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 for Undergraduate Students

2024-2025

Academic Program Description Form

University Name: University of Wasit
Faculty/Institute: College of Agriculture
Scientific Department: Soil and Water Resources
Academic or Professional Program Name: Agricultural Sciences
Final Certificate Name: Soil Sciences
Academic System: Semester
Description Preparation Date: 1/9/2024
File Completion Date: 10/9/2024

Signature:
Head of Department Name: Dr. Ali Jawad Kadhim
Date: 10/9/2024

Signature:
Scientific Associate Name: Dr. Jawadayn AlKawaaree
Date: 10/9/2024

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Date: 10/9/2024
Signature:

Assist. Prof
Dr. Hakeem.S. Abed
Dean

Approval of the Dean

Introduction:

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

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

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

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

Concepts and terminology:

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

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

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

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

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

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

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

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

1. Program Vision

The primary vision of the Department of Soil Sciences and Water Resources aims to build a solid scientific foundation by providing a suitable environment for students to learn about physical, chemical, biological, and pedological properties. Through laboratory analysis, fieldwork, and the use of the latest technologies, students are equipped with solid scientific skills for soil analysis. This, in turn, leads to the development of scientific cadres who can contribute to solving land problems in the agricultural sector. Furthermore, the department conducts numerous scientific research projects annually through graduate student projects, faculty research, and undergraduate student graduation projects to address some soil and water-related problems. The department also contributes to developing students' research capabilities by designing experiments and writing solid scientific research for publication in international peer-reviewed journals. The department's primary goal is to achieve excellence in scientific research, create partnerships with government institutions and civil society, and participate in training workshops to keep pace with global developments.

2. Program Mission

Providing innovative scientific research and solutions on sustainable agriculture, facing contemporary challenges, leading to knowledge of new research areas, working collaboratively with researchers from the same or nearby departments. Preparing leadership cadres with the ability to think critically and then analyze problems for the purpose of solving them, which qualifies graduate students to manage some research projects by acquiring research skills and developing their leadership skills. The department is a pioneer in education by periodically updating the curricula to keep pace with reputable international universities and working to spread awareness among members of society to preserve natural resources and encourage and promoting sustainable practices to address climate

change.

3. Program Objectives

The program aims to provide undergraduate and graduate students with the necessary knowledge to understand everything related to the concept of soil. The department aims to prepare graduates with a high-level understanding of the physical, chemical, and biological properties of soil, soil surveying and classification, and plant fertility and nutrition. They also have the ability to analyze and evaluate the quality of surface and groundwater, and to understand the effects of agricultural production by studying the interactions that occur among soil, water, and plants. In addition, the department focuses on two important factors: the first is natural resource management, through conducting studies on climate change and its impact on soil and water, finding solutions, and reducing pollution from some industrial products by promoting sustainable agriculture. The second factor is combating desertification and sand encroachment, identifying the causes of desertification, and finding and developing strategies to control it and increase productivity and preserving it as a natural resource.

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
Second/ first semester	0C13201	Biochemistry	30 theoretical + 45 practical
	0013201	Principles of soil science	30 theoretical + 45 practical
	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

8. Expected learning outcomes of the program

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

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			٢	
Professor	Soil and water resources	Soil fertility and fertilization			٢	
Professor	Gardening	vegetable production			١	
Assistant Professor	Soil and water resources	Soil survey and classification			١	

Assistant Professor	agricultural economy	agricultural economy			١	
Assistant Professor	Plant/soil production	Soil chemistry			١	
Assistant Professor	Machine engineering	Agricultural machines			١	
Assistant Professor	Gardening	His saddle is green			١	
Lecturer	Soil and water resources	Soil fertility and fertilization			١	
Lecturer	Gardening	Heredity			١	
Lecturer	Vegetable production	Soil fertility			١	
assistant lecturer	Vegetable production	Soil physics			١	
assistant lecturer	Vegetable production	Soil microbiology			١	

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

				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**		•	•					•				

		Principles of geology	Basic								•				
Second/ first semester		The crimes of the Baath regime in Iraq	Basic												
		English language 2	Basic												
		Computer applications	Basic												
		Principles of microbiology	Basic												
		Biochemistry	Basic												
		Environment and weather	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 for the second stage.

1. Course Name:
Biochemistry
2. Course Code:
0C13201
3. Semester / Year:
First semester / **Sophomore**
4. Description Preparation Date:
26\2\2024
5. Available Attendance Forms:
Actual presence
6. Number of Credit Hours (Total) / Number of Units (Total)
theoretical 2 practical 3 units 3
7. Course administrator's name (mention all, if more than one name)
Name**: Professor Dr. Jassim Qasim Manati** Email : jasimiraqe@mu.edu.iq
8. Course Objectives

Course Objecti	• Introducing the student to the importance of biochemistry • Study of carbohydrates • Study of amino acids • Study of lipids • Study of nucleic acids
9. Teaching and Learning Strategies	
Strategy	Audio methods (teaching explanation of the topic) Style of writing on the blackboard The method of direct dialogue between the teacher and the stude with the student's evaluation in class participation

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning	Evaluati

		Outcomes		method	on 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 secon	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 composition, structure, and divisions**	**Explanation, presentation of model and lecture**	**the exam, Quizzes, 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**	**the exam, Quizzes,**

				model and lecture	**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**
Thirteent	2	**Theoretical lecture**	**Its composition and sections**	**Explanation, presentation of model and lecture**	**The exam, Quizzes, Reports, and activities in class**
fourteent	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**

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricu 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 Referenc Websites	https://www.chemistry1science.com/2018/08/2–pdf_44.html

Course Description Form

13.Course Name:
Principles of Soil Science
14.Course Code:
٠٠١٣٢٠١
Semester / Year:
15.
First / **Sophomore**
16.Description Preparation Date:
26/2/2024
17.Available Attendance Forms:
Actual presence
18.Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2 practical , units 3
19.Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. raheem alwan halool Email: **Rahim_alwan@mu.edu.iq**
20.Course Objectives

The student gets to know soil science	• The student gets to know soil science • The student should classify the factors processes of soil formation • The student should separate the var factors in the formation of so • For the student to learn about how soi formed and developed • For the student to evaluate the different ty of soil

21.• The student should classify the factors and processes of soil formation

Strategy	1- Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips

	6 - Self-learning method

22. Course Structure

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

				and lecture	
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 gets to know the types of soil water	Soil principles	Explanation, presentation of the model and lecture	the 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 Twelfth	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
thirteenth		The student will know how to feed plants	Soil principles	Explanation, presentation of the model and lecture	the exam
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

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 (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**

Course Description Form

25. Course Name:
Principles of statistics
26. Course Code:
0C13202
27. Semester / Year:

First / **Sophomore**

28. Description Preparation Date:

1/9/2023

29. Available Attendance Forms:

Actual attendant

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

30 theoretical 45 practical , 3.5 unit

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

Name: sadeq Hadi Hussein

Email: Sadeq.hadi@mu.edu.iq

32. Course Objectives

Course Objectives	**- Introducing students to the principles, basics, and applications of statistics** **- Teaching students the importance of knowing the statistical standards applied in agricultural research**

33. Teaching and Learning Strategies

Strategy	**Active participation in answering questions.** **- Weekly assignments in order to practice applying the laws** **- Monthly tests**

34. 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			**2- Introducing statistical terminology and methods for obtaining random samples**		
3			**3- Tabular and graphical presentation** **4- Concentration metrics**		
4			**5- How to make a frequency distribution table**		
5			**6- Measures of relative dispersion**		
6			**7- The relationship between the arithmetic**		

7	5		**mean, median, and mode** **8- T-test and F-test**		
8	5		**9- Simple regression**		
9	5		**10- Correlation**		
10	5		**11- Probability distributions**		
11	5		**12- Normal distribution**		
12	5		**13- Analysis of variance**		
13	5				

35. Course Evaluation

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

36. 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

37. Course Name:
Basis of microbiology
38. Course Code:
٠٠١٣٢٠٢
39. Semester / Year:
First semester / **Sophomore**
40. Description Preparation Date:
14/2/2024
41. Available Attendance Forms:
Actual Attendance
42. Number of Credit Hours (Total) / Number of Units (Total)
30 theoretical 60 practical = 90 hrs, 3 unit
43. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Dr. Dhifaf jabbar shamran Email: dhifaf15@mu.edu.iq

44. Course Objectives

Course Objectives	*** Introducing the student to the nature of microbiology** *** Different types of microorganisms** *** The use of microorganisms in the agricult field**

45. Teaching and Learning Strategies

Strategy	A- Cognitive objectives * 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 microorganisms in the agricultural field B- Skills goals - Development of bacteria and fungi - Isolate and purify it - Testing its sensitivity to antibiotics

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First		Memorizatio understandi practical application	A historical overview of microbiology, definition o microbiology, its types, an its relationship to other sciences	Lecture and discussion	Oral exams a rapid exam
Second			Bacteria, their shapes and composition		
Third			Different metabolic activit of bacteria		
Forth			Fungi, their general characteristics and types		
Fifth			Different metabolic activit 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 a importance		
11			Second part of biofertilize		
12			Second monthly exam		
13			Protozoa , its definition, structure and sections		
14			General Review		
15			Comprehensive exam		

