

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



Academic Program and Course Description Guide

2024

Academic Program Description Form

University Name: University of Al-Muthanna

Faculty/Institute: College of Agriculture

Scientific Department: Department of desertification combat

Academic or Professional Program Name: Bachelors

Final Certificate Name: Bachelors desertification combat.....

Academic System: semesters

Description Preparation Date: 3-9-2023

File Completion Date: 3-9-2023

Signature:

Head of Department Name:

Flaieh Hamad Kasir

Date:

Signature:

Scientific Associate Name:

HANON RAKI KADHAN

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 12/3/2024

Signature:



Approval of the Dean

أ.م.د. حيدر عبدالمجيد الحميد

Approval of the Dean

1. Program Vision

The Department of Desertification Combat vision is to be a global leader in education and research dedicated to combating desertification and fostering sustainable environmental practices. The Department of Desertification Combat envisions a world where knowledge, innovation, and community engagement converge to mitigate the impacts of desertification and promote ecological resilience

2. Program Mission

The mission of the Department of Desertification Combat is to advance education, research, and outreach efforts that empower individuals to understand, combat, and adapt to the challenges posed by desertification. Through a multidisciplinary approach, we aim to produce graduates equipped with the knowledge and skills to make significant contributions to environmental conservation and sustainable land management.

3. Program Objectives

1. Provide high-quality academic programs that instill a deep understanding of the causes and consequences of desertification.
2. Foster critical thinking and problem-solving skills to address complex environmental challenges.
3. Conduct innovative research to advance the understanding of desertification processes and develop effective solutions.
4. Collaborate with national and international partners to contribute to the global body of knowledge on desertification.
5. Engage with local communities affected by desertification, providing knowledge and support for sustainable land use practices.
6. Collaborate with governmental and non-governmental organizations to implement community-based initiatives for desertification combat.
7. Integrate modern technologies and remote sensing tools in research and educational practices to enhance monitoring and mitigation efforts.
8. Equip students with the skills to leverage technology for sustainable land management.

4. Program Accreditation

No the program have not program accreditation.

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5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	11	%8	
College Requirements	18	49	%41	
Department Requirements	26	73	51%	
Summer Training				
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First	0C15101	General Physics	2	3
	U015101	Mathematic 1	2	-
	0C15102	Statistics Principles	2	3
	U015102	English language	2	-
	0C15103	Horticulture principles	2	3
	U015103	human rights	1	-
	U015104	Computer Applications 1	-	3
	0C2510	General Chemistry	2	3

	U025101	Mathematics 2	2	-
	0C2512	Principles of field crops	2	3
	U025102	Computer Applications 2	-	3
	0C25103	Plane surveying	2	3
	U025103	Freedom and democracy	1	-
	0025101	Principles Geology	2	3
	0C25104	Engineering Drawing	-	3
Second	0C15201	Soil principles	2	3
	0015201	Micro climate	2	-
	0C15202	Principles of animal production	2	3
	0C15203	Agricultural machinery	2	3
	U015201	Computer applications	2	3
	0C15204	Principles of microbiology	2	3
	0015202	Farm desert lands	2	3
	U015202	English language	2	-
	0C25201	Plant Protection Principles	2	3
	0025201	Meteoric weather	2	-
	0C25202	Pasture management	2	3
	0025202	Land settlement and amendment	2	3
	U025201	Arabic Language	2	-
	0C25203	Agricultural extension principles	2	-
	U025202	Computer Applications 2		3
Third	0015301	Hydrology	2	3
	0015302	Plant Physiology	2	3
	0015303	Desertification	2	-
	0C15301	The economics of natural resources	2	-
	0C15302	Design and analysis of experiments	2	3
	0015304	Soil, Water and Plant Analysis	2	3
	0015305	Soil Physics	2	3
	U015301	English language	2	-
	0025301	Irrigation and puncture	2	3
	0025302	Soil fertility	2	3
	0025303	Desert environment	2	-
	0025304	Remote Sensing	2	3

	0025305	Soil chemistry	2	3
	0025306	Soil, Water and Plant Relationships	2	3
	0025307	Water Harvesting	2	
forth	0015401	Water quality	2	3
	0015402	Sustainable development in desert	2	–
	0015403	Groundwater management	2	3
	0015404	Geographic information systems	2	3
	0015405	Soil Micobiologyr	2	3
	0015406	Graduated research project	1	–
	U015401	English language	2	–
	0015407	Environmental stress	2	3
	0025401	Salinity and reclamation of desert	2	3
	0025402	Cattle production	2	3
	0025403	Desert Soil Management	2	3
	0025404	Wind and water erosion	2	3
	0025405	Seminars	1	–
	0025406	Graduated research project	1	–
	U025401	Professional ethics	1	–
	0025407	Soil survey and Classification	2	3

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

9. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of

the program in general.

10. Evaluation methods

Implemented at all stages of the program in general.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements /Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant professor	Agricultural machinery and equipment	Agricultural machinery and equipment			1	
Assistant professor	Animal production	Physiological in poultry			1	
Assistant professor	Agricultural machinery and equipment	Agricultural machinery and equipment			1	
Assistant professor	Vegetable production	plant nutrition			1	
Assistant professor	Horticulture and landscap	Date Palm Physiology			1	
Assistant professor	Horticulture and landscap	Date Palm Physiology			1	
Assistant professor	Soil Science	Soil fertility			1	
Assistant professor	Biology	Genetic engineering and biotechnology			1	
Assistant professor	agricultural economy	Production economics			1	

Lecturer	Animal Production	Fishes			1	
Lecturer	Plant production	Field crops			1	
Lecturer	Horticulture	Ornamental, Medical, and Aromatic Plants				
						Lecturer
						Lecturer
						Assistant lecturer

Professional Development

Mentoring new faculty members

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

Professional development of faculty members

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

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

State briefly the sources of information about the program.

