, presentation of the model and lecture	the exam
The second	5	<p>The student gets to know the types of factors and soil formation processes</p>			

Third	5	The student gets to know the physical properties of soil	Soil principles	Explanation, presentation of the model and lecture	the exam
Fourth		The student gets to know the chemical properties of soil	Soil principles	Explanation, presentation of the model and lecture	the exam
Fifth		The student gets to know the biological characteristics of soil	Soil principles	Explanation, presentation of the model and lecture	the exam
Sixth		The student gets to know soil salinity	Soil principles	Explanation, presentation of the model and lecture	the exam
Seventh		The student will be familiar with the reclamation of saline soils	Soil principles	Explanation, presentation of the model and lecture	the exam
Eighth		The student	Soil principles	Explanation,	the

		gets to know the types of soil water		presentation of the model and lecture	exam
Ninth		The student gets to know soil colloids	Soil principles	Explanation, presentation of the model and lecture	the exam
Tenth		The student will learn about the effect of humidity on plants	Soil principles	Explanation, presentation of the model and lecture	the exam
Eleventh	5	The student gets to know soil fertility For the student to recognize the most important reasons for low soil productivity	Soil principles	Explanation, presentation of the model and lecture	the exam the exam
Twelfth					
thirteenth		The student will know how to feed plants	Soil principles	Explanation, presentation of the model	the exam

				and lecture	
Fourteenth		The student gets to know the classification of soils	Soil principles	Explanation, presentation of the model and lecture	the exam
Fifteenth		For the student to become familiar with educational administration	Sustainable development	Explanation, presentation of the model and lecture	the exam

227. Course Evaluation

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

228. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Introduction to Soil Sciences 2015 / A. Dr. Nour El-Din Shaw Ali
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals

Electronic References, Websites	Soil Science Society Of America Library Genesis
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Course Description Form

229. Course Name:	Principles of statistics		
230. Course Code:	0C13202		
231. Semester / Year:	First / second		
232. Description Preparation Date:	1/9/2025		
233. Available Attendance Forms:	Actual attendant		
234. Number of Credit Hours (Total) / Number of Units (Total)	30 theoretical 45 practical , 3.5 unit		
235. Course administrator's name (mention all, if more than one name)	Name: sadeq Hadi Hussein Email: Sadeq.hadi@mu.edu.iq		
236. Course Objectives	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Course Objectives</td> <td> <ul style="list-style-type: none"> - Introducing students to the principles, basics, and applications of statistics - Teaching students the importance of knowing the statistical standards applied in agricultural research </td> </tr> </table>	Course Objectives	<ul style="list-style-type: none"> - Introducing students to the principles, basics, and applications of statistics - Teaching students the importance of knowing the statistical standards applied in agricultural research
Course Objectives	<ul style="list-style-type: none"> - Introducing students to the principles, basics, and applications of statistics - Teaching students the importance of knowing the statistical standards applied in agricultural research 		
237. Teaching and Learning Strategies			

Strategy	<p>Active participation in answering questions.</p> <ul style="list-style-type: none"> - Weekly assignments in order to practice applying the laws - Monthly tests
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238. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Basics in statistics	1- A historical overview, definition, importance and applications of statistics	Explanation, presentation of the model and lecture	exam
2	5		2- Introducing statistical terminology and methods for obtaining random samples		
3	5		3- Tabular and graphical presentation		
4	5		4- Concentration metrics		
5	5		5- How to make a		

5			frequency distribution table		
6			6- Measures of relative dispersion		
7			7- The relationship between the arithmetic mean, median, and mode		
8			8- T-test and F-test		
9			9- Simple regression		
10			10- Correlation		
11			11- Probability distributions		
12			12- Normal distribution		
13			13- Analysis of variance		

13				
239. Course Evaluation				
1- Theoretical tests		25		
2- Practical tests		15		
3- Reports and studies		10		
4- Final exam		50		
240. Learning and Teaching Resources				
Required textbooks (curricular books, if any)		Introduction to Statistics - Khashi Muhammad Al-Rawi		
Main references (sources)		Principles of Statistics - Ahmed Abdel Samie 2008		
Recommended books and references (scientific journals, reports...)				
Electronic References, Websites				

Course Description Form

241.	Course Name:
Basis of microbiology	
242.	Course Code:
0013202	
243.	Semester / Year:

First semester / second					
244. Description Preparation Date:					
14/2/2025					
245. Available Attendance Forms:					
Actual Attendance					
246. Number of Credit Hours (Total) / Number of Units (Total)					
30 theoretical 60 practical = 90 hrs, 3 unit					
247. Course administrator's name (mention all, if more than one name)					
Name: Assistant Professor Dr. Dhifaf jabbar shamran Email: dhifaf15@mu.edu.iq					
248. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> * Introducing the student to the nature of microbiology * Different types of microorganisms * The use of microorganisms in the agricultural field 		
249. Teaching and Learning Strategies					
Strategy	<p>A- Cognitive objectives</p> <ul style="list-style-type: none"> * Enables the student to understand the nature of microorganism * Enabling the student to distinguish between different types of microorganisms * Enabling the student to focus on the vital activities of all species * Enabling the student to know the importance of microorganism in the agricultural field <p>B- Skills goals</p> <ul style="list-style-type: none"> - Development of bacteria and fungi - Isolate and purify it - Testing its sensitivity to antibiotics 				
250. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

First		Memorization understanding practical application	A historical overview of microbiology, definition of microbiology, its types, and its relationship to other sciences	Lecture and discussion	Oral exams and rapid exam
Second			Bacteria, their shapes and composition		
Third			Different metabolic activities of bacteria		
Fourth			Fungi, their general characteristics and types		
Fifth			Different metabolic activities of fungi and their classification		
Sixth			Monthly exam		
Seventh			Viruses, their definition, structure and types		
Eighth			Types of virus replication		
Ninth			Algae definition, structure and type		
Tenth			Biofertilizers, their types and importance		
11			Second part of biofertilizers		
12			Second monthly exam		
13			Protozoa, its definition, structure and sections		
14			General Review		
15			Comprehensive exam		

251. 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

252. Learning and Teaching Resources

Required textbooks (curricular books, any)	General microbiology
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Main references (sources)	Books related to the subject a scientific research
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Arabic articles published academic and professional bodies

Course Description Form

253. Course Name:	
Vegetable production	
254. Course Code:	
0C13203	
255. Semester / Year:	
FIRST semester / The second	
256. Description Preparation Date:	
26\2\2025	
257. Available Attendance Forms:	
Actual presence	
258. Number of Credit Hours (Total) / Number of Units (Total)	
theoretical 2 practical 2 units 3	
259. Course administrator's name (mention all, if more than one name)	
Name: Assistant prof. aman hameed jaber Email : amanhameed@mu.edu.iq	
260. Course Objectives	
Course Objecti	<ul style="list-style-type: none"> • The student gets to know the types of vegetables • The student should classify climate factors and their relationship to vegetable production • The student should detail the benefits and harms of climatic factors such as temperature, wind, and frost • The student will learn about increased production and its causes <ul style="list-style-type: none"> • To establish an annual agricultural cycle for production
261. Teaching and Learning Strategies	
Strategy	1-Explanation and clarification 2- Lecture method

- 3- Student groups
- 4- Practical lessons
- 5- Scientific trips
- 6 - Self-learning method

262. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2	Vegetable production	Introduction, definition, original homeland	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	2	Vegetable production	Classification of vegetable crops	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the third	2	Vegetable production	Divide vegetables	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the fourth	2	Vegetable production	Vegetable crop service operations	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	2	Vegetable production	Horticultural facility and tools needed for growing vegetables	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Sixth	2	Vegetable production	Vegetable reproduction: sexual reproduction and asexual reproduction	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	2	Vegetable production	Irrigation of vegetable crops	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

Eighth	2	Vegetable production	Fertilizing vegetable crops	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2	Vegetable production	Physiological diseases of vegetables	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

tenth	2	Vegetable production	Organic Agriculture	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	2	Vegetable production	Important vegetable crops in Iraq: Solanaceae family: tomato, potato	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Twelfth	2	Vegetable production	Pepper, eggplant	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Thirteenth	2	Vegetable production	Cucurbita family: cucumber and squash	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
fourteenth	2				
Fifteenth	2				

263. Course Evaluation

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

264. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Vegetable Production, Part One, written by Adnan Nassar Matloob, Ezz El-Din Sultan, and Karim Saleh
Main references (sources)	

Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Internet network

Course Description Form

265. Course Name:					
Applications in computers					
266. Course Code:					
U013201					
267. Semester / Year:					
First / second					
268. Description Preparation Date:					
1/9/2025					
269. Available Attendance Forms:					
Actual presence					
270. Number of Credit Hours (Total) / Number of Units (Total)					
2 / 2					
271. Course administrator's name (mention all, if more than one name)					
Name: Dr. Karrar Hameed Abdulkareem					
Email: khak9784@mu.edu.iq					
272. Course Objectives					
Course Objectives	<ul style="list-style-type: none"> • The student gets to know Microsoft PowerPoint • The student should know advantages of Microsoft PowerPoint in real life. • The student should apply many examples that relative to agriculture sector as well as other sectors. 				
273. Teaching and Learning Strategies					
Strategy	1-Explanation and clarification. 2- Practical lessons. 3- Self-learning method.				
274. Course Structure					
Week	Hours	Required Learning	Unit or subject	Learning	Evaluati

		Outcomes	name	method	on method
First	2	Introduction to Microsoft PowerPoint	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
Second	2	Tabs and groups	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
Third	2	Tabs and groups	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
Fourth	2	Practical Example	Microsoft PowerPoint	Practical session	Exam
Fifth	2	Practical Example	Microsoft PowerPoint	Practical session	Exam
Sixth	2	Tables	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
Seventh	2	Deals with movies	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
Eighth	2	Deals with movies	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
Ninth	2	Shapes, smartart, and charts	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
Tenth	2	Practical Example	Microsoft PowerPoint	Practical session	Exam
Eleventh	2	Practical Example	Microsoft PowerPoint	Practical session	Exam
Twelfth	2	Shapes, smartart, and charts	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
Thirteenth	2	Shapes, smartart, and charts	Microsoft PowerPoint	Explanation, presentation of model and lecture	Exam
fourteenth	2	Practical Example	Microsoft PowerPoint	Practical session	Exam
Fifteenth	2	Practical Example	Microsoft PowerPoint	Practical session	Exam
275. Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
276. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)					

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

Course Description Form

277.	Course Name:
	Agricultural machinery and equipment
278.	Course Code:
	0C13204
279.	Semester / Year: 2025-2025
	First / second
280.	Description Preparation Date:
	1-9-2025
281.	Available Attendance Forms:
	Attended
282.	Number of Credit Hours (60) / Number of Units (3)
	60 hrs / 3 units
283.	Course administrator's name (mention all, if more than one name)
	Name: JAWAD KADHIM AL ARIDHEE Email: jawadaridhee@mu.edu.iq
284.	Course Objectives

Course Objectives	is machinery used in farming or other agriculture. There are many types of such equipment, from hand tools and power tools to tractors and the countless kinds of farm implements that they tow or operate. Diverse arrays of equipment are used in both organic and nonorganic farming. Especially since the advent of mechanized agriculture, agricultural machinery is an indispensable part of how the world is fed
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285. Teaching and Learning Strategies

Strategy	
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286. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Classification of tractors , Mechanical transmission methods		Theoretical + practical lecture	test
2	4	Internal combustion engine parts		Theoretical + practical lecture	test
3	4	Four – stroke cycle& Two – stroke cycle		Theoretical + practical lecture	test
4	4	Timer device		Theoretical + practical lecture	test
5	4	Clutch Device		Theoretical + practical lecture	test
6	4	Gearbox and Transmission devices		Theoretical + practical lecture	test
7	4	Fuel System		Theoretical + practical lecture	test
8	4	Cooling System		Theoretical + practical lecture	test
9	4	Lubrication System		Theoretical + practical	test

				lecture	
10	4	Hydraulic devices. Power take - off shaft		Theoretical + practical lecture	test
11	4	Soil preparation equipment		Theoretical + practical lecture	test
12	4	Control equipment - Spraying equipment		Theoretical + practical lecture	test
13	4	Fogging equipment		Theoretical + practical lecture	test
14	4	Sprinkler calibration		Theoretical + practical lecture	test
15	4	Maintenance of control equipment		Theoretical + practical lecture	test

287. 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

288. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Agricultural machinery
Main references (sources)	Basic Farm Machinery .J.M.shippen,C.R.E and C.H.Clover
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

289. Course Name	
Soil, water and plant analysis	
290. Course Code:	
0023201	
Semester / Year:	
291.	
Second / second	
292. Description Preparation Date:	
1/9/2025	
293. Available Attendance Forms:	
Actual presence	
294. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 2 practical , units 2	
295. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. raheem alwan halool	
Email: Rahim_alwan@mu.edu.iq	
296. Course Objectives	
Course Objectives	<p>For the student to know the types of analytical methods</p> <ul style="list-style-type: none"> • The student learns how to analysis water , soil and plant • The student should evaluate the scientific reality to maintain analytical methods •
297. Teaching and Learning Strategies	
Strategy	1- Explanation and clarification

- 2- Lecture method
- 3- Student groups
- 4- Practical lessons
- 5- Scientific trips
- 6 - Self-learning method

298.Course Structure

Week	Hou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
The first	5	The student gets to know introduction about water , soil plant analytical	Water , soil and plant analytical	Explanati on, presentati on of the model and lecture	the exam
The second	5	is for the student to know analytical of water			
Third	5	The student learns about soil analytical	Water , soil plant analyti	Explanati on, presentati on of the	the exam

				model and lecture	
Fourth	5	The student gets to know plant analytical	Water , soil plant analyti	Explanati on, presentati on of the model and lecture	the exam
Fifth	5	: The student learns about methods of soil samples	Water , soil plant analyti	Explanati on, presentati on of the model and lecture	the exam
Sixth	5	: The student learns about methods of plant samples	Water , soil and plant analytical	Explanati on, presentati on of the model and lecture	the exam
Seventh	5	: The student gets to know the methods of water samples	Water , soil plant analyti	Explanati on, presentati	the exam

		methods		on of the model and lecture	
Eighth	5	The student gets to know the quantitative and volumetric methods	Water , soil plant analyti	Explanati on, presentati on of the model and lecture	the exam
Ninth	5	The student gets to know the quantitative and weighing methods	Water , soil plant analyti	Explanati on, presentati on of the model and lecture	the exam
Tenth	5	: The student will learn about electrical of a Analytical methods	Water , soil plant analyti	Explanati on, presentati on of the model and lecture	the exam
Eleventh		The student gets to know	Water , soil plant analyti	Explanati on,	the exam the exam