47. 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

48. Learning and Teaching Resources	
Required textbooks (curricular books, any)	General microbiology
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

49. Course Name:
Vegetable production
50. Course Code:
0C13203
51. Semester / Year:

FIRST semester / Sophomore
52. Description Preparation Date:
26\2\2024
53.Available Attendance Forms:
Actual presence
54.Number of Credit Hours (Total) / Number of Units (Total)
theoretical 2 practical 2 units 3
55. Course administrator's name (mention all, if more than one name)
Name: Assistant prof. aman hameed jaber Email :amanhameed@mu.edu.iq
56. Course Objectives

Course Objecti	**• The student gets to know the types of vegetables** **• The student should classify climate factors and their relationship to vegetable productio** **• The student should detail the benefits and harms of climatic factors such as temperatu wind, and frost** **• The student will learn about increased production and its causes** **• To establish an annual agricultural cycle for production**

57. 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

58. 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 secon	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**	**Explanation,**	**The exam,**

			crops in Iraq: Solanaceae family: tomato, potato	**presentation of model and lecture**	**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**
Thirteent	2	**Vegetable production**	**Cucurbita family: cucumber and squash**	**Explanation, presentation of model and lecture**	**The exam, Quizzes, Reports, and activities in class**
fourteent	2				
Fifteenth	2				

59. Course Evaluation

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

60. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Vegetable Production, Part One, written by Adnan Nass Matloob, Ezz El-Din Sultan, and Karim Saleh
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Internet network**

Course Description Form

61. Course Name:

Applications in computers

62. Course Code:

٠١٣٢٠١U

63. Semester / Year:
First / **Sophomore**
64. Description Preparation Date:
1/9/2023
65.Available Attendance Forms:
Actual presence
66.Number of Credit Hours (Total) / Number of Units (Total)
2 /2
67. Course administrator's name (mention all, if more than one name)
Name: Dr. Karrar Hameed Abdulkareem Email: khak9784@mu.edu.iq
68. Course Objectives

Course Objecti	• **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.**

69. Teaching and Learning Strategies	
Strategy	1-Explanation and clarification. 2- Practical lessons. 3- Self-learning method.

70. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	**Introduction to Micros 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 PowerPoin**	**Practical session**	**Exam**

Sixth	2	**Tables**	**Microsoft PowerPoin**	**Explanation, presentation of model and lecture**	**Exam**
Seventh	2	**Deals with movies**	**Microsoft PowerPoin**	**Explanation, presentation of model and lecture**	**Exam**
Eighth	2	**Deals with movies**	**Microsoft PowerPoin**	**Explanation, presentation of model and lecture**	**Exam**
Ninth	2	**Shapes, smartart, and charts**	**Microsoft PowerPoin**	**Explanation, presentation of model and lecture**	**Exam**
Tenth	2	**Practical Example**	**Microsoft PowerPoin**	**Practical session**	**Exam**
Eleventh	2	**Practical Example**	**Microsoft PowerPoin**	**Practical session**	**Exam**
Twelfth	2	**Shapes, smartart, and charts**	**Microsoft PowerPoin**	**Explanation, presentation of model and lecture**	**Exam**
Thirteent	2	**Shapes, smartart, and charts**	**Microsoft PowerPoin**	**Explanation, presentation of model and lecture**	**Exam**
fourteent	2	**Practical Example**	**Microsoft PowerPoin**	**Practical session**	**Exam**
Fifteenth	2	**Practical Example**	**Microsoft PowerPoin**	**Practical session**	**Exam**

71. Course Evaluation

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

72. Learning and Teaching Resources

Required textbooks (curricu 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 Referenc Websites	https://support.microsoft.com/en-gb/office/introduction-t excel-starter-601794a9-b73d-4d04-b2d4-eed4c40f98be

Course Description Form

73. Course Name:

Agricultural machinery and equipment
74. Course Code:
0C13204
75. Semester / Year: 2023-2024
First / **Sophomore**
76. Description Preparation Date:
1-9-2023
77. Available Attendance Forms:
Attended
78. Number of Credit Hours (60) / Number of Units (3)
60 hrs / 3 units
79. Course administrator's name (mention all, if more than one name)
Name: JAWAD KADHIM AL ARIDHEE Email: jawadaridhee@mu.edu.iq

80. 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

81. Teaching and Learning Strategies	
Strategy	

82. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	٤	Classification of tractors , Mechanical transmission methods		Theoretical + practical lecture	test
٢	٤	Internal combustion		Theoretical +	test

		engine parts		practical lecture	
٣	٤	Four – stroke cycle& Two – stroke cycle		Theoretical + practical lecture	test
٤	٤	Timer device		Theoretical + practical lecture	test
٥	٤	Clutch Device		Theoretical + practical lecture	test
٦	٤	Gearbox and Transmission devices		Theoretical + practical lecture	test
٧	٤	Fuel System		Theoretical + practical lecture	test
٨	٤	Cooling System		Theoretical + practical lecture	test
٩	٤	Lubrication System		Theoretical + practical lecture	test
١٠	٤	Hydraulic devices. Power take - off shaft		Theoretical + practical lecture	test
١١	٤	Soil preparation equipment		Theoretical + practical lecture	test
١٢	٤	Control equipment - Spraying equipment		Theoretical + practical lecture	test
١٣	٤	Fogging equipment		Theoretical + practical lecture	test
١٤	٤	Sprinkler calibration		Theoretical + practical lecture	test
١٥	٤	Maintenance of control equipment		Theoretical + practical lecture	test

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)	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

85.Course Name
Soil, water and plant analysis
86.Course Code:
٠٠٢٣٢٠١
Semester / Year:
87.
Second / **Sophomore**
88.Description Preparation Date:
26/2/2024
89.Available Attendance Forms:
Actual presence
90.Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2 practical , units 2
91.Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. raheem alwan halool

Email: Rahim_alwan@mu.edu.iq

92.Course Objectives

Course Objectives	For the student to know the types of analytical methods • The student learns how to analysis water , soil and plant • The student should evaluate the scientific reality to maintain analytical methods •

93.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

94. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first	5	The student gets to know introduction about water , soil	ter , soil and nt analytical	Explanation, presentati	the exam

The second	5	plant analytical is for the student to know analytical of water		on of the model and lecture	
Third	5	The student learns about soil analytical	Water , soil plant analyti	Explanation, presentation of the model and lecture	the exam
Fourth	5	The student gets to know plant analytical	Water , soil plant analyti	Explanation, presentation of the model and lecture	the exam
Fifth	5	: The student learns about methods of soil samples	Water , soil plant analyti	Explanation, presentation of the	the exam

				model and lecture	
Sixth	5	: The student learns about methods of plant samples	Water , soil and plant analytical	Explanation, presentation of the model and lecture	the exam
Seventh	5	: The student gets to know the methods of water samples methods	Water , soil plant analyti	Explanation, presentation of the model and lecture	the exam
Eighth	5	The student gets to know the quantitative and volumetric methods	Water , soil plant analyti	Explanation, presentation of the model and lecture	the exam
Ninth	5	The student gets to know the quantitative and weighing	Water , soil plant analyti	Explanation, presentati	the exam

		methods		on of the model and lecture	
Tenth	5	: The student will learn about electrical of a Analytical methods	Water , soil plant analyti	Explanation, presentation of the model and lecture	the exam
Eleventh Twelfth	5	The student gets to know About analytical of spectroscopy The student gets to know Atomic emission methods	Water , soil plant analyti	Explanation, presentation of the model and lecture	the exam the exam
thirteenth	5	: The student knows how the Atomic absorption methods	Water , soil plant analyti	Explanation, presentation of the model and lecture	the exam
Fourteenth		: The student gets to	Water , soil plant analyti	Explanati	the exam

	5	know Metal analysis methods		on, presentation of the model and lecture	
Fifteenth	5	The student gets to know the types of X-ray analysis methods	Water , soil plant analyti	Explanation, presentation of the model and lecture	the exam

95.Course Evaluation
Theoretical tests 25 2- Practical tests 15 3- Reports and studies 10 4- Final exam 50

96.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

97. Course Name:	
Fundamentals of plant protection	
98. Course Code:	
0C٢٣٢٠١	
99. Semester / Year:	
Second semester / Sophomore	
100. Description Preparation Date:	
1\9\2023	
101. Available Attendance Forms:	
Actual presence	
102. Number of Credit Hours (Total) / Number of Units (Total)	
theoretical 30 hrs practical 45 hrs units 3.5	
103. Course administrator's name (mention all, if more than one name)	
Name: Assistant prof. Dr. Saad Manea Email: alifj80@mu.edu.iq	
104. Course Objectives	
Course Objecti	**Enabling students to obtain knowledge and understanding of the intellectual and appl framework in insect principles in general** **• 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 a diseases through showing films, scientific research, and methods of diagnosing insects.**
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	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 secon	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	Explanation,	the exam, Quizzes,

			plant protection	**presentation of model and lecture**	**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**

107. Course Evaluation

5- Theoretical tests	25
6- Practical tests	15
7- Reports and studies	10
8- Final exam	50

108. Learning and Teaching Resources

Required textbooks (curricu books, if any)	-Required readings: -Basic texts -Course books -Other
Main references (sources)	Special requirements (including, for example, worksho periodicals, software, and websites)
Recommended books and references (scientific journals, reports…)	Social services (including, for example, guest lectur vocational training, and field studies) Iraqi academic scientific journals
Electronic Referenc Websites	**Internet network**

Course Description Form

109. Course Name:
Soil environment and weather conditions
110. Course Code:
٠٠٢٣٢٠٢
111. Semester / Year:
Second / Sophomore
112. Description Preparation Date:
26\2\2024
113. Available Attendance Forms:
Actual presence
114. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2 practical units 3
115. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Abdullah Karim Jabbar Email: mu.edu.iq@٧٤karrm-abdallah
116. Course Objectives

Course Objecti	• **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**…..

117. 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

118. Course Structure

Week	Hours	Required Learning	Unit or subject	Learning	Evaluati

		Outcomes	name	method	on method
First	2	The student gets introduction to ecology and ecosystem	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
the secon	2	The student gets to know types of ecosystems and s factors	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
the third	2	For the student to learn ab the importance of biologi water and the division of pla according to their need water, rain, and th effectiveness	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
the fourth	2	The student gets to kn 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 ra of plants and the effect of h stress	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Sixth	2	The student will be famil with the nature of therr stress, the effect of heat vegetation, thermal synchro and ambient temperature	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Seventh	2	The student gets to know li and the biological effects of lig	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Eighth	2	The student gets to know point of photocompensation a the effect of light on the sha and structure of plants	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Ninth	2	The student will be famil with humidity and the decre 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 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 a benefits to plants	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Twelfth	2	The student gets to know most important contempor environmental issues	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
Thirteent	2	The student will be famil with pollution and interrelated effects	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam
fourteent	2	The student will be famil with the phenomenon inverted gradient and glo warming	Soil environment weather conditions	Explanation, presentation of model and lecture	the exam

Fifteenth	2	**The student gets to kn desertification, its types a causes**	**Soil environment weather conditions**	**Explanation, presentation of model and lecture**	**the exam**

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

120. Learning and Teaching Resources	
Required textbooks (curricu 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 Publishi Iraq. University of Al Mosul.
Main references (sources)	Environment and problems of pollution. 2017. Muhamm Hassan Awad and Hassan Ahmed Shehata. Dar Taiba Publishing and Distribution. Cairo. Egypt.
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil Science Society Of America** **Library Genesis**

Course Description Form

121. Course Name:
Agricultural extension
122. Course Code:
0C23202
123. Semester / Year:
Second semester / The second
124. Description Preparation Date:
26\2\2024
125. Available Attendance Forms:
Actual presence
126. Number of Credit Hours (Total) / Number of Units (Total)
theoretical 2 practical units ٢
127. Course administrator's name (mention all, if more than one name)

Name: Assistant prof. Mustafa Abd Manshood
Email :mustafa.manshood@mu.edu.iq

128. Course Objectives

Course Objecti	**• 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 a guidance.** **• Teaching students the art of adopting positive ideas in the field of agriculture**

129. 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

130. 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 secon	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**
Thirteent	2				
fourteent	2				

Fifteenth	2				

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

132. Learning and Teaching Resources	
Required textbooks (curricu 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 Referenc Websites	**Internet network**

Course Description Form

133. Course Name:
Lands leveling and grading
134. Course Code:
٠٠٢٣٢٠٣
135. Semester / Year
Second/ **Sophomore**
136. Description Preparation Date:
1/9/2023
137. Available Attendance Forms:
Attended
138. Number of Credit Hours / Number of Units
60 hrs / 3 units
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	• 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 throughou the field. This means reducing the amount of water required b the irrigation process and reducing the effort and time required for this process, unlike uneven lands that require a large amou of irrigation water in addition to the greater time and effort to d

141. 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 transpor for the purpose of leveling

142. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	٤	Definition of the Lands leveling and grading		Theoretical + practical lecture	test
٢	٤	Types of leveling - application requirements		Theoretical + practical lecture	test
٣	٤	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
٤	٤	Topographic variation: its relationship to of level - estimation methods - direct methods - indirect methods		Theoretical + practical lecture	test
٥	٤	Land leveling without slope		Theoretical + practical lecture	test
٦	٤	Field works - implementation methods - work stages - calculations and estimation		Theoretical + practical lecture	test
٧	٤	the leveling ground with one slope		Theoretical + practical lecture	test

٨	٤	the leveling ground with two slope		Theoretical + practical lecture	test
٩	٤	Calculations, estimates and evaluation		Theoretical + practical lecture	test
١٠	٤	Selection of machines		Theoretical + practical lecture	test
١١	٤	Types of machines - testing standards - efficiency and utilization of machines		Theoretical + practical lecture	test
١٢	٤	Laser leveling		Theoretical + practical lecture	test
١٣	٤	Make a leveling plan		Theoretical + practical lecture	test
١٤	٤	Times for leveling - and ways to succeed		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:
Plant Physiology
146. Course Code:
0C23203
147. Semester / Year:
Second / Sophomore
148. Description Preparation Date:

26\2\2024

149. Available Attendance Forms:

Actual presence

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

2 theoretical 3 practical units 3.5

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

Name: Prof. Dr. Falah Hasan Issa
Email: flah70-hasan@mu.edu.iq

152. Course Objectives

Course Objecti	• **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** •

153. 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

154. 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 secon	5	**Osmosis**	Plant Physiology	**Explanation, presentation of model and lecture**	**the exam**
the third	5	**Past and active absorption**	Plant Physiology	**Explanation, presentation of**	**the exam**

				model and lecture	
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 Hrmons**	Plant Physiology	**Explanation, presentation of model and lecture**	**the exam**
Seventh	5	**Inhibitors plant Hermon's**	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 blooding**	Plant Physiology	**Explanation, presentation of model and lecture**	**the exam**
Eleventh	5	**Colloidal solutions**	Plant Physiology	**Explanation, presentation of model and lecture**	**the exam**
Twelfth	5	**Vernilazation**	Plant Physiology	**Explanation, presentation of model and lecture**	**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 (curricu books, if any)	1- Plant Physiology, P art 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 Referenc Websites	**Plant Physiology Journal** .

Course Description Form

157. Course Name:	
English Language	
158. Course Code:	
U٠٢٣٢٠١	
159. Semester / Year:	
Second semester / **Sophomore**	
160. Description Preparation Date:	
26\2\2024	
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	**- 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**
165. 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

166. 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 secon	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**	**9**	**Explanation, presentation of model and lecture**	**the exam, Quizzes, Reports,**

		- Hot verbs **- In a hotel**			**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**
Thirteent	2	**Earning a living:** **- Present perfect continuous** **- Word formation** **- Adverbs** **- Telephoning**	**13**	**Explanation, presentation of model and lecture**	**The exam, Quizzes, Reports, and activities in class**
fourteent	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**

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 (curricu books, if any)	Pre-Intermediate Student's Book: New Headway Plus (John a Liz Soars) Oxford University Press
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic Referenc	**Internet network**

Websites	

Course Description Form

169. Course Name:	
Computer applications 4	
170. Course Code:	
U٠٢٣٢٠٢	
171. Semester / Year:	
Second / **Sophomore**	
172. Description Preparation Date:	
1/9/2023	
173. Available Attendance Forms:	
Actual presence	
174. Number of Credit Hours (Total) / Number of Units (Total)	
2 /2	
175. Course administrator's name (mention all, if more than one name)	
Name: Dr. Karrar Hameed Abdulkareem Email: khak9784@mu.edu.iq	
176. Course Objectives	
Course Objecti	• **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.**
177. Teaching and Learning Strategies	
Strategy	1-Explanation and clarification. 2- Practical lessons. 3- Self-learning method.