Twelfth	5	About analytical of spectroscopy The student gets to know Atomic emission methods		presentati on of the model and lecture	
thirteenth	5	: The student knows how the Atomic absorption methods	Water , soil plant analyti	Explanati on, presentati on of the model and lecture	the exam
Fourteenth	5	: The student gets to know Metal analysis methods	Water , soil plant analyti	Explanati on, presentati on of the model and lecture	the exam
Fifteenth	5	The student gets to know the types of X-ray analysis methods	Water , soil plant analyti	Explanati on, presentati	the exam

				on of the model and lecture	
299. Course Evaluation					
Theoretical tests	25				
2- Practical tests	15				
3- Reports and studies	10				
4- Final exam	50				
300. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)			Iraqi academic scientific journals		
Electronic References, Websites			Soil Science Society Of America Library Genesis		

Course Description Form

301. Course Name:
Fundamentals of plant protection
302. Course Code:
0C23201
303. Semester / Year:
Second semester / The second
304. Description Preparation Date:
1\9\2025
305. Available Attendance Forms:
Actual presence
306. Number of Credit Hours (Total) / Number of Units (Total)

theoretical 30 hrs

practical 45 hrs

units 3.5

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

Name: Assistant prof. Dr. Saad Manea

Email: alifj80@mu.edu.iq

308. Course Objectives

Course Objectives	<p>Enabling students to obtain knowledge and understanding of the intellectual and applied framework in insect principles in general</p> <ul style="list-style-type: none"> • Enabling students to obtain knowledge and understanding of insecticide requirements accordance with international standards. • Introducing students to modern techniques in the basis of protection from insects and diseases through showing films, scientific research, and methods of diagnosing insects.
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309. Teaching and Learning Strategies

Strategy	<ol style="list-style-type: none"> 1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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310. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	5	The taxonomic position of insects and its relationship to the arthropod phylum	Fundamentals of plant protection	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	5	Its importance, benefits and harms	Fundamentals of plant protection	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the third	5	Its spread and the reasons for its success	Fundamentals of plant protection	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class

the fourth	5	Methods of insect reproduction	Fundamentals of plant protection	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	5	Insect feeding methods	Fundamentals of plant protection	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Sixth	5	Examples of the most important economic insects in Iraq	Fundamentals of plant protection	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	5	Environmental factors affecting the life and activity of insects	Fundamentals of plant protection	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eighth	5		Fundamentals of plant protection	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	5	Ways to combat harmful insects	Fundamentals of plant protection	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

tenth	5	The nature and damage of non-insect pests (rodents and birds)	Fundamentals of plant protection	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	5	The economic importance of plant diseases - definitions and terms	Fundamentals of plant protection	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Twelfth	5	Parasitic plant pathogens (biological)	Fundamentals of plant protection	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

311. Course Evaluation	
5- Theoretical tests	25
6- Practical tests	15
7- Reports and studies	10
8- Final exam	50
312. Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	-Required readings: -Basic texts -Course books -Other
Main references (sources)	Special requirements (including, for example, workshops, periodicals, software, and websites)
Recommended books and references (scientific journals, reports...)	Social services (including, for example, guest lectures, vocational training, and field studies) Iraqi academic scientific journals
Electronic Websites	Referenc Internet network

Course Description Form

313. Course Name:
Soil environment and weather conditions
314. Course Code:
0023202
315. Semester / Year:
Second / second
316. Description Preparation Date:
26\2\2025
317. Available Attendance Forms:
Actual presence
318. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2 practical units 3
319. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Abdullah Karim Jabbar
 Email: karrm74@mu.edu.iq-abdallah

320. Course Objectives

Course Objectives	<ul style="list-style-type: none"> • • The student gets to know environmental science • • The student should classify climate factors and their relationship to soil • • The student should detail the benefits and harms of climatic factors such as temperature, wind, and frost • • The student should know about pollution and its causes • • The student will evaluate desertification and global warming.....
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321. Teaching and Learning Strategies

Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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322. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	The student gets introduction to ecology and ecosystem	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
the second	2	The student gets to know types of ecosystems and factors	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
the third	2	For the student to learn about the importance of biological water and the division of plants according to their need water, rain, and the effectiveness	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
the fourth	2	The student gets to know condensation and frost	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Fifth	2	The student gets to know temperature and thermal range of plants and the effect of h	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam

		stress			
Sixth	2	The student will be familiar with the nature of thermal stress, the effect of heat on vegetation, thermal synchrony and ambient temperature	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Seventh	2	The student gets to know light and the biological effects of light	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Eighth	2	The student gets to know the point of photocompensation and the effect of light on the shape and structure of plants	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Ninth	2	The student will be familiar with humidity and the decrease in the degree of saturation	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
The tenth	2	The student will learn about the effect of humidity on plants	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Eleventh	2	For the student to get to know Winds, their types, harms and benefits to plants	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Twelfth	2	The student gets to know the most important contemporary environmental issues	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Thirteenth	2	The student will be familiar with pollution and interrelated effects	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
fourteenth	2	The student will be familiar with the phenomenon of inverted gradient and global warming	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Fifteenth	2	The student gets to know desertification, its types and causes	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam

323. Course Evaluation

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

324. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Fundamentals of Agricultural Climatology. 2015. Salam H. Ahmed Al-Jubouri. Amman. Jordan. 2- Plant ecology. 1989. Dr. Majeed Rashid Al-Hilli and Hikmat Abbas Al-Ani. Dar Al-Kutub for Printing and Publishing. Iraq. University of Al Mosul.
Main references (sources)	Environment and problems of pollution. 2017. Muhammad Hassan Awad and Hassan Ahmed Shehata. Dar Taiba Publishing and Distribution. Cairo. Egypt.
Recommended books and	Iraqi academic scientific journals

references (scientific journals, reports...)	
Electronic Websites	Referenc Soil Science Society Of America Library Genesis

Course Description Form

325. Course Name:	
Agricultural extension	
326. Course Code:	
0C23202	
327. Semester / Year:	
Second semester / The second	
328. Description Preparation Date:	
26\2\2025	
329. Available Attendance Forms:	
Actual presence	
330. Number of Credit Hours (Total) / Number of Units (Total)	
theoretical 2	practical units 2
331. Course administrator's name (mention all, if more than one name)	
Name: Assistant prof. Mustafa Abd Manshood Email : mustafa.manshood@mu.edu.iq	
332. Course Objectives	
Course Objecti	<ul style="list-style-type: none"> • Teaching and introducing students to the most important link in the agricultural extens system, which is the agricultural extension worker and his role in transferring scient material from scientific research departments and delivering it to farms with some ease guidance. • Teaching students the art of adopting positive ideas in the field of agriculture
333. Teaching and Learning Strategies	
Strategy	1-Explanation and clarification 2- Lecture method

- 3- Student groups
- 4- Practical lessons
- 5- Scientific trips
- 6 - Self-learning method

334. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2		About agricultural extension	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	2		Types of extension training	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the third	2		Contact method	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the fourth	2		Creation and spread of modern innovations	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	2		Leadership	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Sixth	2		Planning extension programs	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	2		Agricultural extension methods and extension methods	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

Eighth	2		Agricultural extension philosophy	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2		Education and teaching	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

Tenth	2		The importance of using modern irrigation methods and their economic impacts	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	2		The role of agricultural extension in improving archaeological areas	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Twelfth	2		Water crisis	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Thirteenth	2				
fourteenth	2				
Fifteenth	2				

335. Course Evaluation

1-Theoretical tests, Quizzes, Reports, and Class's Activities	50
4- Final exam	50

336. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Principles of agricultural extension - Abdullah Al-Samarrai
Main references (sources)	1-Planning extension programs 1992 - Abdullah Al-Samarrai 2- Agricultural Extension Science 1990- Adnan Hussein Al-Ja
Recommended books and references (scientific journals, reports...)	
Electronic Websites	Referenc Internet network

Course Description Form

337. Course Name:					
Lands leveling and grading					
338. Course Code:					
0023203					
339. Semester / Year					
Second/ second					
340. Description Preparation Date:					
1/9/2025					
341. Available Attendance Forms:					
Attended					
342. Number of Credit Hours / Number of Units					
60 hrs / 3 units					
343. Course administrator's name (mention all, if more than one name)					
Name: JAWAD KADHIM AL ARIDHEE Email: jawadaridhee@mu.edu.iq					
344. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> Increasing the production of agricultural crops in quantity and quality due to the distribution of water in the field at approximately one depth Ease of irrigation, as the water is distributed evenly throughout the field. This means reducing the amount of water required by the irrigation process and reducing the effort and time required for this process, unlike uneven lands that require a large amount of irrigation water in addition to the greater time and effort to c 			
345. Teaching and Learning Strategies					
Strategy		1- Create a slope that provides an appropriate amount of water 2- Leveling the field in the best way using the least possible amount of soil transport for the purpose of leveling			
346. Course Structure					
Week	Hours	Required Learning	Unit or	Learning	Evaluation

		Outcomes	subject name	method	method
1	4	Definition of the Lands leveling and grading		Theoretical + practical lecture	test
2	4	Types of leveling - application requirements		Theoretical + practical lecture	test
3	4	the factors that must be followed before starting work to level and modify: soil factors, environmental factors, plants, and human factors		Theoretical + practical lecture	test
4	4	Topographic variation: its relationship to of level - estimation methods - direct methods - indirect methods		Theoretical + practical lecture	test
5	4	Land leveling without slope		Theoretical + practical lecture	test
6	4	Field works - implementation methods - work stages - calculations and estimation		Theoretical + practical lecture	test
7	4	the leveling ground with one slope		Theoretical + practical lecture	test
8	4	the leveling ground with two slope		Theoretical + practical lecture	test
9	4	Calculations, estimates and evaluation		Theoretical + practical lecture	test
10	4	Selection of machines		Theoretical + practical lecture	test
11	4	Types of machines - testing standards - efficiency and utilization of machines		Theoretical + practical lecture	test
12	4	Laser leveling		Theoretical + practical lecture	test
13	4	Make a leveling plan		Theoretical + practical lecture	test
14	4	Times for leveling - and ways to succeed		Theoretical + practical lecture	test

347. 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					
348. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Surveying		
Main references (sources)			Basic Farm Machinery .J.M.shippen,C.R.E and C.H.Clover		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

349. Course Name:	
Plant Physiology	
350. Course Code:	
0C23203	
351. Semester / Year:	
Second / second	
352. Description Preparation Date:	
26\2\2025	
353. Available Attendance Forms:	
Actual presence	
354. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 3 practical units 3.5	
355. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Falah Hasan Issa Email: flah70-hasan@mu.edu.iq	
356. Course Objectives	
Course Objecti	<ul style="list-style-type: none"> • • The student gets to know Plant Physiology • • The student should classify of cells • • The student should detail the benefits and harms of Metabolism , Respiration , Transpiration • • The student should know about plant hormones •

357. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> 1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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358. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Components of a plant cell	Plant Physiology	Explanation, presentation of model and lecture	the exam
the second	5	Osmosis	Plant Physiology	Explanation, presentation of model and lecture	the exam
the third	5	Passive and active absorption	Plant Physiology	Explanation, presentation of model and lecture	the exam
the fourth	5	Photosynthesis	Plant Physiology	Explanation, presentation of model and lecture	the exam
Fifth	5	Respiration	Plant Physiology	Explanation, presentation of model and lecture	the exam
Sixth	5	Growth plant Hormones	Plant Physiology	Explanation, presentation of model and lecture	the exam
Seventh	5	Inhibitors plant Hormones	Plant Physiology	Explanation, presentation of model and lecture	the exam
Eighth	5	Enzymes	Plant Physiology	Explanation, presentation of model and lecture	the exam
Ninth	5	Transpiration	Plant Physiology	Explanation, presentation of model and lecture	the exam
The tenth	5	Guttation and bleeding	Plant Physiology	Explanation, presentation of model and lecture	the exam
Eleventh	5	Colloidal solutions	Plant Physiology	Explanation, presentation of	the exam

Twelfth	5	Vernilazation	Plant Physiology	model and lecture Explanation, presentation of model and lecture	the exam

359. Course Evaluation

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

360. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Plant Physiology, Part One and Two, Dr. Abdel Azim 2-Plant Physiology . 2000. Dr.Mouaid Alyonis
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Plant Physiology Journal .