178. 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 model and lecture**	**the exam**
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**
Thirteent	2	**Charts**	**Microsoft Excel**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	2	**Practical Example**	**Microsoft Excel**	**Practical session**	**the exam**
Fifteenth	2	**Practical Example**	**Microsoft Excel**	**Practical session**	**the exam**

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 (curricu 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 Referenc Websites	https://support.microsoft.com/en-gb/office/introduction-t excel-starter-601794a9-b73d-4d04-b2d4-eed4c40f98be

Course Description Form

181. Course Name:	
Soil physics	
182. Course Code:	
٠٠١٣٣٠١	
183. Semester / Year:	
First / Junior	
184. Description Preparation Date:	
26\2\2024	
185. Available Attendance Forms:	
Actual presence	
186. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 2 practical units 3	
187. Course administrator's name (mention all, if more than one name)	
Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq	
188. 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.**
189. 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

190. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	ntroduction and definition soil science, soil physics a some related relationships	Soil physics	Explanation, presentation of model and lecture	the exam
the secon	4	Physical soil properties, s texture, particle s distribution, and Stock's law	Soil physics	Explanation, presentation of model and lecture	the exam
the third	4	The specific area of soil a methods for determining physically and chemically	Soil physics	Explanation, presentation of model and lecture	the exam
the fourth	4	Soil Structure: its definiti 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 aggrega methods of studying them, a factors affecting the format of aggregates	Soil physics	Explanation, presentation of model and lecture	the exam
Seventh	4	Soil water and general wa properties, soil air, air capac and gas exchange in the soil	Soil physics	Explanation, presentation of model and lecture	the exam
Eighth	4	Water properties related porous media (soil), soil wa energy and methods expressing and measuring it	Soil physics	Explanation, presentation of model and lecture	the exam
Ninth	4	Soil temperature, s temperature, and heat flow the soil	Soil physics	Explanation, presentation of model and lecture	the exam
The tenth	4	Water flow in saturated s and water flow in unsatura soils	Soil physics	Explanation, presentation of model and lecture	the exam
Eleventh	4	Water infiltration in s methods for measuring it a equations	Soil physics	Explanation, presentation of model and lecture	the exam
Twelfth	4	rrigation and drainage cha the physical properties surface soil	Soil physics	Explanation, presentation of model and lecture	the exam

Thirteent	4	**Water balance and ene balance in the field**	**Soil physics**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	4	**Evaluation of the water bala equation, water consumpti evapotranspiration**	**Soil physics**	**Explanation, presentation of model and lecture**	**the exam**
Fifteenth	4		**Soil physics**	**Explanation, presentation of model and lecture**	**the exam**

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

192. Learning and Teaching Resources	
Required textbooks (curricu books, if any)	1- Soil Physics, written by Dr. Hisham Mahmoud Hassan 200 2- Basics of soil physics, translation. Mahdi Ibrahim Odeh 19
Main references (sources)	Basics of soil physics, translation. Mahdi Ibrahim Odeh 1990
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil physics**

Course Description Form

193. Course Name:
Soil Chemistry
194. Course Code:
0013302
195. Semester / Year:
First Semester / **Junior**
196. Description Preparation Date:
27/2/2024
197. Available Attendance Forms:
attend
198. Number of Credit Hours (Total) / Number of Units (Total)
hrs 3 units

199. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Dr. bashar mezher jader Email: bashar_mezher@mu.edu.iq

200. Course Objectives	
Course Objectives	**The soil chemistry course aims to explain the principles used in stud the chemical composition of soil. During this course, the stude introduced to all the chemical properties of soil and how to estimate calculate them practically and in the field. During this course chemical properties of soil are linked to other branches of soil scienc**

201. Teaching and Learning Strategies	
Strategy	• 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.

202. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	٥	The importance studying soil chemistry,	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
the second	٥	Ion exchar equations, physicochemical equations	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
the third	٥	chemical equatio soil anion exchar capacity	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
the fourth	٥	Solubility balar in soil	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Fifth	٥	Carbonate equilibrium, CC H2O syste CaCO3-H2O-CO system in soil	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Sixth	٥	Phosphorus balan ionization phosphorus in s phosphorus reactions	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Seventh	٥	Chemical potent of ions in the s	Soil chemist	**Explanation, presentat of the model and lectur**	Exam

		system - s solution			
Eighth	٥	phosphorus dissolution Soil acidity a alkalinity	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Ninth	٥	curves in Al2O3-Fe2O3-CaO-P2O5-H2O system	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Tenth	٥	the importance studying the deg of soil reaction	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Eleventh	٥	sources of acidity the soil, methods measuring acid and alkalinity	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Twelfth	٥	effect of the deg of reaction on cation exchar capacity.	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Thirteenth	٥	Equilibrium curv soil bufferi acidity	Soil chemist	**Explanation, presentat of the model and lectur**	Exam
Fourteenth	٥	alkalinity of soils dry and semi-a areas, calcareoussoils, a gypsum soils.	Soil chemist	**Explanation, presentat of the model and lectur**	Exam

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 (curricu 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

205. Course Name:
Soil fertility
206. Course Code:
٠٠١٣٣٠٣
207. Semester / Year:
First / Junior
208. Description Preparation Date:
27\2\2024
209. Available Attendance Forms:
Actual presence
210. Number of Credit Hours (Total) / Number of Units (Total)
60 hrs units 3
211. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Raheem alwan halool Email: Rahim_alwan@mu.edu.iq
212. Course Objectives

Course Objecti	• **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 plants**

213. 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

214. 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 a lecture**	**the exam**
the secon	5	**The student gets to know the types nutrients**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
the third	5	**The student recognizes the movement a absorption of elements in the soil**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
the fourth	5	**The student gets to know the types elements in the soil**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
Fifth	5	**The student gets to know the necess elements**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
Sixth	5	**The student gets to know the ma elements**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
Seventh	5	**The student gets to know the smal elements**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
Eighth	5	**The student gets to know the useful a encouraging elements for growth**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
Ninth	5	**For the student to recognize the distinct between elements**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
The tenth	5	**For the student to get to know Factors affecting the readiness elements**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
Eleventh	5	**The student gets to know nitrogen and factors**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
Twelfth	5	**The student gets to know phosphorus a potassium and their factors**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
Thirteent	5	**The student gets to know sulfur, calciu magnesium, and trace elements**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**
fourteent	5	**The student will be familiar with evaluation of soil fertility**	**Fertilizer technology**	**Explanation, presentation**	**the exam**

				the model a lecture	
Fifteenth	5	**The student will be familiar with organic matter**	**Fertilizer technology**	**Explanation, presentation the model a lecture**	**the exam**

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

216. Learning and Teaching Resources	
Required textbooks (curricu 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-I Shawqi Ali
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil Science Society Of America** **Library Genesis**

Course Description Form

217. Course Name:
Irrigation
218. Course Code:
٠٠١٣٣٠٤
219. Semester / Year:
First semester / Junior
220. Description Preparation Date:
1/9/2023
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: Dr. AULA HUSSEIN ALI
Email: Aula.alobeidi@mu.edu.iq

224. 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.**

225. 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

226. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	4	**The concept of irrigation, irrigatio ancient and modern times**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
the secon	4	**Irrigation water sources, irriga water quality**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
the third	4	**Soil physical properties associa with irrigation**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
the fourth	4	**The relationship of water with soil moisture constants, movemen water in the soil, water flow**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
Fifth	4	**Water measurement**	**Irrigation**	**Explanation, presentation of**	**the exam**

				model and lecture	
Sixth	4	**Plant water consumption**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
Seventh	4	**Water requirements and irriga scheduling**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
Eighth	4	**Transport and distribution irrigation water, movement of wa in pipes and open channels**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
Ninth	4	**Design of soil and lined irriga channels**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
The tenth	4	**Efficiency, adequacy and consiste 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**
Thirteent	4	**Modern irrigation methods rationalization of water use**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	4	**Pumping water and how to calcu pump capacity**	**Irrigation**	**Explanation, presentation of model and lecture**	**the exam**
Fifteenth	4		**Irrigation**	**Explanation, presentation of 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 (curricu books, if any)	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. 2-Irrigation and drainage, written by Dr. Laith Khalil Ismail 2000 Ministry of Higher Education and Scientific Research - University of Mosul 3- Modern irrigation technologies and other topics in the wa issue, written by Dr. Issam Khudair Al-Hadithi, Dr. Ahm Madloul Al-Kubaisi, and Dr. Yas Khudair Hamza Al-Hadit 2010, Ministry of Higher Education and Scientific Researcl

	Anbar University
Main references (sources)	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 . 2- Modern irrigation technologies and other topics in the wa issue, written by Dr. Issam Khudair Al-Hadithi, Dr. Ahm Madloul Al-Kubaisi, and Dr. Yas Khudair Hamza Al-Hadit 2010, Ministry of Higher Education and Scientific Researcl Anbar University
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil Science Society Of America** **Library Genesis**

Course Description Form

229. Course Name:	
Soil morphology	
230. Course Code:	
٠٠١٣٣٠5	
231. Semester / Year:	
First semester / Junior	
232. Description Preparation Date:	
1/9/2023	
233. Available Attendance Forms:	
Actual presence	
234. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 2 practical units 3	
235. Course administrator's name (mention all, if more than one name)	
Name: Assistant prof. Ahmed Kazem Fazza Email: ahmad.kadhem@mu.edu.iq	
236. Course Objectives	
Course Objecti	**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

237. 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

238. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	4	The student gets to know the conc of morphology	Soil morphology	Explanation, presentation of model and lecture	the exam
the secon	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 ther 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 fami with the methods of morpholog description of the soil in question	Soil morphology	Explanation, presentation of model and lecture	the exam
Seventh	4	The student will be familiar v chemical weathering		Explanation, presentation of model and lecture	the exam
Eighth	4	The student gets to know phys weathering		Explanation, presentation of model and lecture	the exam
Ninth	4	For the student to know the factor soil formation		Explanation, presentation of model and lecture	the exam
The tenth	4	The student gets to know processes of soil formation		Explanation, presentation of	the exam

				model and lecture	
Eleventh	4	The student gets to know the n processes of soil formation.	Soil morphology	Explanation, presentation of model and lecture	the exam
Twelfth	4	For the student to recognize symbols used with horizons.		Explanation, presentation of model and lecture	the exam
Thirteent	4	For the student to become fami with the morphological descrip form		Explanation, presentation of model and lecture	the exam
fourteent	4			Explanation, presentation of model and lecture	the exam
Fifteenth	4			Explanation, presentation of model and lecture	the exam

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 (curricu 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 Referenc Websites	**Soil Science Society Of America**

241. . Course Title:
Design and analysis of agricultural experiments
242. Course Code
0C13301
243. Semester / Year
Junior / autumn
244. The history of preparation of this description
1/9/2023

245. Available Attendance Forms
Actual attendant
246. Number of Credit Hours (Total) / Number of Units (Total)
2 hours theoretical and 3 hours practical Number of units 3
247. Course administrator's name (if more than one name)
Name: Prof. Dr. Abdullah Karim Jabbar Email: Abdallah-karrm74@mu.edu.iq
248. Course Objectives

* Introducing the student that there are areas 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 val that can be lost during the experiment and be estimated	Course Objectives:

249. 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

250. 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	Theoretical	2	8

		agricultural experiments, complete random design	lecture		
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

251. 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

252. Learning and Teaching Resources

1- Design and analysis of experiments - Kha Al-Rawi and Khalaf Allah 2000	Required textbooks (methodology any)
	Main references (sources)
- Foreign books specialized in the design agricultural experiments .	Recommended books and references (scientific journals, reports...)
Arabic articles issued by academic and professio bodies	Electronic References, Websites

Course Description Form

253. Course Name:	
Soil and water pollution	
254. Course Code:	
0013306	
255. Semester / Year:	
First semester / Junior	
256. Description Preparation Date:	
1/9/2023	
257. Available Attendance Forms:	
Actual presence	
258. Number of Credit Hours (Total) / Number of Units (Total)	
30 hrs theoretical 45 hrs practical units 3.5	
259. Course administrator's name (mention all, if more than one name)	
Name: Lecturer Dr. Mohammed Abdulridha Naser Email :**mohammed.naser@mu.edu.iq**	
260. Course Objectives	
Course Objecti	**• 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 environme pollution, then learn about water pollution, including surface and groundwater polluti** **• 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.**
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	4	The student gets to know ecosystem and the definition pollution, its causes a sources.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
the secon	4	The student will be famil with the cycles of eleme (nitrogen, phosphorus, oxyg carbon, and sulfur)	Soil and water pollution	Explanation, presentation of model and lecture	the exam
the third	4	The student will learn ab surface and groundwa pollution and seawa pollution.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
the fourth	4	The student will learn ab bacterial, viral, and wo pollution in water.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Fifth	4	The student will be famil with industrial water pollutar battery factories, and fertili factories.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Sixth	4	The student gets to know behavior of pesticides in aquatic environment, and behavior of pesticides on liv organisms.	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Seventh	4	The student will learn ab biological pollution, sew waste, and fertilization behav in water pollution	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Eighth	4	The student will be famil with the division of wa according to its suitability different uses	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Ninth	4	The student gets to kn biological soil pollution	Soil and water pollution	Explanation, presentation of model and lecture	the exam
The tenth	4	The student will learn about s contamination with pesticid 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 the soil	Soil and water pollution	Explanation, presentation of model and lecture	the exam
Twelfth	4	The student will learn about chemical and natural contro	Soil and water	Explanation, presentation of	the exam

		pesticides in the soil and th absorption by plants.	**pollution**	**model and lecture**	
Thirteent	4	**The student will learn abou global warming, ozone laye erosion, thermal pollution, a pollution Radiological.**	**Soil and water pollution**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	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**

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

Course Description Form

265. Course Name:
English Language
266. Course Code:
U٠١٣٣٠١
267. Semester / Year:
first semester / Junior
268. Description Preparation Date:

1/9/2023

269. Available Attendance Forms:

Actual presence

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

theoretical 2 practical units 1

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

Name: Asst.prof. Dr. Ahmed Merza Abood
Email : ahmedme@mu.edu.iq

272. 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.** **- The student gets to know the concept of the English language.** **- Enabling students to know how to deal with the English language**

273. 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

274. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	**It's a wonderful world:** **- Tenses** **- Auxiliary verbs** **- Short answers** **- What's in a word?**	**1**	**Explanation, presentation of model and lecture**	**the exam, Quizzes, Reports, and activities**

		- Social expressions			**in class**
the secon	2	**Get happy!** **- 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:** **- 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:** **- 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:** **- 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!**	**11**	**Explanation,**	**The exam,**

		- Indirect questions **- Question tags** **- The body** **- Informal English**		**presentation of model and lecture**	**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**
Thirteent	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**
fourteent	2	**Pairwork activities:** **- Practice** **- Vocabulary** **- Reading and speaking** **- Problems**	**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**

275. Course Evaluation

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

276. Learning and Teaching Resources

Required textbooks (curricu 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 Referenc Websites	**Internet network**

Course Description Form

277. Course Name:	
Natural resource economics	
278. Course Code:	
0C23301	
279. Semester / Year:	
Second/ **Junior**	
280. Description Preparation Date:	
26/2/2024	
281. Available Attendance Forms:	
Actual attendant	
282. Number of Credit Hours (Total) / Number of Units (Total)	
60 hrs , 2 units	
283. Course administrator's name (mention all, if more than one name)	
Name: assistant prof. Dr. sadeq Hadi Hussein Email: Sadeq.hadi@mu.edu.iq	
284. 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
285. Teaching and Learning Strategies	
Strategy	- Active participation in the classroom

	-Rapid exams -Monthly tests are proof of understanding the lecture

286. 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		**4- Water resources**		Theoretical ex
5	2	**Natural resource economics**	**5- Human resources**	**Theoretical lecture**	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		**9- Public revenues**		Theoretical ex
10	2	**Natural resource economics**	**10- Preserving natural resources**	**Theoretical lecture**	Theoretical ex

11	2	**Natural resource economics**	**11- Sources of environmental pollution** **12- Means of preserving natural resources**	**Theoretical lecture**	Theoretical ex
12	2				Theoretical ex

287. 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.

288. 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

289. Course Name:
Drainage
290. Course Code:
٠٠٢٣٣٠١
291. Semester / Year:
Second / Junior
292. Description Preparation Date:
26\2\2024
293. Available Attendance Forms:

Actual presence

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

2 theoretical 2 practical units 3

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

Name: Dr. AULA HUSSEIN ALI
Email: Aula.alobeidi@mu.edu.iq

296. Course Objectives

Course Objecti	**It examines the concept of drainage, the types of drains, the basic purpose of th 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.**

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	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	The concept of drainage, the purpos constructing drains, the relationship drainage to plant growth productivity	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
the secon	4	Physical soil properties related drainage	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
the third	4	The hydrological cycle and the loca of irrigation and drainage therein	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
the fourth	4	Drainage, soil salinity, leacl requirements and salt balance	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
Fifth	4	Investigations required to	**drainage**	**Explanation,**	**the exam**

		establish drains		**presentation of model and lecture**	
Sixth	4	Water flow in the soil and relationship to the concept of drain Analysis of flow	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
Seventh	4	Measurement of saturated w conductivity	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
Eighth	4	Types of drains, their classification, 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	Incisive and vertical drains and desig 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 implementing drains	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
Thirteent	4	Maintenance of covered drains, meth of cleaning them, causes malfunctions, and processing in drain system	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	4	Maintenance of open drains	**drainage**	**Explanation, presentation of model and lecture**	**the exam**
Fifteenth	4	Designs of open and covered d systems and calculation of distar between drains	**drainage**	**Explanation, presentation of model and lecture**	**the exam**

299. Course Evaluation

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

300. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Drainage (investigations, designs, implementation a 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 Referenc	**Soil Science Society Of America** **Library Genesis**

Websites	

Course Description Form

301. Course Name:
Soil minerals
302. Course Code:
٠٠٢٣٣٠2
303. Semester / Year:
First / Junior
304. Description Preparation Date:
26\2\2024
305. Available Attendance Forms:
Actual presence
306. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2 practical units 3
307. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Ahmed Kazem Fazza Email: Ahmad.kadhem@mu.edu.iq
308. Course Objectives

Course Objecti	**• 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** .
309. 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

310. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	The student gets to know the cond of metals	Soil minerals	Explanation, presentation of model and lecture	the exam
the secon	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 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 fami 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 v metal swelling and shrinkage	Soil minerals	Explanation, presentation of model and lecture	the exam
Ninth	4	For the student to know the effec 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 irrigation water and the indica used to determine the quality irrigation water	Soil minerals	Explanation, presentation of model and lecture	the exam
Eleventh	4	The student will recognize expand and contracting metals	Soil minerals	Explanation, presentation of model and lecture	the exam
Twelfth	4	The student will learn how to coe with minerals that affect properties	Soil minerals	Explanation, presentation of model and lecture	the exam
Thirteent	4	For the student to become fami with the problems of limestone soil	Soil minerals	Explanation, presentation of model and lecture	the exam
fourteent	4		Soil minerals	Explanation, presentation of	the exam

				model and lecture	
Fifteenth	4		**Soil minerals**	**Explanation, presentation of model and lecture**	**the exam**

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

312. Learning and Teaching Resources	
Required textbooks (curricu books, if any)	**1– Soil minerals** : **prof**. **Dr**. **Salman Issa** 2-Lectures
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil minerals**

Course Description Form

313. Course Name:
remote sensing
314. Course Code:
0C23302
315. Semester / Year:
Second semester/ Junior
316. Description Preparation Date:
26\2\2024
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: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq

320. Course Objectives

Course Objecti	**1- It examines the concept of remote sensing, and the elements and applications 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 a satellite images** **4- Studying methods for classifying satellite images** **5- The student's knowledge of geographic information systems (GIS) and their uses**

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

322. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	**History and target of rem sensing**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
the secon	4	**Electromagnetic energy a parts of the electromagne spectrum**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
the third	4	**Energy interaction w environmental components**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
the fourth	4	**Spectral reflectivity and fact 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 a their characteristics**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**

Seventh	4	**Rules for classifying aer photographs**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
Eighth	4	**Types of characteristics of sp platforms**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
Ninth	4	**Types and characteristics sensors**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
The tenth	4	**Types and properties of satel 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 satel images**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
Thirteent	4	**Remote sensing applications**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	4	**Geographic information syste**	**remote sensing**	**Explanation, presentation of model and lecture**	**the exam**
Fifteenth	4		**remote sensing**	**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 (curricu books, if any)	Remote sensing science: Prof. Dr. Ahmed Saleh Al-Mashhada 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 Referenc Websites	**Google earth ،USGS**

Course Description Form

325. Course Name:
Soil Salinity
326. Course Code:
٠٠٢٣٣٠٣
327. Semester / Year:
Second / Junior
328. Description Preparation Date:
26\2\2024
329. Available Attendance Forms:
Actual presence
330. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 3 practical units 3
331. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Ghanem. B. Noni Email: ghanem-bahlol@mu.edu.iq
332. Course Objectives

Course Objecti	• **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 fertilize and its harm to plants** • **• For the student to recognize pollution from chemical fertilizers** •

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	**Hrs**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
First	٥	**The student gets to know the concept of saline soils**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
the secon	٥	**For the student to know the sources of salts**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
the third	٥	**The student will be familiar with the means of transporting salts**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
the fourth	٥	**The student will be familiar with the stages of soil salinization**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
Fifth	٥	**The student will be familiar with the conditions of soil salinization**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
Sixth	٥	**student gets to know the types of saline and sodic soils**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
Seventh	٥	**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	٥	**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	٥	**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	٥	**The student will be familiar with the factors determining the quality of irrigation water and the indicators used determine the quality of irrigation wate**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
Eleventh	٥	**The student will be familiar with irrigation water classification systems**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
Twelfth	٥	**The student will learn how to live with salinity**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
Thirteent	٥	**For the student to become familiar w the problems of limestone soils**	**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	٥	**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	٥		**Soil Salinity**	**Explanation, presentation of model and lecture**	**the exam**

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

336. Learning and Teaching Resources	
Required textbooks (curricu books, if any)	1- Soil salinity. 2012. Dr. Haider Ai-Zoubedi. 2-Lectures
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil Science Society Of America** **Library Genesis**

Course Description Form

337. Course Name:
Soil Organic Matter
338. Course Code:
0023304
339. Semester / Year:
First semester / Junior
340. Description Preparation Date:
26\2\2024
341. Available Attendance Forms:
Actual presence
342. Number of Credit Hours (Total) / Number of Units (Total)
30 theoretical 45 practical units 3.5
343. Course administrator's name (mention all, if more than one name)
Name: Lecturer Dr. Mohammed Abdulridha Naser Email :mohammed.naser@mu.edu.iq

344. Course Objectives

Course Objecti	**• Teaching students the basic concepts related to organic matter in the soil a 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 meth 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 functions, by knowing the level of microbial mass, the ratio of carbon to nitrogen, and nature of the organic matter,** **• Realizing the agricultural and environmental value of organic matter,** **• To contribute to improving the general management of organic matter in the soil.**

345. 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

346. 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 secon	4	**Humus, its origin, definition and properties**	**Soil Organic**	**Explanation,**	**the exam**

			Matter	**presentation of model and lecture**	
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 model and lecture**	**the exam**
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**
Thirteent	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**
fourteent	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**

347. Course Evaluation

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

348. Learning and Teaching Resources

Required textbooks (curricu	**Soil organic matter and organic manure** **Prepared by: Nour El-Din Shawqi Abdel-Wahab Abdel-Razzaq a**

books, if any)	**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 a Nitrogen in the Terrestrial EnvironmentSpringer Netherlands 2008, 81-111.**
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil Science Society Of America** **Internet network**

Course Description Form

349. Course Name:
Soil survey and classification
350. Course Code:
013401
351. Semester / Year:
First / Senior
352. Description Preparation Date:
26\2\2024
353. Available Attendance Forms:
Actual presence
354. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2 practical units 3
355. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Ahmed Kazem Fazza Email: Ahmad.kadhem@mu.edu.iq
356. Course Objectives

Course Objecti	**• 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**

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357. 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

358. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	The student gets to know the con of surveying and classification	Soil survey and classification	Explanation, presentation of model and lecture	the exam
the secon	4	The student gets to know the ty of international categories	Soil survey and classification	Explanation, presentation of model and lecture	the exam
the third	4	For the student to become fami 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 prep soil maps.	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Seventh	4	For the student to become fami 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 v drawing and preparing soil maps.	Soil survey and classification	Explanation, presentation of model and lecture	the exam
Ninth	4	For the student to become fami with the modern American systen soil classification.	Soil survey and	Explanation, presentation of	the exam

			classification	model and lecture	
The tenth	4	The student gets to know the clim and humidity factors	Soil survey an classification	Explanation, presentation of model and lecture	the exam
Eleventh	4	The student gets to know diagnostic soil horizons	Soil survey an classification	Explanation, presentation of model and lecture	the exam
Twelfth	4	The student will know how diagnose unidentified soils	Soil survey an classification	Explanation, presentation of model and lecture	the exam
Thirteent	4	The student gets to know soil types	Soil survey an classification	Explanation, presentation of model and lecture	the exam
fourteent	4		Soil survey an classification	Explanation, presentation of model and lecture	the exam
Fifteenth	4		Soil survey an classification	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 (curricu 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 Referenc Websites	Soil classification

Course Description Form

361. Course Name:

Soil maintenance

362. Course Code:

٠٠١٣٤٠٢

363. Semester / Year:

Second / Senior

364. Description Preparation Date:

26\2\2024

365. Available Attendance Forms:

Actual presence

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

2 theoretical 3 practical units 3

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

Name: Assistant Prof Mustafa Abed Manshood
Email: Mustafa.manshood@mu.edu.iq

368. Course Objectives

Course Objecti	• **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**

369. 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

370. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	**Introduction to soil and wate conservation, its concept and importance, the relationship soil conservation to other topics, Factors affecting soil formati goals and principles, soil maintenance * Rain data analysis**	**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**

the secon	5	**Clouds and rain** ***Calculate the maximum fl rate and use the basic wa relations device**	**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**
the third	5	**Al-Sayh *Applications based the general equation of s losses**	**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**
the fourth	5	**Geological erosion** ***Calculating the gene equation factors for soil los 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 w erosion in the field using general equation for w erosion**	**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**
Sixth	5	**T Soil conservation methods, general soil loss equation** *** Conducting terrace designs**	**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**
Seventh	5	**Wind erosion** ***Field observations on soil a water management procedur**	**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 a 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 erosio**	**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**
Twelfth	5	**For the student to become familiar with the conditions o the lands and soil of Iraq, the types of problems, and how t manage them** **Practical applications on la valuation methods**	**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**
Thirteent			**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**
fourteent			**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**
Fifteenth			**Soil maintenance**	**Explanation, presentation of model and lecture**	**the exam**