Course Description Form

361. Course Name:	
English Language	
362. Course Code:	
U023201	
363. Semester / Year:	
Second semester / The second	
364. Description Preparation Date:	
26\2\2025	
365. Available Attendance Forms:	
Actual presence	
366. Number of Credit Hours (Total) / Number of Units (Total)	
theoretical 2 practical units 1	

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

Name: Assistant Professor Dr. Ahmed Merza Abood
 Email : ahmedme@mu.edu.iq

368. Course Objectives

- | | |
|--------------------------|--|
| Course Objectives | <ul style="list-style-type: none"> - Teaching students, the basic concepts related to access to the simple basics of introduction to the English language for students of the College of Agriculture. - The student gets to know the concept of the English language. - Enabling students to know how to deal with the English language |
|--------------------------|--|

369. Teaching and Learning Strategies

- | | |
|-----------------|--|
| Strategy | <ul style="list-style-type: none"> 1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method |
|-----------------|--|

370. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Getting to know you: - Tenses - Questions - Using a bilingual dictionary - Social expressions 1	1	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	2	The way we live: - Present tenses - Have/have got - Collocation-daily life - Making conversation	2	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the third	2	It all went wrong: - Past tenses - Word formation - Time expressions	3	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and

					activities in class
the fourth	2	Let's go shopping: - Much/many - Some/any - A few, a little, a lot of - Articles - Shopping, prices	4	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	2	What do you want to do? - Verb patterns 1 - future forms - Hot verbs - How are you feel?	5	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Sixth	2	Tell me! What's it like? - What ...like? - Comparatives and superlatives - Synonyms and antonyms - Directions	6	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	2	Fame: - Present perfect - For, since - Adverbs, word pairs - Short answers	7	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eighth	2	Do's and don'ts: - Have(got) to - Should/must - Words that go together - At the doctor's	8	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2	Going places: - Time clauses - If - Hot verbs - In a hotel	9	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

Tenth	2	Scared to death: - Verb patterns 2 - Manage to, used to - Ed/ing adjectives - Exclamations	10	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	2	Things that changed the world: - Passives - Verbs and nouns that go together - Notices	11	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Twelfth	2	Dreams and reality: - Second conditional - Might - Phrasal verbs - Social expressions	12	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Thirteenth	2	Earning a living: - Present perfect continuous - Word formation	13	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and

		- Adverbs - Telephoning			activities in class
fourteenth	2	Family ties: - Past perfect - Reported statements - Saying goodbye	14	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Fifteenth	2	Reviewing	15	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class

371. Course Evaluation

1-Theoretical tests	35
2- Quizzes, Reports, and Class's Activities	15
4- Final exam	50

372. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Pre-Intermediate Student's Book: New Headway Plus (John and Liz Soars) Oxford University Press
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic Websites	Internet network

Course Description Form

373. Course Name:	Computer applications 4
374. Course Code:	U023202
375. Semester / Year:	Second / Second
376. Description Preparation Date:	1/9/2025
377. Available Attendance Forms:	Actual presence
378. Number of Credit Hours (Total) / Number of Units (Total)	

2 / 2

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

Name: Dr. Karrar Hameed Abdulkareem

Email: khak9784@mu.edu.iq

380. Course Objectives

Course Objectives	<ul style="list-style-type: none"> • The student gets to know Microsoft excel • The student should know advantages of Microsoft excel in real life. • The student should apply many examples that relative to agriculture sector as well as other sectors.
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381. Teaching and Learning Strategies

Strategy	1-Explanation and clarification. 2- Practical lessons. 3- Self-learning method.
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382. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Introduction to Microsoft Excel	Microsoft Excel	Explanation, presentation of model and lecture	the exam
second	2	Tabs and groups	Microsoft Excel	Explanation, presentation of model and lecture	the exam
third	2	Workbooks and sheets	Microsoft Excel	Explanation, presentation of model and lecture	the exam
fourth	2	Practical Example	Microsoft Excel	Practical session	the exam
Fifth	2	Practical Example	Microsoft Excel	Practical session	the exam
Sixth	2	Workbooks design	Microsoft Excel	Explanation, presentation of model and lecture	the exam
Seventh	2	Fundamentals of data entry	Microsoft Excel	Explanation, presentation of model and lecture	the exam
Eighth	2	Fundamentals of data entry	Microsoft Excel	Explanation, presentation of model and lecture	the exam
Ninth	2	Fundamentals of data entry	Microsoft Excel	Explanation, presentation of	the exam

				model and lecture	
Tenth	2	Practical Example	Microsoft Excel	Practical session	the exam
Eleventh	2	Practical Example	Microsoft Excel	Practical session	the exam
Twelfth	2	Tables	Microsoft Excel	Explanation, presentation of model and lecture	the exam
Thirteenth	2	Charts	Microsoft Excel	Explanation, presentation of model and lecture	the exam
fourteenth	2	Practical Example	Microsoft Excel	Practical session	the exam
Fifteenth	2	Practical Example	Microsoft Excel	Practical session	the exam
383. Course Evaluation					
1-Theoretical tests	25				
2- Practical tests	15				
3- Reports and studies	10				
4- Final exam	50				
384. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)					
Main references (sources)		1- Microsoft Excel 2016 Step by Step 1st Edition by Curtis Frye 2- Microsoft Excel 2016 prepared by Muhammad Malik			
Recommended books and references (scientific journals, reports...)					
Electronic Websites		Referenc https://support.microsoft.com/en-gb/office/introduction-to-excel-starter-601794a9-b73d-4d04-b2d4-eed4c40f98be			

Course Description Form

385.	Course Name:
Soil physics	
386.	Course Code:
0013301	
387.	Semester / Year:
First / THIRD	
388.	Description Preparation Date:
26\2\2025	

389. Available Attendance Forms:					
Actual presence					
390. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		2 practical		units 3	
391. Course administrator's name (mention all, if more than one name)					
Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq					
392. Course Objectives					
Course Objecti	1- Researches the study of soil physics and the physical properties of soil 2- Study how to measure the physical properties of soil 3- Applying measurements of physical properties to solve scientific problems related agriculture and the environment 4- Understanding the relationship between physical soil properties 5- Knowing the movement of water in the soil and the flow of water in saturated and unsaturated soils.				
393. Teaching and Learning Strategies					
Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method				
394. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluati on method
First	4	Introduction and definition of soil science, soil physics and some related relationships	Soil physics	Explanation, presentation of model and lecture	the exam
the second	4	Physical soil properties, texture, particle size distribution, and Stock's law	Soil physics	Explanation, presentation of model and lecture	the exam
the third	4	The specific area of soil and methods for determining physical and chemical properties	Soil physics	Explanation, presentation of model and lecture	the exam

the fourth	4	Soil Structure: its definition, importance, and how to study	Soil physics	Explanation, presentation of model and lecture	the exam
Fifth	4	Methods of studying soil structure and evidence of soil structure	Soil physics	Explanation, presentation of model and lecture	the exam
Sixth	4	Stability of soil aggregates, methods of studying them, and factors affecting the formation of aggregates	Soil physics	Explanation, presentation of model and lecture	the exam
Seventh	4	Soil water and general water properties, soil air, air capacity and gas exchange in the soil	Soil physics	Explanation, presentation of model and lecture	the exam
Eighth	4	Water properties related to porous media (soil), soil water energy and methods of expressing and measuring it	Soil physics	Explanation, presentation of model and lecture	the exam
Ninth	4	Soil temperature, soil temperature, and heat flow in the soil	Soil physics	Explanation, presentation of model and lecture	the exam
The tenth	4	Water flow in saturated soils and water flow in unsaturated soils	Soil physics	Explanation, presentation of model and lecture	the exam
Eleventh	4	Water infiltration in soils, methods for measuring it and equations	Soil physics	Explanation, presentation of model and lecture	the exam
Twelfth	4	Irrigation and drainage characteristics, the physical properties of surface soil	Soil physics	Explanation, presentation of model and lecture	the exam
Thirteenth	4	Water balance and energy balance in the field	Soil physics	Explanation, presentation of model and lecture	the exam
fourteenth	4	Evaluation of the water balance equation, water consumption, evapotranspiration	Soil physics	Explanation, presentation of model and lecture	the exam
Fifteenth	4		Soil physics	Explanation, presentation of model and lecture	the exam

395. Course Evaluation

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

396. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Soil Physics, written by Dr. Hisham Mahmoud Hassan 2000 2- Basics of soil physics, translation. Mahdi Ibrahim Odeh 1990
Main references (sources)	Basics of soil physics, translation. Mahdi Ibrahim Odeh 1990
Recommended books and references (scientific)	Iraqi academic scientific journals

journals, reports...)		
Electronic Websites	Referenc	Soil physics

Course Description Form

397. Course Name:					
Soil Chemistry					
398. Course Code:					
0013302					
399. Semester / Year:					
First Semester / Third					
400. Description Preparation Date:					
27/2/2025					
401. Available Attendance Forms:					
attend					
402. Number of Credit Hours (Total) / Number of Units (Total)					
hrs		3 units			
403. Course administrator's name (mention all, if more than one name)					
Name: Assistant Professor Dr. bashar mezher jader Email: bashar_mezher@mu.edu.iq					
404. Course Objectives					
Course Objectives			The soil chemistry course aims to explain the principles used in studying the chemical composition of soil. During this course, the student is introduced to all the chemical properties of soil and how to estimate and calculate them practically and in the field. During this course, the chemical properties of soil are linked to other branches of soil science.		
405. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> Make the learner active and effective in educational situations. Teach students to respect different opinions and value others Benefit from other people's ideas and information. 			
406. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	5	The importance	Soil	Explanation, presentation	Exam

		studying soil chemistry,	chemist	of the model and lectur	
the second	5	Ion exchange equations, physicochemical equations	Soil chemist	Explanation, presentat of the model and lectur	Exam
the third	5	chemical equation soil anion exchange capacity	Soil chemist	Explanation, presentat of the model and lectur	Exam
the fourth	5	Solubility balance in soil	Soil chemist	Explanation, presentat of the model and lectur	Exam
Fifth	5	Carbonate equilibrium, CO_2 - H_2O system $CaCO_3$ - H_2O - CO_2 system in soil	Soil chemist	Explanation, presentat of the model and lectur	Exam
Sixth	5	Phosphorus balance ionization phosphorus in soil phosphorus reactions	Soil chemist	Explanation, presentat of the model and lectur	Exam
Seventh	5	Chemical potential of ions in the soil solution	Soil chemist	Explanation, presentat of the model and lectur	Exam
Eighth	5	phosphorus dissolution Soil acidity and alkalinity	Soil chemist	Explanation, presentat of the model and lectur	Exam
Ninth	5	curves in Al_2O_3 - Fe_2O_3 - CaO - P_2O_5 - H_2O system	Soil chemist	Explanation, presentat of the model and lectur	Exam
Tenth	5	the importance studying the degree of soil reaction	Soil chemist	Explanation, presentat of the model and lectur	Exam
Eleventh	5	sources of acidity the soil, methods measuring acid and alkalinity	Soil chemist	Explanation, presentat of the model and lectur	Exam
Twelfth	5	effect of the degree of reaction on cation exchange	Soil chemist	Explanation, presentat of the model and lectur	Exam

		capacity.			
Thirteenth	5	Equilibrium curve of soil buffer capacity	Soil chemistry	Explanation, presentation of the model and lecture	Exam
Fourteenth	5	alkalinity of soils, dry and semi-arid areas, calcareous soils, and gypsum soils.	Soil chemistry	Explanation, presentation of the model and lecture	Exam
407. 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					
408. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)		Soil chemistry			
Main references (sources)		Books related to the subject and scientific research			
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites		https://onlinelibrary.wiley.com/doi/full/10.1002/9781119300762.wsts0025			

Course Description Form

409. Course Name:	Soil fertility
410. Course Code:	0013303
411. Semester / Year:	First / Third
412. Description Preparation Date:	27\2\2025
413. Available Attendance Forms:	Actual presence
414. Number of Credit Hours (Total) / Number of Units (Total)	60 hrs units 3
415. Course administrator's name (mention all, if more than one name)	Name: Prof. Dr. Raheem alwan halool Email: Rahim_alwan@mu.edu.iq

416. Course Objectives

Course Objectives	<ul style="list-style-type: none"> • The student gets to know the science of soil fertility • The student should classify the types of elements and their importance to plants • The student should detail the factors affecting nutrient readiness • The student will be familiar with soil fertility evaluation • The student should evaluate the soil elements according to their importance to plants
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417. Teaching and Learning Strategies

Strategy	<ol style="list-style-type: none"> 1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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418. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	The student gets to know growth and the factors affecting it	Fertilizer technology	Explanation, presentation the model and lecture	the exam
the second	5	The student gets to know the types of nutrients	Fertilizer technology	Explanation, presentation the model and lecture	the exam
the third	5	The student recognizes the movement and absorption of elements in the soil	Fertilizer technology	Explanation, presentation the model and lecture	the exam
the fourth	5	The student gets to know the types of elements in the soil	Fertilizer technology	Explanation, presentation the model and lecture	the exam
Fifth	5	The student gets to know the necessary elements	Fertilizer technology	Explanation, presentation the model and lecture	the exam
Sixth	5	The student gets to know the major elements	Fertilizer technology	Explanation, presentation the model and lecture	the exam

				lecture	
Seventh	5	The student gets to know the small elements	Fertilizer technology	Explanation, presentation the model and lecture	the exam
Eighth	5	The student gets to know the useful and encouraging elements for growth	Fertilizer technology	Explanation, presentation the model and lecture	the exam
Ninth	5	For the student to recognize the distinction between elements	Fertilizer technology	Explanation, presentation the model and lecture	the exam
The tenth	5	For the student to get to know Factors affecting the readiness elements	Fertilizer technology	Explanation, presentation the model and lecture	the exam
Eleventh	5	The student gets to know nitrogen and factors	Fertilizer technology	Explanation, presentation the model and lecture	the exam
Twelfth	5	The student gets to know phosphorus, potassium and their factors	Fertilizer technology	Explanation, presentation the model and lecture	the exam
Thirteenth	5	The student gets to know sulfur, calcium, magnesium, and trace elements	Fertilizer technology	Explanation, presentation the model and lecture	the exam
fourteenth	5	The student will be familiar with evaluation of soil fertility	Fertilizer technology	Explanation, presentation the model and lecture	the exam
Fifteenth	5	The student will be familiar with organic matter	Fertilizer technology	Explanation, presentation the model and lecture	the exam

419. Course Evaluation

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

420. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Soil fertility 2014/a. Dr. Nour El-Din Shawky Ali
Main references (sources)	Fertilizer technologies and uses, 2012, Prof. Dr. Nour El-Shawqi Ali
Recommended books and references (scientific)	Iraqi academic scientific journals

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

Course Description Form

421.		Course Name:
Irrigation		
422.		Course Code:
0013304		
423.		Semester / Year:
First semester / THIRD		
424.		Description Preparation Date:
1/9/2025		
425.		Available Attendance Forms:
Actual presence		
426.		Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2 practical units 3		
427.		Course administrator's name (mention all, if more than one name)
Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq		
428.		Course Objectives
Course Objecti	1–It discusses irrigation, the science of irrigation, the tasks of each of them, the sources irrigation, methods of controlling it, and exploiting water resources 2– Researches how to design, plan and implement irrigation facilities 3–Studies how to calculate plant water needs and water consumption. 4– Apply and calculate irrigation efficiency, irrigation interval, and irrigation water depth 5–Study measuring water using different methods 6–Knowledge of traditional irrigation methods and modern irrigation methods and difference between them.	
429.		Teaching and Learning Strategies
Strategy	1-Explanation and clarification 2- Lecture method	