371. Course Evaluation	
1-Theoretical tests 2- Practical tests 3- Reports and studies 4- Final exam	25 15 10 50
372. Learning and Teaching Resources	
Required textbooks (curricu books, if any)	1Al-Latif, Nabil Ibrahim 1991. Soil and water conservation. Ministry of Higher Education and Scientific Research. Baghda University -2• Ismail, Laith Khalil, 1985. Soil Conservation. Ministry of Higher Education and Scientific Research. University of Al Mosul. Nineveh. translator. -3 Al-Ani, Abdel Fattah Abdullah, 1987. Soil conservation. Ministry of Higher Education and Scientific Research. Technic Institutes Foundation. Baghdad. -4 Fahd, Ali Abd. 1984. Soil and Water Conservati Engineering. Ministry of Higher Education and Scienti Research. Baghdad University. Baghdad. translator.
Main refe rences (sources)	Articles on land conservation - Dr. Khaled Hassan Al-Khalic Arab Republic of Egypt - 2007
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	

Course Description Form

373. Course Name:
Soil microbiology
374. Course Code:
٠٠١٣403
375. Semester / Year:
First / Senior
376. Description Preparation Date:
26\2\2024
377. Available Attendance Forms:
Actual presence
378. Number of Credit Hours (Total) / Number of Units (Total)

30 theoretical 45 practical units 3

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

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

380. Course Objectives

Course Objecti	• **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**

381. 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

382. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	**Historical overview, definition, and**	**Soil Microbiology**	**Explanation, presentation of model and lecture**	**the exam**
the secon	2	**importance of studying soil microbiolog Sections of soil microbiology**	**Soil Microbiology**	**Explanation, presentation of model and lecture**	**the exam**
the third	2	**Soil microbial groups: bacteria, fu algae, actinomycetes, archa mycorrhizae.**	**Soil Microbiology**	**Explanation, presentation of model and lecture**	**the exam**
the fourth	2	**Organic matter: carbon cycle, enzyma activity in soil**	**Soil Microbiology**	**Explanation, presentation of model and lecture**	**the exam**
Fifth	2	**Biotransformations of N, nitrogen cy urea decomposition, nitration proc mineralization and assimilation, C/N ra**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**

Sixth	2	**Biological nitrogen fixation**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
Seventh	2	**Biological transformations of phosphor its cycle and the role of microorganisms its transformations**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
Eighth	2	**Biological transformations of phosphor its cycle and the role of microorganisms its transformations**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
Ninth	2	**Biological transformations of sulf sulfur cycle, mineralization, microb metabolism, oxidation, and reduction inorganic sulfur compounds.**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
The tenth	2	**Biotransformations of iron: oxidati reduction, and decomposition of orga iron compounds**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
Eleventh	2	**Biotransformations of iron: oxidati reduction, and decomposition of orga iron compounds**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
Twelfth	2	**Decomposition of pesticides in soil**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
Thirteent	2	**Relationships between microorganisi the area surrounding the ro (rhizosphere) and the activity microorganisms in this area Factors affecting the growth of**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	2	**microorganisms, growth microorganisms**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**the exam**
Fifteenth	2	**Factors affecting the growth microorganisms, growth microorganisms**	**Soil Microbiolog**	**Explanation, presentation of model and lecture**	**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 (curricu books, if any)	1- Soil Microbiology, Dr. Ghayath Muhammad Al-Sourji 2-Lectures
Main references (sources)	
Recommended books and	Iraqi academic scientific journals

references (scientific journals, reports…)	
Electronic Referenc Websites	**Soil Micrology**

Course Description Form

385. Course Name:	
Plant Nutrition	
386. Course Code:	
٠٠١٣٤٠٤	
387. Semester / Year:	
First / Senior	
388. Description Preparation Date:	
26\2\2024	
389. Available Attendance Forms:	
Actual presence	
390. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 3 practical units 3	
391. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Falah Hasan Issa Email: flah70-hasan@mu.edu.iq	
392. Course Objectives	
Course Objecti	• **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** •
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	Evaluation method
First	5	**Definition of plant nutrit conditions for the nutrient and importance.**	**Plant Nutrition**	**Explanation, presentation of model and lecture**	**the exam**
the secon	5	**Distribution of nutrients accordin their concentrations, physiolog functions and factors affecting ther**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
the third	5	**Organic matter: its definition, ty and conditions for its decompositio**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
the fourth	5	**Foliar fertilization**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
Fifth	5	**Factor determining plant growth**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
Sixth	5	**Soilless agriculture: its definit importance, and historical overviev**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
Seventh	5	**Types of soilless agriculture and advantages of each**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
Eighth	5	**Preparing the nutrient solution**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
Ninth	5	**Magnet technology: its definit types, importance and disadvantag**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
The tenth	5	**Ionic antagonism**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
Eleventh	5	**The effect of macro elements on pla**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**
Twelfth	5	**The effect of micro elements on pla**	Plant Nutrition	**Explanation, presentation of the mo and lecture**	**the exam**

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

396. Learning and Teaching Resources	
Required textbooks (curricu 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 journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Plant Nutrition Journal** .

Course Description Form

397. Course Name:
Hydrology
398. Course Code:
٠٠١٣٤٠٥
399. Semester / Year:
First / **Senior**
400. Description Preparation Date:
26/2/2024
401. Available Attendance Forms:
Actual attendant
402. Number of Credit Hours (Total) / Number of Units (Total)
60 hrs theoretical 45 hrs practical units 3.5
403. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Dr. Qassim A. Talib Alshujairy Email: qassimtalib@mu.edu.iq

404. 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.

405. 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.

406. 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**		

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 (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

409. Course Name:
English Language
410. Course Code:
U013401
411. Semester / Year:
first semester / Senior
412. Description Preparation Date:
26\2\2024
413. Available Attendance Forms:
Actual presence
414. Number of Credit Hours (Total) / Number of Units (Total)
theoretical 2 practical units 1
415. Course administrator's name (mention all, if more than one name)
Name: Asst.prof. Dr. Ahmed Merza Abood Email : ahmedme@mu.edu.iq
416. 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.**

	- **The student gets to know the concept of the English language.** - **Enabling students to know how to deal with the English language**

417. 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

418. 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 secon	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** **- Homonyms/Homophones** **- Making your point**	**9**	**Explanation, presentation of model and lecture**	**the exam, Quizzes, Reports, and activities in class**
Tenth	2	**Risking life and limb:** **- 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:** **- 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:** **- Articles** **- Determiners** **- Hot words-life, time** **- Linking and commenting**	**12**	**Explanation, presentation of model and lecture**	**the exam, Quizzes, Reports, and activities in class**
Thirteent	2	**Writing:** **- 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** **- Descripting 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**	**1-12**	**Explanation, presentation of model and lecture**	**The exam, Quizzes, Reports, and activities in class**

		- Adding emphasis in writing			
fourteent	2	**Extra material:** **- 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**

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

420. Learning and Teaching Resources	
Required textbooks (curricu books, if any)	Upper-Intermediate Student's Book: New Headway Plus (Jo and Liz Soars) Oxford University Press
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic Referenc Websites	**Internet network**

Course Description Form

421. Course Name:
Modern irrigation technology
422. Course Code:
٠٠١٣٤٠٧
423. Semester / Year:
First semester / Senior
424. Description Preparation Date:
26\2\2024

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- Researches the concept of modern irrigation systems technologies.** **2- Researches ancient and modern irrigation technologies and the difference betw them.** **3- The student evaluates the cost of maintaining irrigation and drainage projects.** **4- The student's knowledge of the philosophy of modern irrigation technologies.** **5- Study the components of modern irrigation systems and methods of maintaining then** **6- Introducing the student to the importance of rationalizing water consumption and wat harvesting.**

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	**Introduction, irrigation netw basics of irrigation system design**	**Modern irrigation technology**	**Explanation, presentation of model and lecture**	**the exam**
the secon	4	**Design factors, water consumpt irrigation interval, and irriga depth**	**Modern irrigation technology**	**Explanation, presentation of model and lecture**	**the exam**
the third	4	**Surface irrigation. Surface irriga mechanism, water balance**	**Modern irrigation**	**Explanation,**	**the exam**

		irrigation	technology	presentation of model and lecture	
the fourth	4	Strip irrigation, design assumpti 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 irriga technologies, water requirem under modern irrigation systems	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Seventh	4	Sprinkler irrigation, components the sprinkler irrigation system, ty of sprinkler irrigation systems	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Eighth	4	Uniformity of spray w distribution, overlapping sp patterns, consistency coefficient water distribution under sprinklers	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Ninth	4	Hydraulics of flow in pi 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 irrigation,	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Thirteent	4	Advantages and disadvantages sprinkler and drip irrigat Maintaining the sprinkler and irrigation system	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
fourteent	4	Center pivot irrigation, components, advantages disadvantages, type characteristics of the sprin package used to distribute water	Modern irrigation technology	Explanation, presentation of model and lecture	the exam
Fifteenth	4	Rationalization of water consumpt water harvesting and its importanc	Modern irrigation technology	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 (curricu books, if any)	1-Modern irrigation technologies and other topics in the wat -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. 2- Field Irrigation Systems Engineering 1992, written by I Ahmed Youssef Hajim and Haqqi Ismail Yassin. Ministry Higher Education and Scientific Research, University of Mos College of Engineering.
Main references (sources)	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 Mosu College of Engineering. 2- Irrigation, its basics and applications, written by Dr. Na Ibrahim Al-Taif and Dr. Issam Khudair Al-Hadithi 198 Ministry of Higher Education and Scientific Resear University of Baghdad.
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil Science Society Of America** **Library Genesis**