- 3- Student groups
- 4- Practical lessons
- 5- Scientific trips
- 6 - Self-learning method

430. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	4	The concept of irrigation, irrigation in ancient and modern times	Irrigation	Explanation, presentation of model and lecture	the exam
the second	4	Irrigation water sources, irrigation water quality	Irrigation	Explanation, presentation of model and lecture	the exam
the third	4	Soil physical properties associated with irrigation	Irrigation	Explanation, presentation of model and lecture	the exam
the fourth	4	The relationship of water with soil moisture constants, movement of water in the soil, water flow	Irrigation	Explanation, presentation of model and lecture	the exam
Fifth	4	Water measurement	Irrigation	Explanation, presentation of model and lecture	the exam
Sixth	4	Plant water consumption	Irrigation	Explanation, presentation of model and lecture	the exam
Seventh	4	Water requirements and irrigation scheduling	Irrigation	Explanation, presentation of model and lecture	the exam
Eighth	4	Transport and distribution of irrigation water, movement of water in pipes and open channels	Irrigation	Explanation, presentation of model and lecture	the exam
Ninth	4	Design of soil and lined irrigation channels	Irrigation	Explanation, presentation of model and lecture	the exam
The tenth	4	Efficiency, adequacy and consistency of irrigation	Irrigation	Explanation, presentation of model and lecture	the exam
Eleventh	4	Traditional irrigation methods	Irrigation	Explanation, presentation of model and lecture	the exam
Twelfth	4	Modern irrigation methods	Irrigation	Explanation, presentation of model and lecture	the exam
Thirteenth	4	Modern irrigation methods	Irrigation	Explanation,	the exam

		rationalization of water use		presentation of model and lecture	
fourteenth	4	Pumping water and how to calculate pump capacity	Irrigation	Explanation, presentation of model and lecture	the exam
Fifteenth	4		Irrigation	Explanation, presentation of model and lecture	the exam

431. Course Evaluation

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

432. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	<p>1-Irrigation, its basics and applications, written by Dr. Nabil Ibrahim Al-Tayef and Dr. Issam Khudair Hamza Al-Hadithi 1988 Ministry of Higher Education and Scientific Research - University of Baghdad.</p> <p>2-Irrigation and drainage, written by Dr. Laith Khalil Ismail 2000 Ministry of Higher Education and Scientific Research - University of Mosul</p> <p>3- Modern irrigation technologies and other topics in the water issue, written by Dr. Issam Khudair Al-Hadithi, Dr. Ahmad Madloul Al-Kubaisi, and Dr. Yas Khudair Hamza Al-Hadithi 2010, Ministry of Higher Education and Scientific Research - Anbar University</p>
Main references (sources)	<p>1- drainage (investigations, designs, implementation and maintenance). Dr. Mohsen Muhareb Awad Al-Lami and Dr. Al Saleh Abdul-Jabbar Al-Janabi. Iraq . Ministry of Higher Education and Scientific Research. University of Al Mosul .</p> <p>2- Modern irrigation technologies and other topics in the water issue, written by Dr. Issam Khudair Al-Hadithi, Dr. Ahmad Madloul Al-Kubaisi, and Dr. Yas Khudair Hamza Al-Hadithi 2010, Ministry of Higher Education and Scientific Research - Anbar University</p>
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	<p>Referenc Soil Science Society Of America</p> <p>Library Genesis</p>

Course Description Form

433. Course Name:					
Soil morphology					
434. Course Code:					
0013305					
435. Semester / Year:					
First semester / THIRD					
436. Description Preparation Date:					
1/9/2025					
437. Available Attendance Forms:					
Actual presence					
438. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		2 practical		units 3	
439. Course administrator's name (mention all, if more than one name)					
Name: Assistant prof. Ahmed Kazem Fazza Email: ahmad.kadhem@mu.edu.iq					
440. Course Objectives					
Course Objecti	For the student to become familiar with the science of metallurgy. <ul style="list-style-type: none"> • The student should classify soil minerals and methods for distinguishing them • The student should separate the negative and positive effect of minerals on the soil • The student gets to know the depth of the soil and discover it • The student will be able to manage soil according to mineral content 				
441. Teaching and Learning Strategies					
Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method				
442. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluati on

					method
first	4	The student gets to know the concept of morphology	Soil morphology	Explanation, presentation of model and lecture	the exam
the second	4	The student gets to know the horizons		Explanation, presentation of model and lecture	the exam
the third	4	The student gets to know diagnostic soil horizons		Explanation, presentation of model and lecture	the exam
the fourth	4	The student gets to know the soil systems		Explanation, presentation of model and lecture	the exam
Fifth	4	The student gets to know the humidity systems.		Explanation, presentation of model and lecture	the exam
Sixth	4	For the student to become familiar with the methods of morphological description of the soil in question	Soil morphology	Explanation, presentation of model and lecture	the exam
Seventh	4	The student will be familiar with chemical weathering	Soil morphology	Explanation, presentation of model and lecture	the exam
Eighth	4	The student gets to know physical weathering		Explanation, presentation of model and lecture	the exam
Ninth	4	For the student to know the factors of soil formation		Explanation, presentation of model and lecture	the exam
The tenth	4	The student gets to know the processes of soil formation		Explanation, presentation of model and lecture	the exam
Eleventh	4	The student gets to know the nature of processes of soil formation.		Explanation, presentation of model and lecture	the exam
Twelfth	4	For the student to recognize the symbols used with horizons.	Soil morphology	Explanation, presentation of model and lecture	the exam
Thirteenth	4	For the student to become familiar with the morphological description of soil form		Explanation, presentation of model and lecture	the exam
fourteenth	4			Explanation, presentation of model and lecture	the exam
Fifteenth	4			Explanation, presentation of model and lecture	the exam

443. Course Evaluation

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

444. Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	- Soil morphology, Dr. Walid Khaled Al-Akidi - Lectures
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Soil Science Society Of America

445.	. Course Title:
	Design and analysis of agricultural experiments
446.	Course Code
	0C13301
447.	Semester / Year
	Third / autumn
448.	The history of preparation of this description
	1/9/2025
449.	Available Attendance Forms
	Actual attendant
450.	Number of Credit Hours (Total) / Number of Units (Total)
	2 hours theoretical and 3 hours practical Number of units 3
451.	Course administrator's name (if more than one name)
	Name: Prof. Dr. Abdullah Karim Jabbar Email: Abdallah-karm74@mu.edu.iq
452.	Course Objectives
* Introducing the student that there are areas	Course Objectives:

that depend on conducting experiments and these experiments must be designed on scientific bases

- * When analyzing experiments, it is according to scientific methods and logical steps
- * When obtaining accurate results of the experiment leads us to make the appropriate decision
- * Introducing the student to many types of designs, as each experience has a specific design
- * Introduce the student to how to test the morale of each mathematical model
- * Introducing the student that there are tests conducted before the experiment and tests proposed after the experiment
- * Introducing the student that there are values that can be lost during the experiment and can be estimated

453. Teaching and Learning Strategies

Audio methods (teaching explanation of the subject) Blackboard writing style The method of direct dialogue between the teacher and the student with evaluation of the student in the classroom participations	Strategy
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454. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Rapid exam	Lecture	A brief history of statistics, definition of statistics, division of statistics	Theoretical lecture	2	1

Rapid exam	Lecture	Measures of central tendency, measures of concentration	Theoretical lecture	2	2
Rapid exam	Lecture	Dispersion meters	Theoretical lecture	2	3
Rapid exam	Lecture	Hypothesis testing, statistical errors, hypothesis testing-t	Theoretical lecture	2	4
First month exam	Theoretical exam	examination	examination	2	5
Rapid exam	Lecture	Chi-Square Test	Theoretical lecture	2	6
Rapid exam	Lecture	general concepts and definitions in the design and analysis of experiments,	Theoretical lecture	2	7
Rapid exam	Lecture	Types of agricultural experiments, complete random design	Theoretical lecture	2	8
Rapid exam	Lecture	LSD Test	Theoretical lecture	2	9
Second month exam	Theoretical exam	examination	examination	2	10
Rapid exam	Lecture	Design of complete random sectors	Theoretical lecture	2	11
Rapid exam	Lecture	Duncan Test	Theoretical lecture	2	12
Rapid exam	Lecture	Latin Square Design	Theoretical lecture	2	13

Rapid exam	Lecture	Factor experiments	Theoretical lecture	2	14
Rapid exam	Lecture	Factor experiments with two factors	Theoretical lecture	2	15
455. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc					
456. Learning and Teaching Resources					
1- Design and analysis of experiments – Khalaf Allah 2000			Required textbooks (methodology any)		
			Main references (sources)		
- Foreign books specialized in the design and agricultural experiments .			Recommended books and references (scientific journals, reports...)		
Arabic articles issued by academic and professional bodies			Electronic References, Websites		

Course Description Form

457. Course Name:
Soil and water pollution
458. Course Code:
0013306
459. Semester / Year:
First semester / Third
460. Description Preparation Date:
1/9/2025
461. Available Attendance Forms:
Actual presence
462. Number of Credit Hours (Total) / Number of Units (Total)
30 hrs theoretical 45 hrs practical units 3.5

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

Name: Lecturer Dr. Mohammed Abdulridha Naser
 Email : mohammed.naser@mu.edu.iq

464. Course Objectives

Course Objectives	<ul style="list-style-type: none"> • To introduce the student to the concept of soil and water pollution • To introduce the student to the ecosystem and its types. • Introducing the student to pollution – its causes and sources • The student will learn about the cycles of elements and their impact on environmental pollution, then learn about water pollution, including surface and groundwater pollution • To learn about bacterial and viral water pollution, industrial water pollutants and behavior of pesticides in the aquatic environment. • To learn about bacterial and viral water pollution, industrial water pollutants and behavior of pesticides in the aquatic environment.
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465. Teaching and Learning Strategies

Strategy	<ol style="list-style-type: none"> 1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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466. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	4	The student gets to know ecosystem and the definition of pollution, its causes and sources.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
the second	4	The student will be familiar with the cycles of elements (nitrogen, phosphorus, oxygen, carbon, and sulfur)	Soil and water pollution	Explanation, presentation of model and lecture	the exam
the third	4	The student will learn about surface and groundwater pollution and seawater	Soil and water pollution	Explanation, presentation of model and lecture	the exam

		pollution.			
the fourth	4	The student will learn about bacterial, viral, and water pollution in water.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Fifth	4	The student will be familiar with industrial water pollution, battery factories, and fertilizer factories.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Sixth	4	The student gets to know the behavior of pesticides in an aquatic environment, and the behavior of pesticides on living organisms.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Seventh	4	The student will learn about biological pollution, sewage waste, and fertilization behavior in water pollution	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Eighth	4	The student will be familiar with the division of water according to its suitability for different uses	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Ninth	4	The student gets to know biological soil pollution	Soil and water pollution	Explanation, presentation of model and lecture	the exam
The tenth	4	The student will learn about soil contamination with pesticides and the behavior of pesticides	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Eleventh	4	different types of soil, and biodegradation of pesticides in the soil	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Twelfth	4	The student will learn about chemical and natural control of pesticides in the soil and their absorption by plants.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Thirteenth	4	The student will learn about global warming, ozone layer erosion, thermal pollution, and radiological.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
fourteenth	4		Soil and water pollution	Explanation, presentation of model and lecture	the exam
Fifteenth	4		Soil and water pollution	Explanation, presentation of model and lecture	the exam

467. Course Evaluation

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

468. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Environmental pollution, Prof. Dr. Falih Hassan - Prof. Bahaa Abdel-Jabbar
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Main references (sources)	Environmental Pollution Dr. Muhammad Ammar Al-Rawi 198
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Referenc Soil Science Society Of America Internet network

Course Description Form

469. Course Name:	
English Language	
470. Course Code:	
U013301	
471. Semester / Year:	
first semester / The third	
472. Description Preparation Date:	
1/9/2025	
473. Available Attendance Forms:	
Actual presence	
474. Number of Credit Hours (Total) / Number of Units (Total)	
theoretical 2 practical units 1	
475. Course administrator's name (mention all, if more than one name)	
Name: Asst.prof. Dr. Ahmed Merza Abood Email : ahmedme@mu.edu.iq	
476. Course Objectives	
Course Objecti	- Teaching students, the basic concepts related to access to the simple basics of introduction to the English language for students of the College of Agriculture.

	<ul style="list-style-type: none"> - The student gets to know the concept of the English language. - Enabling students to know how to deal with the English language
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477. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> 1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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478. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	It's a wonderful world: <ul style="list-style-type: none"> - Tenses - Auxiliary verbs - Short answers - What's in a word? - Social expressions 	1	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	2	Get happy! <ul style="list-style-type: none"> - Simple or continuous? - Passive - Sport - Numbers and dates 	2	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the third	2	Telling tales: <ul style="list-style-type: none"> - Past tenses - Passive - Art and literature - Giving opinions 	3	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the fourth	2	Doing the right thing: <ul style="list-style-type: none"> - Modal verbs 1 - Obligation and permission - Nationality words - Requests and offers 	4	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	2	On the move: <ul style="list-style-type: none"> - Future forms - The weather - Travelling 	5	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities

					in class
Sixth	2	I just love it: - Like - Verb patterns - Describing food, towns, and people - Signs and sounds	6	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	2	The world of work: - Present perfect active and passive - Phrasal verbs - On the phone	7	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eighth	2	Just imagine! - Conditionals - Time clauses - Base and strong adjectives - Making suggestions	8	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2	Getting on together: - Modal verbs 2 - Probability - Character adjectives - So do I! Neither do I!	9	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

Tenth	2	Obsessions: - Present perfect continuous - Time expressions - Compound nouns - Quantity	10	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	2	Tell me about it! - Indirect questions - Question tags - The body - Informal English	11	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Twelfth	2	Life's great events! - Reported speech - Reporting verbs - Birth, marriage, and death - Saying sorry	12	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Thirteenth	2	Writing: - Correcting mistakes 1 - Letters and emails - A narrative 1 - For and against - Making a reservation - A description 1 - A letter of Application - A narrative 2 - A description 2 - Writing a biography - Words that join ideas - Correcting mistakes 2	1-12	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
fourteenth	2	Pairwork activities: - Practice	1-12	Explanation, presentation of	the exam, Quizzes,

		- Vocabulary - Reading and speaking - Problems		model and lecture	Reports, and activities in class
Fifteenth	2	Reviewing	1-12	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class

479. Course Evaluation

1-Theoretical tests	35
2- Quizzes, Reports, and Class's Activities	15
4- Final exam	50

480. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Intermediate Student's Book: New Headway Plus (John and Soars) Oxford University Press
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic Websites	Internet network

Course Description Form

481. Course Name:	Natural resource economics
482. Course Code:	0C23301
483. Semester / Year:	Second/third
484. Description Preparation Date:	1/9/2025
485. Available Attendance Forms:	Actual attendant
486. Number of Credit Hours (Total) / Number of Units (Total)	60 hrs , 2 units
487. Course administrator's name (mention all, if more than one)	

name)

Name: assistant prof. Dr. sadeq Hadi Hussein

Email: Sadeq.hadi@mu.edu.iq

488. Course Objectives

Course Objectives

- 1- Increase knowledge of natural resource economics.
- 2- Optimal exploitation of natural resources as they are viable resources
- 3- Teaching students the importance of natural resources and their role in the economic development of the country
Developing the student's ability to make people aware that natural resources belong to future generations as well as their current

489. Teaching and Learning Strategies

Strategy

- Active participation in the classroom
- Rapid exams
- Monthly tests are proof of understanding the lecture

490. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Natural resource economics	1- Natural resource economics	Theoretical lecture	Theoretical ex
2	2		2- Land economics		Theoretical ex
3	2		3- Oil		Theoretical ex

4	2	Natural resource economics	4- Water resources	Theoretical lecture	Theoretical ex
5	2		5- Human resources		Theoretical ex
6	2		6- Environment		Theoretical ex
7	2	Natural resource economics	7- Public goods and external factors	Theoretical lecture	Theoretical ex
8	2		8- General expenses		Theoretical ex
9	2	Natural resource economics	9- Public revenues	Theoretical lecture	Theoretical ex
10	2		10- Preserving natural resources		Theoretical ex
11	2		11- Sources of environmental pollution		Theoretical ex
12	2	Natural resource economics	12- Means of preserving natural resources	Theoretical lecture	Theoretical ex

491. Course Evaluation

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

492. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Natural Resource Economics - Hassoun Muhammad Ali Economics of Animal Production - Salem Tawfiq Al-Najafi - Mosul Press
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

493. Course Name:	
Drainage	
494. Course Code:	
0023301	
495. Semester / Year:	
Second / THIRD	
496. Description Preparation Date:	
26\2\2025	
497. Available Attendance Forms:	
Actual presence	
498. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 2 practical units 3	
499. Course administrator's name (mention all, if more than one name)	
Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq	
500. Course Objectives	
Course Objecti	It examines the concept of drainage, the types of drains, the basic purpose of the construction, and the characteristics of the soil related to drainage The relationship of drainage to plant growth and productivity, as well as the patterns distribution of drains networks and the requirements for implementing sewers. Mechanization and maintenance of drains of all kinds.
501. Teaching and Learning Strategies	

Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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502. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	The concept of drainage, the purpose of constructing drains, the relationship between drainage to plant growth and productivity	drainage	Explanation, presentation of model and lecture	the exam
the second	4	Physical soil properties related to drainage	drainage	Explanation, presentation of model and lecture	the exam
the third	4	The hydrological cycle and the location of irrigation and drainage therein	drainage	Explanation, presentation of model and lecture	the exam
the fourth	4	Drainage, soil salinity, leaching requirements and salt balance	drainage	Explanation, presentation of model and lecture	the exam
Fifth	4	Investigations required to establish drains	drainage	Explanation, presentation of model and lecture	the exam
Sixth	4	Water flow in the soil and its relationship to the concept of drainage. Analysis of flow	drainage	Explanation, presentation of model and lecture	the exam
Seventh	4	Measurement of saturated water conductivity	drainage	Explanation, presentation of model and lecture	the exam
Eighth	4	Types of drains, their classification, and the objectives of their establishment	drainage	Explanation, presentation of model and lecture	the exam
Ninth	4	Open drains and covered drains	drainage	Explanation, presentation of model and lecture	the exam
The tenth	4	Incised and vertical drains and design of drains systems	drainage	Explanation, presentation of model and lecture	the exam
Eleventh	4	drain network distribution patterns	drainage	Explanation, presentation of model and lecture	the exam
Twelfth	4	Mechanization of drains and supplies	drainage	Explanation,	the exam

		implementing drains		presentation of model and lecture	
Thirteenth	4	Maintenance of covered drains, methods of cleaning them, causes malfunctions, and processing in drain system	drainage	Explanation, presentation of model and lecture	the exam
fourteenth	4	Maintenance of open drains	drainage	Explanation, presentation of model and lecture	the exam
Fifteenth	4	Designs of open and covered drainage systems and calculation of distance between drains	drainage	Explanation, presentation of model and lecture	the exam

503. Course Evaluation

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

504. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Drainage (investigations, designs, implementation and maintenance). Dr. Mohsen Muhareb Awad Al-Lami and Dr. Al Saleh Abdul-Jabbar Al-Janabi. Iraq . Ministry of High Education and Scientific Research. University of Al Mosul .
Main references (sources)	Field drainage engineering
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Referenc Soil Science Society Of America Library Genesis

Course Description Form

505. Course Name:
Soil minerals
506. Course Code:
0023302
507. Semester / Year:
First / THIRD
508. Description Preparation Date:
26\2\2025
509. Available Attendance Forms:

Actual presence					
510. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		2 practical		units 3	
511. Course administrator's name (mention all, if more than one name)					
Name: Assistant Prof. Ahmed Kazem Fazza Email: Ahmad.kadhem@mu.edu.iq					
512. Course Objectives					
Course Objecti		<ul style="list-style-type: none"> • For the student to become familiar with the science of metallurgy • The student should classify soil minerals and methods for distinguishing them • The student should separate the negative and positive effect of minerals on the soil • The student gets to know the depth of the soil and discover it • The student will be able to manage soil according to mineral content 			
513. Teaching and Learning Strategies					
Strategy		1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method			
514. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluati on method
First	4	The student gets to know the conc of metals	Soil minerals	Explanation, presentation of model and lecture	the exam
the second	4	For the student to know the sou of salts	Soil minerals	Explanation, presentation of model and lecture	the exam
the third	4	The student will be familiar with methods of diagnosing minerals	Soil minerals	Explanation, presentation of model and lecture	the exam

the fourth	4	The student gets to know the type of soil minerals	Soil minerals	Explanation, presentation of model and lecture	the exam
Fifth	4	The student gets to know the behavior of soil minerals	Soil minerals	Explanation, presentation of model and lecture	the exam
Sixth	4	For the student to become familiar with the relevant education section	Soil minerals	Explanation, presentation of model and lecture	the exam
Seventh	4	The student gets to know characteristics of soil minerals	Soil minerals	Explanation, presentation of model and lecture	the exam
Eighth	4	The student will be familiar with metal swelling and shrinkage	Soil minerals	Explanation, presentation of model and lecture	the exam
Ninth	4	For the student to know the effect of minerals on fertility	Soil minerals	Explanation, presentation of model and lecture	the exam
The tenth	4	The student will be familiar with factors determining the quality of irrigation water and the indicators used to determine the quality of irrigation water	Soil minerals	Explanation, presentation of model and lecture	the exam
Eleventh	4	The student will recognize expansion and contracting metals	Soil minerals	Explanation, presentation of model and lecture	the exam
Twelfth	4	The student will learn how to cope with minerals that affect soil properties	Soil minerals	Explanation, presentation of model and lecture	the exam
Thirteenth	4	For the student to become familiar with the problems of limestone soil	Soil minerals	Explanation, presentation of model and lecture	the exam
fourteenth	4		Soil minerals	Explanation, presentation of model and lecture	the exam
Fifteenth	4		Soil minerals	Explanation, presentation of model and lecture	the exam

515. Course Evaluation

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

516. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Soil minerals : prof. Dr. Salman Issa 2-Lectures
Main references (sources)	
Recommended books and references (scientific)	Iraqi academic scientific journals

journals, reports...)		
Electronic Websites	Referenc	Soil minerals

Course Description Form

517.	Course Name:		
	remote sensing		
518.	Course Code:		
	0C23302		
519.	Semester / Year:		
	Second semester/ THIRD		
520.	Description Preparation Date:		
	26\2\2025		
521.	Available Attendance Forms:		
	Actual presence		
522.	Number of Credit Hours (Total) / Number of Units (Total)		
	2 theoretical 2 practical units 3		
523.	Course administrator's name (mention all, if more than one name)		
	Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq		
524.	Course Objectives		
Course Objecti	1- It examines the concept of remote sensing, and the elements and applications of remote sensing 2- Researches the interactions of electromagnetic energy and spectral reflectivity and factors affecting them 3- Knowing the sensors, their types and characteristics, as well as examining aerial and satellite images 4- Studying methods for classifying satellite images 5- The student's knowledge of geographic information systems (GIS) and their uses		
525.	Teaching and Learning Strategies		
Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups		

- 4- Practical lessons
- 5- Scientific trips
- 6 - Self-learning method

526. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	History and target of remote sensing	remote sensing	Explanation, presentation of model and lecture	the exam
the second	4	Electromagnetic energy and parts of the electromagnetic spectrum	remote sensing	Explanation, presentation of model and lecture	the exam
the third	4	Energy interaction with environmental components	remote sensing	Explanation, presentation of model and lecture	the exam
the fourth	4	Spectral reflectivity and factors affecting it	remote sensing	Explanation, presentation of model and lecture	the exam
Fifth	4	Aerial photography and its stages of development	remote sensing	Explanation, presentation of model and lecture	the exam
Sixth	4	Types of aerial photographs and their characteristics	remote sensing	Explanation, presentation of model and lecture	the exam
Seventh	4	Rules for classifying aerial photographs	remote sensing	Explanation, presentation of model and lecture	the exam
Eighth	4	Types of characteristics of satellite platforms	remote sensing	Explanation, presentation of model and lecture	the exam
Ninth	4	Types and characteristics of sensors	remote sensing	Explanation, presentation of model and lecture	the exam
The tenth	4	Types and properties of satellite data	remote sensing	Explanation, presentation of model and lecture	the exam
Eleventh	4	Satellite data sensing	remote sensing	Explanation, presentation of model and lecture	the exam
Twelfth	4	Methods of classifying satellite images	remote sensing	Explanation, presentation of model and lecture	the exam
Thirteenth	4	Remote sensing applications	remote sensing	Explanation, presentation of	the exam

fourteenth	4	Geographic information systems	remote sensing	model and lecture Explanation, presentation of model and lecture	the exam
Fifteenth	4		remote sensing	Explanation, presentation of model and lecture	the exam
527. Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
528. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)		Remote sensing science: Prof. Dr. Ahmed Saleh Al-Mashhadani M.D. Ahmed Madloul. 2014.			
Main references (sources)		Basics of remote sensing (Canada center for remote sensing)			
Recommended books and references (scientific journals, reports...)		Iraqi academic scientific journals			
Electronic Websites		Referenc Google earth .USGS			

Course Description Form

529.	Course Name:
Soil Salinity	
530.	Course Code:
0023303	
531.	Semester / Year:
Second / third	
532.	Description Preparation Date:
26\2\2025	
533.	Available Attendance Forms:
Actual presence	
534.	Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 3 practical units 3	
535.	Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Ghanem. B. Noni
 Email: ghanem-bahlol@mu.edu.iq

536. Course Objectives

Course Objectives	<ul style="list-style-type: none"> • The student gets to know the concept of saline soils • For the student to know the sources of salts • The student gets to know the classification and types of fertilizers and the importance • • For the student to learn about methods of adding fertilizers • • The student should separate the positive and negative aspects of fertilizers and its harm to plants • • For the student to recognize pollution from chemical fertilizers •
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537. Teaching and Learning Strategies

Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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538. Course Structure

Week	Hrs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	The student gets to know the concept of saline soils	Soil Salinity	Explanation, presentation of model and lecture	the exam
the second	5	For the student to know the sources of salts	Soil Salinity	Explanation, presentation of model and lecture	the exam
the third	5	The student will be familiar with the means of transporting salts	Soil Salinity	Explanation, presentation of model and lecture	the exam
the fourth	5	The student will be familiar with the stages of soil salinization	Soil Salinity	Explanation, presentation of model and lecture	the exam
Fifth	5	The student will be familiar with the	Soil Salinity	Explanation,	the exam

		conditions of soil salinization		presentation of model and lecture	
Sixth	5	student gets to know the types of saline and sodic soils	Soil Salinity	Explanation, presentation of model and lecture	the exam
Seventh	5	For the student to recognize the aspects the effect of salinity on plant growth	Soil Salinity	Explanation, presentation of model and lecture	the exam
Eighth	5	The student will be familiar with the indicators for determining the effect of salinity	Soil Salinity	Explanation, presentation of model and lecture	the exam
Ninth	5	The student will be familiar with the means of increasing the ability of plants tolerate salinity	Soil Salinity	Explanation, presentation of model and lecture	the exam
The tenth	5	The student will be familiar with the factors determining the quality of irrigation water and the indicators used determine the quality of irrigation water	Soil Salinity	Explanation, presentation of model and lecture	the exam
Eleventh	5	The student will be familiar with irrigation water classification systems	Soil Salinity	Explanation, presentation of model and lecture	the exam
Twelfth	5	The student will learn how to live with salinity	Soil Salinity	Explanation, presentation of model and lecture	the exam
Thirteenth	5	For the student to become familiar with the problems of limestone soils	Soil Salinity	Explanation, presentation of model and lecture	the exam
fourteenth	5	The student will be familiar with the means of increasing the ability of plants tolerate salinity	Soil Salinity	Explanation, presentation of model and lecture	the exam
Fifteenth	5		Soil Salinity	Explanation, presentation of model and lecture	the exam