Course Description Form

433. Course Name:
Fertilizer technology
434. Course Code:
٠٠٢٣٤٠١
435. Semester / Year:
Second semester / Senior
436. Description Preparation Date:
26\2\2024
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: Prof. Dr. Hanoon N. Kadhem Email: reda@mu.edu.iq
440. Course Objectives

Course Objecti	• **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** •

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	Evaluation method
First	2	**Fertilizers, their types and classificat (fertilizers concepts).**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
the secon	2	**Mineral fertilizers: Nitrogen fertilize their types and behavior in the soil a their manufacture**	Fertilizer technology	**Explanation, presentation of model and lecture**	**the exam**
the third	2	**Phosphate fertilizers, their typ behavior in soil, and manufacturing**	Fertilizer technology	**Explanation, presentation of model and lecture**	**the exam**
the fourth	2	**Potassium fertilizers, their types and th behavior in the soil and th manufacture/Sulphur, calcium a magnesium fertilizers Sulfat, calicium a magnesium fertilizers**	Fertilizer technology	**Explanation, presentation of model and lecture**	**the exam**
Fifth	2	**Its types, behavior in soil and productio**	Fertilizer technology	**Explanation, presentation of model and lecture**	**the exam**
Sixth	2	**Micronutrient Fertilizers, their typ behavior in soil, and manufacturing**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
Seventh	2	**Organic fertilizers (types and methods**	**Fertilizer**	**Explanation,**	**the exam**

		preparation) Organic fertilizers	**technology**	**presentation of model and lecture**	
Eighth	2	**Biofertilizers, their preparation a methods of adding them**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
Ninth	2	**Liquid fertilizers and methods preparing them**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
The tenth	2	**Nano fertilizers (types and methods preparation) Nano fertilizers**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
Eleventh	2	**Fertilizers Evaluation, Mixing a manufacturing**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
Twelfth	2	**Analytical Fertilizer analysis a evaluation/environmental proble associated with the use of fertiliz (pollution).**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
Thirteent	2	**Economics of using fertilizers**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	2	**Techniques of using chemical fertilizers Iraqi agriculture**	**Fertilizer technology**	**Explanation, presentation of model and lecture**	**the exam**
Fifteenth	2	**Fertilizers - type of irrigation systems a types of fertilizers that can be added The movement of fertilizer and eleme in the soil and their impact on pl growth**	**Fertilizer technology**	**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 (curricu 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 alla Suleiman 2- Soil Fertility 1988 Dr. Kazem Mashhout Awad
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic Referenc Websites	**Soil Science Society Of America** **Library Genesis**

Course Description Form

445. Course Name:
Land reclamation
446. Course Code:
٠٠23402
447. Semester / Year:
Second / **Senior**
448. Description Preparation Date:
26\2\2024
449. Available Attendance Forms:
Actual presence
450. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2 practical units 3
451. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Ghanem. B. Noni Email: ghanem-bahlol@mu.edu.iq
452. Course Objectives

Course Objecti	•

453. 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

454. Course Structure

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

First	4	The student gets to know the concept of saline soils	Land Reclamation	Explanation, presentation of model and lecture	the exam
the secon	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 condition 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 pl growth	Land Reclamation	Explanation, presentation of model and lecture	the exam
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 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 wa quality	Land Reclamation	Explanation, presentation of model and lecture	the exam
Eleventh	4	The student will be familiar with irrigation wa 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
Thirteent	4	For the student to become familiar with problems of limestone soils	Land Reclamation	Explanation, presentation of model and lecture	the exam
fourteent	4			Explanation, presentation of model and lecture	the exam
Fifteenth	4			Explanation, presentation of model and lecture	the exam

455. Course Evaluation

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

456. Learning and Teaching Resources

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

Course Description Form

457. Course Name:	
Soil management	
458. Course Code:	
٠٠٢٣٤٠٣	
459. Semester / Year:	
Second / Senior	
460. Description Preparation Date:	
26\2\2024	
461. Available Attendance Forms:	
Actual presence	
462. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 2 practical units 3	
463. Course administrator's name (mention all, if more than one name)	
Name: Assistant Prof Mustafa Abed Manshood Email: Mustafa.manshood@mu.edu.iq	
464. Course Objectives	
Course Objecti	• **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**
465. 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

466. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	The student gets to know introduction to the concept a objectives of educatio management	Soil management	Explanation, presentation of model and lecture	the exam
the secon	5	For the student to recognize importance of classifying soi its management, classificat and level of series	Soil management	Explanation, presentation of model and lecture	the exam
the third	5	Soil surveying tasks in th management, methods measuring areas on land and the map, choosing import drawing standards.	Soil management	Explanation, presentation of model and lecture	the exam
the fourth	5	The student will be famil with the sample and inspect for the purposes administration and scient research, and the rules 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 oth purposes, and how to use s survey reports and maps in s management	Soil management	Explanation, presentation of model and lecture	the exam
Sixth	5	The student gets to know quality of lands and th relationship to production, a the link between the map u the classification unit, and management unit in 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 repo and maps in soil managemen	Soil management	Explanation, presentation of model and lecture	the exam

Eighth	5	**For the student to become familiar with the conditions o the lands and soil of Iraq, the types of problems, and how t manage them Practical applications on la 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 pedagogi and ideological problems**	**Soil management**	**Explanation, presentation of model and lecture**	**the exam**
The tenth	5	**The student should become familiar with agricultural planning and the administrative program that the specialist must present to the employer Preparing the administrat map (an attempt at applicatio**	**Soil management**	**Explanation, presentation of model and lecture**	**the exam**
Eleventh	5	**Good ways to use land and conserve soil and water *Observations of wind erosio**	**Soil management**	**Explanation, presentation of model and lecture**	**the exam**
Twelfth	5	**The student gets to kn desertification, its types a causes**	**Soil management**	**Explanation, presentation of model and lecture**	**the exam**
Thirteent			**Soil management**	**Explanation, presentation of model and lecture**	**the exam**
fourteent			**Soil management**	**Explanation, presentation of model and lecture**	**the exam**
Fifteenth			**Soil management**	**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 (curricu 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	Iraqi academic scientific journals

references (scientific journals, reports…)	
Electronic Referenc Websites	/www.iraqwho.com › About_TheLand_So

Course Description Form

469. Course Name:	
Soil-Plant-Water Relationship	
470. Course Code:	
٠٠٢٣٤٠٤	
471. Semester / Year:	
Second semester / **Senior**	
472. Description Preparation Date:	
26/2/2024	
473. Available Attendance Forms:	
Actual attendant	
474. Number of Credit Hours (Total) / Number of Units (Total)	
60 hrs Theoretical + 45 hrs practical 3>5 units	
475. Course administrator's name (mention all, if more than one name)	
Name: Qassim A. Talib Alshujairy Email: qassimtalib@mu.edu.iq	
476. 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**
477. 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**

478. 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 Agriculture:** **9. Climate Change Impacts:** **10. Applied Research and Technology:** **11. Fieldwork and Practical Skills:**		

479. 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

480. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Soil-Plant-Water Relationship
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

481. Course Name:
Desertification
482. Course Code:
٠٠٢٣٤٠٥
483. Semester / Year:
Second semester / Senior

484. Description Preparation Date:
26\2\2024
485. Available Attendance Forms:
Actual presence
486. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 2
487. Course administrator's name (mention all, if more than one name)
Name:Ass. Prof. Ahmed k.fazza Email ahmad.kadem @mu.edu.iq
488. Course Objectives

Course Objecti	• **The student gets to know the concept of Desertification** • **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** •

489. 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

490. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	**The student gets to know the concept of Desertification**	**Desertificatio**	**Explanation, presentation of model and lecture**	**the exam**
the secon	5	**For the student to know the resources of**	**Desertificatio**	**Explanation,**	**the exam**

		Desertification		**presentation of model and lecture**	
the third	5	**The student will be familiar with the mea of SGS**	**Desertificatio**	**Explanation, presentation of model and lecture**	**the exam**
the fourth	5	**The student will be familiar with the stag of Desertification**	**Desertificatio**	**Explanation, presentation of model and lecture**	**the exam**
Fifth	5	**The student will be familiar with the conditions of soil Deserteficition**	**Desertificati**	**Explanation, presentation of model and lecture**	**the exam**
Sixth	5	**student gets to know the types ofDesertification**	**Desertifiaca n**	**Explanation, presentation of model and lecture**	**the exam**
Seventh	5	**For the student to recognize the aspects o the effect of Deserification**	**Desertificati**	**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 wate 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**
Thirteent	5	**For the student to become familiar with problems of limestone soils**	**Deserificatio**	**Explanation, presentation of model and lecture**	**the exam**
fourteent	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**

491. Course Evaluation

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

492. 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 Referenc Websites	**Soil Science Society Of America** **Library Genesis**