539. Course Evaluation

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

540. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Soil salinity. 2012. Dr. Haider Ai-Zoubedi. 2-Lectures
Main references (sources)	
Recommended books and references (scientific)	Iraqi academic scientific journals

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

Course Description Form

541.	Course Name:		
Soil Organic Matter			
542.	Course Code:		
0023304			
543.	Semester / Year:		
First semester / Third			
544.	Description Preparation Date:		
26\2\2025			
545.	Available Attendance Forms:		
Actual presence			
546.	Number of Credit Hours (Total) / Number of Units (Total)		
30 theoretical		45 practical	units 3.5
547.	Course administrator's name (mention all, if more than one name)		
Name: Lecturer Dr. Mohammed Abdulridha Naser Email : mohammed.naser@mu.edu.iq			
548.	Course Objectives		
Course Objecti	<ul style="list-style-type: none"> • Teaching students the basic concepts related to organic matter in the soil and understanding its role in various environmental systems, including agricultural on forests, marshes, and swamps. • Estimating the percentage of organic matter in the soil using various laboratory metho or estimating it in the field and then expressing it quantitatively in kilograms or tons hectare. • Drawing a relative score for the organic carbon balance between the soil and its exte surroundings. • Describe how carbon and nitrogen move under the influence of current agricult methods and the impact of sudden, severe changes such as fires, droughts, and floods. • Measuring the ability of the soil in the short and long term to recover and perform 		

	<p>functions, by knowing the level of microbial mass, the ratio of carbon to nitrogen, and nature of the organic matter,</p> <ul style="list-style-type: none"> • Realizing the agricultural and environmental value of organic matter, • To contribute to improving the general management of organic matter in the soil.
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549. Teaching and Learning Strategies

Strategy	<p>1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method</p>
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550. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	4	Sources of organic matter in soil	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
the second	4	Humus, its origin, definition and properties	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
the third	4	Components of plant waste	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
the fourth	4	Decomposition of organic compounds and formation of humus	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
Fifth	4	Simple organic compounds resulting from the decomposition of organic matter	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
Sixth	4	Carbon cycle in nature	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
Seventh	4	Organic compounds containing nitrogen and their mineralization	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
Eighth	4	Organic compounds containing phosphorus and their mineralization	Soil Organic Matter	Explanation, presentation of	the exam

				model and lecture	
Ninth	4	Sulfur-containing organic compounds and their mineralization	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
The tenth	4	Effect of climate and vegetation on soil organic matter content	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
Eleventh	4	Changes in organic matter in agriculture and the direct effect of organic compounds on higher plants	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
Twelfth	4	The effect of organic matter on soil properties and the relationship between them	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
Thirteenth	4	The C:N ratio, its importance and value in some plants and organisms	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
fourteenth	4	The amount of organic matter and nitrogen in the soil and Some characteristics of organic soil	Soil Organic Matter	Explanation, presentation of model and lecture	the exam
Fifteenth	4	Liquid organic fertilizers	Soil Organic Matter	Explanation, presentation of model and lecture	the exam

551. Course Evaluation

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

552. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Soil organic matter and organic manure Prepared by: Nour El-Din Shawqi Abdel-Wahab Abdel-Razzaq and Qahtan Jamal
Main references (sources)	1. Soil Organic Matter in Sustainable Agriculture (Advances in Agroecology) by Fred Madoff and Ray R. Weil (May 27, 2004). CRC Press; 1 edition. 416 pages. 1- Carbon 2. Soil Organic Matter Characterization. Chapter 3. . Publisher and Nitrogen in the Terrestrial EnvironmentSpringer Netherlands 2008, 81-111.
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Soil Science Society Of America Internet network

Course Description Form

553. Course Name:					
Soil survey and classification					
554. Course Code:					
0013401					
555. Semester / Year:					
First / Fourth					
556. Description Preparation Date:					
26\2\2025					
557. Available Attendance Forms:					
Actual presence					
558. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		2 practical		units 3	
559. Course administrator's name (mention all, if more than one name)					
Name: Assistant Prof. Ahmed Kazem Fazza Email: Ahmad.kadhem@mu.edu.iq					
560. Course Objectives					
Course Objecti		<ul style="list-style-type: none"> • For the student to become familiar with the science of surveying and classification • The student should classify all types of soil • That the student can distinguish soil • The student gets to know the types of classifications in the world • The student will be able to manage soil according to its characteristics 			
561. Teaching and Learning Strategies					
Strategy		1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method			
562. Course Structure					
Week	Hours	Required Learning	Unit or subject	Learning	Evaluati

		Outcomes	name	method	on method
First	4	The student gets to know the concepts of surveying and classification	Soil survey and classification	Explanation, presentation of model and lecture	the exam
the second	4	The student gets to know the types of international categories	Soil survey and classification	Explanation, presentation of model and lecture	the exam
the third	4	For the student to become familiar with classification methods.	Soil survey and classification	Explanation, presentation of model and lecture	the exam
the fourth	4	The student will be familiar with stages of soil classification	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Fifth	4	The student will learn how to conduct soil mineral surveys	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Sixth	4	The student will know how to prepare soil maps.	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Seventh	4	For the student to become familiar with the classification of land uses.	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Eighth	4	The student will be familiar with drawing and preparing soil maps.	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Ninth	4	For the student to become familiar with the modern American system of soil classification.	Soil survey and classification	Explanation, presentation of model and lecture	the exam
The tenth	4	The student gets to know the climate and humidity factors	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Eleventh	4	The student gets to know diagnostic soil horizons	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Twelfth	4	The student will know how to diagnose unidentified soils	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Thirteenth	4	The student gets to know soil types	Soil survey and classification	Explanation, presentation of model and lecture	the exam
fourteenth	4		Soil survey and classification	Explanation, presentation of model and lecture	the exam

Fifteenth	4		Soil survey and classification	Explanation, presentation of model and lecture	the exam
563. Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
564. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)		1-Soil survey and classification, Dr. Ahmed Al-Mashdani			
Main references (sources)					
Recommended books and references (scientific journals, reports...)		Iraqi academic scientific journals			
Electronic Websites		Referenc Soil classification			

Course Description Form

565. Course Name:
Soil maintenance
566. Course Code:
0013402
567. Semester / Year:
Second /fourth
568. Description Preparation Date:
26\2\2025
569. Available Attendance Forms:
Actual presence
570. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 3 practical units 3
571. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof Mustafa Abed Manshood Email: Mustafa.manshood@mu.edu.iq
572. Course Objectives

Course Objecti	<ul style="list-style-type: none"> • Understanding the development tools for soil conservation for optimal exploitation of land and water and their relationship to erosion, t knowing the effects resulting from them. • And ways to process it for the purpose of use and management
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573. Teaching and Learning Strategies

Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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574. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Introduction to soil and water conservation, its concept and importance, the relationship soil conservation to other topics, Factors affecting soil formation goals and principles, soil maintenance * Rain data analysis	Soil maintenance	Explanation, presentation of model and lecture	the exam
the second	5	Clouds and rain *Calculate the maximum infiltration rate and use the basic water relations device	Soil maintenance	Explanation, presentation of model and lecture	the exam
the third	5	Al-Sayh *Applications based the general equation of soil losses	Soil maintenance	Explanation, presentation of model and lecture	the exam
the fourth	5	Geological erosion *Calculating the general equation factors for soil loss in the field	Soil maintenance	Explanation, presentation of model and lecture	the exam
Fifth	5	Water erosion, its types, the mechanics of its occurrence, and how to control it *Estimate the amounts of water erosion in the field using general equation for water erosion	Soil maintenance	Explanation, presentation of model and lecture	the exam
Sixth	5	T Soil conservation methods, general soil loss equation	Soil maintenance	Explanation, presentation of	the exam

		* Conducting terrace designs		model and lecture	
Seventh	5	Wind erosion *Field observations on soil and water management procedures	Soil maintenance	Explanation, presentation of model and lecture	the exam
Eighth	5	Controlling wind erosion *A visit to a weather station Samawah	Soil maintenance	Explanation, presentation of model and lecture	the exam
Ninth	5	Contour farming, strip and terrace farming *The concept of positivity and its applications	Soil maintenance	Explanation, presentation of model and lecture	the exam
The tenth	5	The nature of land use and its role in soil maintenance *Calculating the amount leachate in the field	Soil maintenance	Explanation, presentation of model and lecture	the exam
Eleventh	5	Good ways to use land and conserve soil and water *Observations of wind erosion	Soil maintenance	Explanation, presentation of model and lecture	the exam
Twelfth	5	For the student to become familiar with the conditions of the lands and soil of Iraq, the types of problems, and how to manage them Practical applications on land valuation methods	Soil maintenance	Explanation, presentation of model and lecture	the exam
Thirteenth			Soil maintenance	Explanation, presentation of model and lecture	the exam
fourteenth			Soil maintenance	Explanation, presentation of model and lecture	the exam
Fifteenth			Soil maintenance	Explanation, presentation of model and lecture	the exam

575. Course Evaluation

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

576. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	<p>1-Al-Latif, Nabil Ibrahim 1991. Soil and water conservation. Ministry of Higher Education and Scientific Research. Baghdad University</p> <p>-2• Ismail, Laith Khalil, 1985. Soil Conservation. Ministry of Higher Education and Scientific Research. University of Al Mosul. Nineveh. translator.</p> <p>-3 Al-Ani, Abdel Fattah Abdullah, 1987. Soil conservation. Ministry of Higher Education and Scientific Research. Technical Institutes Foundation. Baghdad.</p> <p>-4 Fahd, Ali Abd. 1984. Soil and Water Conservation</p>
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	Engineering. Ministry of Higher Education and Scientific Research. Baghdad University. Baghdad. translator.
Main references (sources)	Articles on land conservation - Dr. Khaled Hassan Al-Khalid Arab Republic of Egypt - 2007
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Referenc

Course Description Form

577. Course Name:	
Soil microbiology	
578. Course Code:	
0013403	
579. Semester / Year:	
First / Fourth	
580. Description Preparation Date:	
26\2\2025	
581. Available Attendance Forms:	
Actual presence	
582. Number of Credit Hours (Total) / Number of Units (Total)	
30 theoretical 45 practical units 3	
583. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Ghanem. B. Noni Email: ghanem-bahlol@mu.edu.iq	
584. Course Objectives	
Course Objecti	<ul style="list-style-type: none"> • The student gets to know the classification and types of Soil microbiology and their importance • For the student to learn about methods of Soil microbiology • For the student to recognize method of Soil microbiology • • The student should evaluate Soil microbiology
585. Teaching and Learning Strategies	
Strategy	1-Explanation and clarification 2- Lecture method

- 3- Student groups
- 4- Practical lessons
- 5- Scientific trips
- 6 - Self-learning method

586. Course Structure

Week	H ou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
First	2	Historical overview, definition, and	Soil Microbiology	Explanation, presentation of model and lecture	the exam
the second	2	importance of studying soil microbiology Sections of soil microbiology	Soil Microbiology	Explanation, presentation of model and lecture	the exam
the third	2	Soil microbial groups: bacteria, fungi, algae, actinomycetes, archaea, mycorrhizae.	Soil Microbiology	Explanation, presentation of model and lecture	the exam
the fourth	2	Organic matter: carbon cycle, enzymatic activity in soil	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Fifth	2	Biotransformations of N, nitrogen cycle, urea decomposition, nitrification process, mineralization and assimilation, C/N ratio	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Sixth	2	Biological nitrogen fixation	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Seventh	2	Biological transformations of phosphorus its cycle and the role of microorganisms its transformations	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Eighth	2	Biological transformations of phosphorus its cycle and the role of microorganisms its transformations	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Ninth	2	Biological transformations of sulfur sulfur cycle, mineralization, microbial metabolism, oxidation, and reduction of inorganic sulfur compounds.	Soil Microbiology	Explanation, presentation of model and lecture	the exam
The tenth	2	Biotransformations of iron: oxidation, reduction, and decomposition of organic iron compounds	Soil Microbiology	Explanation, presentation of model and lecture	the exam

Eleventh	2	Biotransformations of iron: oxidation, reduction, and decomposition of organic iron compounds	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Twelfth	2	Decomposition of pesticides in soil	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Thirteenth	2	Relationships between microorganisms in the area surrounding the root (rhizosphere) and the activity of microorganisms in this area Factors affecting the growth of	Soil Microbiology	Explanation, presentation of model and lecture	the exam
fourteenth	2	microorganisms, growth of microorganisms	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Fifteenth	2	Factors affecting the growth of microorganisms, growth of microorganisms	Soil Microbiology	Explanation, presentation of model and lecture	the exam

587. Course Evaluation

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

588. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Soil Microbiology, Dr. Ghayath Muhammad Al-Sourji 2-Lectures
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Referenc Soil Micrology

Course Description Form

589. Course Name:
Plant Nutrition
590. Course Code:

0013404					
591. Semester / Year:					
First / fourth					
592. Description Preparation Date:					
26\2\2025					
593. Available Attendance Forms:					
Actual presence					
594. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		3 practical		units 3	
595. Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Falah Hasan Issa Email: flah70-hasan@mu.edu.iq					
596. Course Objectives					
Course Objecti	<ul style="list-style-type: none"> • • The student gets to know Plant Nutriti0n • • The student should classify Nutrient elements • • The student should detail the benefits and harms of elements factors such as Macro and Micro elements • • The student should know about nutrient solution • 				
597. Teaching and Learning Strategies					
Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method				
598. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluati on method

First	5	Definition of plant nutrient conditions for the nutrient and importance.	Plant Nutrition	Explanation, presentation of model and lecture	the exam
the second	5	Distribution of nutrients according to their concentrations, physiological functions and factors affecting them	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
the third	5	Organic matter: its definition, types and conditions for its decomposition	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
the fourth	5	Foliar fertilization	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
Fifth	5	Factor determining plant growth	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
Sixth	5	Soilless agriculture: its definition, importance, and historical overview	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
Seventh	5	Types of soilless agriculture and advantages of each	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
Eighth	5	Preparing the nutrient solution	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
Ninth	5	Magnet technology: its definition, types, importance and disadvantages	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
The tenth	5	Ionic antagonism	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
Eleventh	5	The effect of macro elements on plants	Plant Nutrition	Explanation, presentation of the model and lecture	the exam
Twelfth	5	The effect of micro elements on plants	Plant Nutrition	Explanation, presentation of the model and lecture	the exam

599. Course Evaluation

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

600. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Plant Nutrition. 2014. Part 1 .Dr.NoorAldien Shawqi 2- Plant Nutrition. 2014. Part 2 .Dr.NoorAldien Shawqi
Main references (sources)	Plant Nutrition
Recommended books and references (scientific)	Iraqi academic scientific journals

journals, reports...)	
Electronic Websites	Referenc Plant Nutrition Journal .

Course Description Form

601. Course Name:	
Hydrology	
602. Course Code:	
0013405	
603. Semester / Year:	
First / fourth	
604. Description Preparation Date:	
1/9/2025	
605. Available Attendance Forms:	
Actual attendant	
606. Number of Credit Hours (Total) / Number of Units (Total)	
60 hrs theoretical	45 hrs practical units 3.5
607. Course administrator's name (mention all, if more than one name)	
Name: Assistant Prof. Dr. Qassim A. Talib Alshujairy Email: qassimtalib@mu.edu.iq	
608. Course Objectives	
Course Objectives	The objectives of a hydrology course are to provide students with a comprehensive understanding of the principles and processes related to the distribution, movement, and properties of water on Earth.
609. Teaching and Learning Strategies	
Strategy	Lectures: Traditional classroom lectures are often used to present fundamental concepts, theories, and principles of hydrology. Lectures provide an opportunity for instructors to convey information, discuss theoretical frameworks, and highlight key concepts. Laboratory Work: Hands-on laboratory sessions allow students to apply theoretical knowledge to practical situations. In hydrology courses, students may engage in activities such as water quality testing, flow measurements, and experiments related to hydrological processes. Fieldwork: Field trips or fieldwork exercises provide students with direct exposure to real-world hydrological environments. This could include visits to watersheds, rivers, lakes, or groundwater monitoring sites to observe and analyze hydrological features and processes.

610. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Hydrology	1. Understanding the Water Cycle	Theoretical Lecture	Theoretical exam
2	2		2. Watershed Analysis		
3	2		3. Quantifying Precipitation and Runoff		
4	2		4. Groundwater Hydrology		
5	2		5. Hydrological Modeling		
6	2		6. Hydrological Data Collection		
7	2		7. Water Quality		
8	2		8. Climate Change and Hydrology		
9	2		9. Water Resource Management		
10	2		10. Hydrological Engineering		
11	2		11. Environmental Impact Assessment		
611. 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					
612. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Applied Hydrology Ray K. lensley et.al New York, USA		
Main references (sources)					
Recommended books and references (scientific journals, reports...)			International Journal of Hydrology Science and Technology		
Electronic References, Websites					

Course Description Form

613.		Course Name:
English Language		
614.		Course Code:
U013401		
615.		Semester / Year:
first semester / The fourth		
616.		Description Preparation Date:
26\2\2025		
617.		Available Attendance Forms:
Actual presence		
618.		Number of Credit Hours (Total) / Number of Units (Total)
theoretical 2 practical units 1		
619.		Course administrator's name (mention all, if more than one name)
Name: Asst.prof. Dr. Ahmed Merza Abood Email : ahmedme@mu.edu.iq		
620.		Course Objectives
Course Objecti	<ul style="list-style-type: none"> - Teaching students, the basic concepts related to access to the simple basics of introduction to the English language for students of the College of Agriculture. - The student gets to know the concept of the English language. - Enabling students to know how to deal with the English language 	
621.		Teaching and Learning Strategies
Strategy	<ul style="list-style-type: none"> 1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method 	

622. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	No place like home: - The tense system - Informal language - Compound words - Social expression	1	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
the second	2	Been there, done that! - Present perfect - Simple and continuous - Hot verbs-make, do - Exclamations	2	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the third	2	What a story! - Narrative tenses - Writing narratives - Vocabulary and speaking - Everyday English	3	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
the fourth	2	Nothing but the truth: - Questions and negatives - Prefixes and antonyms - Being polite	4	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Fifth	2	An eye to the future: - Future forms - Hot verbs-take, put - Telephoning	5	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Sixth	2	Making it big: - Expressions of quantity - 'export and ex'port - Business expressions and numbers	6	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	2	Getting on together: - Modals and related verbs 1 - Hot verb get - Exaggeration and understatement	7	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eighth	2	Going to extremes: - Relative clauses - Participles - Adverb collocations - The world around	8	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2	Things ain't what they used to be! - Expressing habit - Used to do/doing	9	Explanation, presentation of model and lecture	the exam, Quizzes, Reports,

		<ul style="list-style-type: none"> - Homonyms/Homophones - Making your point 			and activities in class
Tenth	2	Risking life and limb: <ul style="list-style-type: none"> - Modal auxiliary verbs 2 - Synonyms - Metaphors and idioms-the body 	10	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eleventh	2	In your dreams: <ul style="list-style-type: none"> - Hypothesizing - Expressions with if - Word pairs - Moans and groans 	11	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Twelfth	2	It's never too late: <ul style="list-style-type: none"> - Articles - Determiners - Hot words-life, time - Linking and commenting 	12	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Thirteenth	2	Writing: <ul style="list-style-type: none"> - Applying for a job-a CV and a covering letter - Informal Letters-correcting mistakes - Narrative writing 1 - Linking ideas - Emailing friends - Report writing- a consumer survey - Arguing your case-for and against - Describing places-my favourite part of town - Writing for talking -what I want to talk about is ... - Formal and informal letters and emails-do's and don'ts - Narrative writing 2 - Adding emphasis in writing 	1-12	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
fourteenth	2	Extra material: <ul style="list-style-type: none"> - Everyday English - Practice (Exchanging information) - Speaking and listening (dream come true) - Practice (news and responses) - Everyday English (roleplay) - Practice (Quiztime!) - Vocabulary and pronunciation - The pace of life 	1-12	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Fifteenth	2	Reviewing	1-12	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class

623. Course Evaluation

1-Theoretical tests

35

2- Quizzes, Reports, and Class's Activities	15
4- Final exam	50
624. Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	Upper-Intermediate Student's Book: New Headway Plus (John and Liz Soars) Oxford University Press
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic Websites	Internet network

Course Description Form

625. Course Name:		
	Modern irrigation technology	
626. Course Code:		
	0013407	
627. Semester / Year:		
	First semester / Fourth	
628. Description Preparation Date:		
	26\2\2025	
629. Available Attendance Forms:		
	Actual presence	
630. Number of Credit Hours (Total) / Number of Units (Total)		
	2 theoretical	2 practical units 3
631. Course administrator's name (mention all, if more than one name)		
	Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq	
632. Course Objectives		
Course Objecti	1- Researches the concept of modern irrigation systems technologies. 2- Researches ancient and modern irrigation technologies and the difference between them.	

	<p>3- The student evaluates the cost of maintaining irrigation and drainage projects.</p> <p>4- The student's knowledge of the philosophy of modern irrigation technologies.</p> <p>5- Study the components of modern irrigation systems and methods of maintaining them</p> <p>6- Introducing the student to the importance of rationalizing water consumption and water harvesting.</p>
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633. Teaching and Learning Strategies

Strategy	<p>1-Explanation and clarification</p> <p>2- Lecture method</p> <p>3- Student groups</p> <p>4- Practical lessons</p> <p>5- Scientific trips</p> <p>6 - Self-learning method</p>
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634. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	4	Introduction, irrigation network basics of irrigation system design	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
the second	4	Design factors, water consumption, irrigation interval, and irrigation depth	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
the third	4	Surface irrigation. Surface irrigation mechanism, water balance irrigation	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
the fourth	4	Strip irrigation, design assumptions and determinants, rate and depth flow.	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Fifth	4	Line irrigation, considerations and assumptions	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Sixth	4	Philosophy of modern irrigation technologies, water requirements under modern irrigation systems	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Seventh	4	Sprinkler irrigation, components of the sprinkler irrigation system, types of sprinkler irrigation systems	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Eighth	4	Uniformity of spray water distribution, overlapping spray patterns, consistency coefficient water distribution under sprinklers	Modern irrigation technology	Explanation, presentation of model and lecture	the exam

Ninth	4	Hydraulics of flow in pipes, permissible change in pressure	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
The tenth	4	Drip irrigation, the main parts of drip irrigation system, drippers	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Eleventh	4	Hydraulic drippers, wet area	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Twelfth	4	Design water requirement for drip irrigation,	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Thirteenth	4	Advantages and disadvantages of sprinkler and drip irrigation. Maintaining the sprinkler and drip irrigation system	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
fourteenth	4	Center pivot irrigation, components, advantages and disadvantages, types and characteristics of the sprinkler package used to distribute water	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Fifteenth	4	Rationalization of water consumption, water harvesting and its importance	Modern irrigation technology	Explanation, presentation of model and lecture	the exam

635. Course Evaluation

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

636. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	<p>1-Modern irrigation technologies and other topics in the water -issue, written by Dr. Issam Khudair Al-Hadithi, Dr. Ahmed Madloul Al-Kubaisi, and Dr. Yas Khudair Al-Hadithi, 2010. Ministry of Higher Education and Scientific Research. Anbar University.</p> <p>2- Field Irrigation Systems Engineering 1992, written by Dr. Ahmed Youssef Hajim and Haqqi Ismail Yassin. Ministry of Higher Education and Scientific Research, University of Mosul College of Engineering.</p>
Main references (sources)	<p>1-Field Irrigation Systems Engineering 1992, written by Dr. Ahmed Youssef Hajim and Haqqi Ismail Yassin. Ministry of Higher Education and Scientific Research, University of Mosul College of Engineering.</p> <p>2- Irrigation, its basics and applications, written by Dr. Naqib Ibrahim Al-Taif and Dr. Issam Khudair Al-Hadithi 1998. Ministry of Higher Education and Scientific Research, University of Baghdad.</p>
Recommended books and	Iraqi academic scientific journals

references (scientific journals, reports...)	
Electronic Websites	Referenc Soil Science Society Of America Library Genesis

Course Description Form

637. Course Name:	
Fertilizer technology	
638. Course Code:	
0023401	
639. Semester / Year:	
Second semester / Fourth	
640. Description Preparation Date:	
26\2\2025	
641. Available Attendance Forms:	
Actual presence	
642. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 2 practical units 3	
643. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Hanoon N. Kadhem Email: reda@mu.edu.iq	
644. Course Objectives	
Course Objecti	<ul style="list-style-type: none"> • The student gets to know the classification and types of fertilizers and the importance • • For the student to learn about methods of adding fertilizers • • The student should separate the positive and negative aspects of fertilize and its harm to plants • • For the student to recognize pollution from chemical fertilizers • • The student should evaluate soil fertility •
645. Teaching and Learning Strategies	
Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons

5- Scientific trips
6 - Self-learning method

646. Course Structure

Week	H ou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
First	2	Fertilizers, their types and classification (fertilizers concepts).	Fertilizer technology	Explanation, presentation of model and lecture	the exam
the second	2	Mineral fertilizers: Nitrogen fertilizers their types and behavior in the soil and their manufacture	Fertilizer technology	Explanation, presentation of model and lecture	the exam
the third	2	Phosphate fertilizers, their types and behavior in soil, and manufacturing	Fertilizer technology	Explanation, presentation of model and lecture	the exam
the fourth	2	Potassium fertilizers, their types and their behavior in the soil and their manufacture/Sulphur, calcium and magnesium fertilizers Sulfat, calcium and magnesium fertilizers	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Fifth	2	Its types, behavior in soil and production	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Sixth	2	Micronutrient Fertilizers, their types and behavior in soil, and manufacturing	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Seventh	2	Organic fertilizers (types and methods of preparation) Organic fertilizers	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Eighth	2	Biofertilizers, their preparation and methods of adding them	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Ninth	2	Liquid fertilizers and methods of preparing them	Fertilizer technology	Explanation, presentation of model and lecture	the exam
The tenth	2	Nano fertilizers (types and methods of preparation) Nano fertilizers	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Eleventh	2	Fertilizers Evaluation, Mixing and manufacturing	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Twelfth	2	Analytical Fertilizer analysis and evaluation/environmental problems associated with the use of fertilizers (pollution).	Fertilizer technology	Explanation, presentation of model and lecture	the exam

Thirteenth	2	Economics of using fertilizers	Fertilizer technology	Explanation, presentation of model and lecture	the exam
fourteenth	2	Techniques of using chemical fertilizers in Iraqi agriculture	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Fifteenth	2	Fertilizers - type of irrigation systems and types of fertilizers that can be added The movement of fertilizer and elements in the soil and their impact on plant growth	Fertilizer technology	Explanation, presentation of model and lecture	the exam

647. Course Evaluation

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

648. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	11- Fertilizer Technologies. 2012. Dr. Nour El-Din Shawqi Ali.
Main references (sources)	1- Soil fertility. 2014. Dr. Nour El-Din Shawky Ali Dr. hamd all Suleiman 2- Soil Fertility 1988 Dr. Kazem Mashhout Awad
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Soil Science Society Of America Library Genesis

Course Description Form

649. Course Name:	Land reclamation
650. Course Code:	0023402
651. Semester / Year:	Second / fourth
652. Description Preparation Date:	26\2\2025
653. Available Attendance Forms:	Actual presence

654. Number of Credit Hours (Total) / Number of Units (Total)		
2 theoretical	2 practical	units 3

655. Course administrator's name (mention all, if more than one name)		
Name: Prof. Dr. Ghanem. B. Noni Email: ghanem-bahlol@mu.edu.iq		

656. Course Objectives		
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Course Objecti	•	
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657. Teaching and Learning Strategies		
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Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method	
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658. Course Structure					
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Week	H ou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
First	4	The student gets to know the concept of saline soils	Land Reclamation	Explanation, presentation of model and lecture	the exam
the second	4	For the student to know the sources of salts	Land Reclamation	Explanation, presentation of model and lecture	the exam
the third	4	The student will be familiar with the means transporting salts	Land Reclamation	Explanation, presentation of model and lecture	the exam
the fourth	4	The student will be familiar with the stages of salinization	Land Reclamation	Explanation, presentation of model and lecture	the exam
Fifth	4	The student will be familiar with the conditions of soil salinization	Land Reclamation	Explanation, presentation of model and lecture	the exam
Sixth	4	The student gets to know the types of saline sodic soils	Land Reclamation	Explanation, presentation of model and lecture	the exam
Seventh	4	Identify the aspects of the effect of salinity on p	Land	Explanation,	the exam

		growth	Reclamation	presentation of model and lecture	
Eighth	4	Indicators for determining the effect of salinity	Land Reclamation	Explanation, presentation of model and lecture	the exam
Ninth	4	Identify ways to increase the ability of plants to tolerate salinity	Land Reclamation	Explanation, presentation of model and lecture	the exam
The tenth	4	Factors determining irrigation water quality indicators used to determine irrigation water quality	Land Reclamation	Explanation, presentation of model and lecture	the exam
Eleventh	4	The student will be familiar with irrigation water classification systems	Land Reclamation	Explanation, presentation of model and lecture	the exam
Twelfth	4	The student will learn how to live with salinity	Land Reclamation	Explanation, presentation of model and lecture	the exam
Thirteenth	4	For the student to become familiar with problems of limestone soils	Land Reclamation	Explanation, presentation of model and lecture	the exam
fourteenth	4			Explanation, presentation of model and lecture	the exam
Fifteenth	4			Explanation, presentation of model and lecture	the exam

659. Course Evaluation

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

660. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Land Reclamation Dr. Hadi Hassan
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Soil Science Society Of America Library Genesis

Course Description Form

661. Course Name:

Soil management					
662. Course Code:					
0023403					
663. Semester / Year:					
Second / Fourth					
664. Description Preparation Date:					
26\2\2025					
665. Available Attendance Forms:					
Actual presence					
666. Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		2 practical		units 3	
667. Course administrator's name (mention all, if more than one name)					
Name: Assistant Prof Mustafa Abed Manshood					
Email: Mustafa.manshood@mu.edu.iq					
668. Course Objectives					
Course Objecti		<ul style="list-style-type: none"> • The student gets to know the introduction to the concept and objecti of educational management • Understanding the development tools for soil conservation for opti exploitation of land and water and their relationship to erosion, t knowing the effects resulting from them. • And ways to process it for the purpose of use and management 			
669. Teaching and Learning Strategies					
Strategy		1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method			
670. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method

First	5	The student gets to know introduction to the concept and objectives of educational management	Soil management	Explanation, presentation of model and lecture	the exam
the second	5	For the student to recognize importance of classifying soil its management, classification and level of series	Soil management	Explanation, presentation of model and lecture	the exam
the third	5	Soil surveying tasks in the management, methods measuring areas on land and the map, choosing important drawing standards.	Soil management	Explanation, presentation of model and lecture	the exam
the fourth	5	The student will be familiar with the sample and inspection for the purposes of administration and scientific research, and the rules of collecting samples and for agricultural purposes	Soil management	Explanation, presentation of model and lecture	the exam
Fifth	5	The student will know classification of lands agricultural and other purposes, and how to use soil survey reports and maps in soil management	Soil management	Explanation, presentation of model and lecture	the exam
Sixth	5	The student gets to know quality of lands and their relationship to production, and the link between the map and the classification unit, and management unit in the formation of farm fields.	Soil management	Explanation, presentation of model and lecture	the exam
Seventh	5	The student will be familiar with land use evaluation How to use soil survey reports and maps in soil management	Soil management	Explanation, presentation of model and lecture	the exam
Eighth	5	For the student to become familiar with the conditions of the lands and soil of Iraq, the types of problems, and how to manage them Practical applications on land valuation methods	Soil management	Explanation, presentation of model and lecture	the exam
Ninth	5	The student will be familiar with diagnosing soil and land problems at the farm level Systematic diagnosis of soil problems on the farm Drawing a map of pedagogical and ideological problems	Soil management	Explanation, presentation of model and lecture	the exam
The tenth	5	The student should become familiar with agricultural	Soil management	Explanation, presentation of	the exam

		planning and the administrative program that the specialist must present to the employer Preparing the administrative map (an attempt at application)		model and lecture	
Eleventh	5	Good ways to use land and conserve soil and water *Observations of wind erosion	Soil management	Explanation, presentation of model and lecture	the exam
Twelfth	5	The student gets to know desertification, its types and causes	Soil management	Explanation, presentation of model and lecture	the exam
Thirteenth			Soil management	Explanation, presentation of model and lecture	the exam
fourteenth			Soil management	Explanation, presentation of model and lecture	the exam
Fifteenth			Soil management	Explanation, presentation of model and lecture	the exam

671. Course Evaluation

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

672. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1- Soil and Land Use Management, 1990, Dr. Walid Khaled Hassan Al-Akidi. 2- Soil management in planning and land use, 1999
Main references (sources)	Soil and land use management
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Referenc /www.iraqwho.com › About_TheLand_So

Course Description Form

673. Course Name:					
Soil-Plant-Water Relationship					
674. Course Code:					
0023404					
675. Semester / Year:					
Second semester / fourth					
676. Description Preparation Date:					
1/9/2025					
677. Available Attendance Forms:					
Actual attendant					
678. Number of Credit Hours (Total) / Number of Units (Total)					
60 hrs Theoretical + 45 hrs practical 3>5 units					
679. Course administrator's name (mention all, if more than one name)					
Name: Qassim A. Talib Alshujairy Email: qassimtalib@mu.edu.iq					
680. Course Objectives					
Course Objectives			The objectives of study Soil-Plant-Water course are to provide students with a comprehensive understanding of the relationships between soil, water, and plants		
681. Teaching and Learning Strategies					
Strategy		The strategies for a course on soil-plant-water interactions often involve a combination of theoretical knowledge, practical applications, and field experiences			
682. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			1. Understanding Soil Properties: 2. Soil-Water Movement: 3. Plant-Water Relations: 4. Soil-Water-Plant Interactions: 5. Irrigation and Water Management: 6. Soil and Water Conservation: 7. Soil-Water Quality: 8. Sustainable		

	<ul style="list-style-type: none"> • For the student to know the resources of Desertification • The student should separate the positive and negative aspects of fertilizer and its harm to plants •
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693. Teaching and Learning Strategies

Strategy	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
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694. Course Structure

Week	H ou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
First	5	The student gets to know the concept of Desertification	Desertification	Explanation, presentation of model and lecture	the exam
the second	5	For the student to know the resources of Desertification	Desertification	Explanation, presentation of model and lecture	the exam
the third	5	The student will be familiar with the means of SGS	Desertification	Explanation, presentation of model and lecture	the exam
the fourth	5	The student will be familiar with the stages of Desertification	Desertification	Explanation, presentation of model and lecture	the exam
Fifth	5	The student will be familiar with the conditions of soil Desertification	Desertification	Explanation, presentation of model and lecture	the exam
Sixth	5	student gets to know the types of Desertification	Desertification	Explanation, presentation of model and lecture	the exam
Seventh	5	For the student to recognize the aspects of the effect of Desertification	Desertification	Explanation, presentation of model and lecture	the exam

Eighth	5	The student will be familiar with the indicators for determining the effect of Desertification	Desertificati	Explanation, presentation of model and lecture	the exam
Ninth	5	The student will be familiar with the mea of increasing the ability of plants to tolera Desertification	Desertificati	Explanation, presentation of model and lecture	the exam
The tenth	5	The student will be familiar with the facto determining the quality of irrigation water and the indicators used to determine the quality of irrigation water	Desertificati	Explanation, presentation of model and lecture	the exam
Eleventh	5	The student will be familiar with irrigatio water classification systems	Desertificati	Explanation, presentation of model and lecture	the exam
Twelfth	5	The student will learn how to live with Desertefication	desertificati	Explanation, presentation of model and lecture	the exam
Thirteenth	5	For the student to become familiar with problems of limestone soils	Deserificati	Explanation, presentation of model and lecture	the exam
fourteenth	5	The student will be familiar with the mea of increasing the ability of plants to tolera Desertification	Deserteficat	Explanation, presentation of model and lecture	the exam
Fifteenth	5			Explanation, presentation of model and lecture	the exam

695. Course Evaluation

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

696. Learning and Teaching Resources

Required textbooks (curricu books, if any)	1- Desertification. Desertification in iraq.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Soil Science Society Of America Library Genesis

Course Description Form

697. Course Name:

sustainable development	
698.	Course Code:
U023401	
Semester / Year:	
699.	
Second semester / fourth	
700.	Description Preparation Date:
1/9/2025	
701.	Available Attendance Forms:
Actual presence	
702.	Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 0 practical units 2	
703.	Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. raheem alwan halool	
Email: Rahim_alwan@mu.edu.iq	
704.	Course Objectives
Course Objectives	<p>For the student to know the types of sustainable development</p> <ul style="list-style-type: none"> • The student should classify sustainable development and its benefits to the environment • The student should detail the harms of environmental pollution • The student learns how to enhance the natural vital aspect • The student should evaluate the scientific reality to maintain a sustainable environment •
705.	Teaching and Learning Strategies
Strategy	1- Explanation and clarification

- 2- Lecture method
- 3- Student groups
- 4- Practical lessons
- 5- Scientific trips
- 6 - Self-learning method

706. Course Structure

Week	Hou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluati on method
The first	5	The student gets to know the ecosystems of sustainable agriculture	Sustainable development	Explanation, presentation of the model and lecture	the exam
The second	5	is for the student to become familiar with the use of renewable resources	Sustainable development		
Third	5	The student learns about reducing toxic substances in the environment	Sustainable development	Explanation, presentation of the model and lecture	the exam

Fourth	5	The student gets to know soil conservation	Sustainable development	Explanation, presentation of the model and lecture	the exam
Fifth	5	: The student learns about water conservation	Sustainable development	Explanation, presentation of the model and lecture	the exam
Sixth	5	: The student learns about energy conservation	Sustainable development	Explanation, presentation of the model and lecture	the exam
Seventh	5	: The student gets to know the preservation of seeds and seeds	Sustainable development	Explanation, presentation of the model and lecture	the exam
Eighth	5	The student gets to know capital in the sustainable agricultural system	Sustainable development	Explanation, presentation of the model and lecture	the exam

Ninth	5	The student gets to know the management of the animal and plant ecosystem	Sustainable development	Explanation, presentation of the model and lecture	the exam
Tenth	5	: The student will learn about enhancing and preserving natural life	Sustainable development	Explanation, presentation of the model and lecture	the exam
Eleventh	5	The student gets to know Recycling and preserving items	Sustainable development	Explanation, presentation of the model and lecture	the exam
Twelfth		The student gets to know the economics of natural resources			the exam
hirteenth	5	: The student knows how to manage human capital	Sustainable development	Explanation, presentation of the model and lecture	the exam

Fourteenth	5	: The student gets to know sustainable agriculture	Sustainable development	Explanation, presentation of the model and lecture	the exam
Fifteenth	5	The student gets to know the types of sustainable natural energy	Sustainable development	Explanation, presentation of the model and lecture	the exam

707. Course Evaluation

Theoretical tests 40

2- Practical tests -

3- Reports and studies 10

4- Final exam 50

708. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic References, Websites	Soil Science Society Of America Library Genesis

Course Description Form

709.	Course Name:		
Professional ethics			
710.	Course Code:		
U023402			
711.	Semester / Year:		
First / fourth			
712.	Description Preparation Date:		
26\2\2025			
713.	Available Attendance Forms:		
Actual presence			
714.	Number of Credit Hours (Total) / Number of Units (Total)		
60 hrs theoretical		units 2	
715.	Course administrator's name (mention all, if more than one name)		
Name: Prof. Dr. Falah Hasan Issa Email: flah70-hasan@mu.edu.iq			
716.	Course Objectives		
Course Objecti		<ul style="list-style-type: none"> • The student recognizes the importance of the concept of work ethics. • The student learns about the importance of ethics to society 	
717.	Teaching and Learning Strategies		
Strategy		1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method	

718. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	The concept of work ethics	Professional ethics	Explanation, presentation of model and lecture	the exam
the second	2	The importance of ethics in general	Professional ethics	Explanation, presentation of the model and lecture	the exam
the third	2	The importance of ethics for individual	Professional ethics	Explanation, presentation of the model and lecture	the exam
the fourth	2	The importance of ethics for society	Professional ethics	Explanation, presentation of the model and lecture	the exam
Fifth	2	Ethics required in employers	Professional ethics	Explanation, presentation of the model and lecture	the exam
Sixth	2	Reasons for the decline in work ethics	Professional ethics	Explanation, presentation of the model and lecture	the exam
Seventh	2	Patterns of behavior and ethics in work	Professional ethics	Explanation, presentation of the model and lecture	the exam
Eighth	2	Types of corruption according to field in which it arose	Professional ethics	Explanation, presentation of the model and lecture	the exam
Ninth	2	Corruption according to the affiliation of the individuals involved in corruption	Professional ethics	Explanation, presentation of the model and lecture	the exam
The tenth	2	Manifestations of administrative and financial corruption	Professional ethics	Explanation, presentation of the model and lecture	the exam
Eleventh	2	The ethics of the teaching profession and its impact on the personality and performance of the educator	Professional ethics	Explanation, presentation of the model and lecture	the exam
Twelfth	2	Sources of teaching ethics	Professional ethics	Explanation, presentation of the model and lecture	the exam

719. Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
720. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)	Ministry of Higher Education curriculum				
Main references (sources)					
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals				
Electronic Websites	Referenc				