14. Program Development Plan

- 1- Conduct a comprehensive needs assessment to identify emerging trends, challenges, and opportunities in the field of desertification combat.
- 2- Analyze industry demands, technological advancements, and changes in environmental policies that may impact the program.
- 3- Engage with faculty, students, industry professionals, and community stakeholders to gather input on program strengths, weaknesses, and areas for improvement.
- 4- Form advisory committees or forums to ensure ongoing collaboration and feedback.

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
The first		General Physics	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Mathematic 1	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Statistics Principles	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		English language	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Horticulture principles	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		human rights	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Computer Applications 1	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		General Chemistry	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Mathematics 2	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
The first		Principles of field crops	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Computer Applications 2	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Plane surveying	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Freedom and democracy	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Principles Geology	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
		Engineering Drawing	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
			Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓

			Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
			Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
The second	0C15201	Soil principles	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015201	Micro climate	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0C15202	Principles of animal production	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0C15203	Agricultural machinery	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	U015201	Computer applications	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0C15204	Principles of microbiology	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015202	Farm desert lands	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	U015202	English language	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0C25201	Plant Protection Principles	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025201	Meteoric weather	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0C25202	Pasture management	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025202	Land settlement and amendment	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	U025201	Arabic Language	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0C25203	Agricultural extension principles	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓

The third	U025202	Computer Applications 2	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015301	Hydrology	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015302	Plant Physiology	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015303	Desertification	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0C15301	The economics of natural resources	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0C15302	Design and analysis of experiments	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015304	Soil, Water and Plant Analysis	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015305	Soil Physics	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
third	U015301	English language	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025301	Irrigation and puncture	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025302	Soil fertility	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025303	Desert environment	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025304	Remote Sensing	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025305	Soil chemistry	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025306	Soil, Water and Plant	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓

	0025307	Water Harvesting	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015401	Water quality	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015402	Sustainable development in desert	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015403	Groundwater management	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Fourth	0015404	Geographic information systems	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015405	Soil Microbiologyr	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015406	Graduated research project	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	U015401	English language	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0015407	Environmental stress	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025401	Salinity and reclamation of desert	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025402	Cattle production	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025403	Desert Soil Management	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025404	Wind and water erosion	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025405	Seminars	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	0025406	Graduated research	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓

	U025401	Professional ethics	Basic	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
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Course Description Form

Course Name:
1 – Surveying
Course Code:
0C25103
Semester / Year: 2023-2024
Description Preparation Date:1-9-2023
Available Attendance Forms: Attended
Number of Credit Hours (60) / Number of Units (3)

Course administrator's name (mention all, if more than one name)					
Name: JAWAD KADHIM AL ARIDHEE Email: jawadaridhee@mu.edu.iq					
Course Objectives					
Course Objectives			to determine, measure and represent land three-dimensional objects, point-fields and trajectories; to assemble and interpret land and geographically related information, to use that information for the planning and efficient administration of the land, the sea and any structures thereon; and, to conduct research into the above practices and to develop them		
Teaching and Learning Strategies					
Strategy		1-Explaining the importance of using space and training students to benefit from agricultural aspect 2- Explaining the modern and advanced method in agriculture of finding points of high and low and thus leveling agricultural lands			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Definition of the surveying, the types of surveys, the requirements of a good survey and its the importance in agriculture		Theoretical + practical lecture	Test
2	4	Tape measurement-conditions for		Theoretical + practical	Test

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

				+ practical lecture	
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Surveying		
Main references (sources)			Basic Farm Machin .J.M.shippen,C.R.Ellin and C.H.Clove		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

Course Name:
2- Freedom and democracy
Course Code:
U015103
Semester / Year:

The first stage/ autumn semester					
Description Preparation Date:					
26/2/2024					
Available Attendance Forms:					
Presence					
Number of Credit Hours (Total) / Number of Units (Total)					
2 practical hours. Number of units: 2					
Course administrator's name (mention all, if more than one name)					
Name: Dr. Omar Arhaim Jadoa Email: omarjadoa@mu.edu.iq					
Course Objectives					
Course Objectives		Teaching the student about human rights as well as the relationship of human rights to other variables			
Teaching and Learning Strategies					
Strategy		1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Definition of human rights	A lecture	Quiz
2	2	Theoretical lecture	The emergence and development of human rights	A lecture	Quiz
3	2	Theoretical lecture	A glimpse of human rights in ancient civilizations	A lecture	Quiz
4	2	Theoretical lecture	Human rights in heavenly religions	A lecture	Quiz

5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Human rights and their relationship to other variables	A lecture	Quiz
7	2	Theoretical lecture	The relationship of rights to law	A lecture	Quiz
8	2	Theoretical lecture	The relationship of rights and duties	A lecture	Quiz
9	2	Theoretical lecture	The most important basic human rights	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	The impact of globalization on rights	A lecture	Quiz
12	2	Theoretical lecture	Cairo Declaration on Human Rights in Islam	A lecture	Quiz
13	2	Theoretical lecture	The most important international declarations and conventions	A lecture	Quiz
14	2	Theoretical lecture	The most important international declarations and conventions	A lecture	Quiz
15	2	Theoretical lecture	Financial and administrative corruption	A lecture	Quiz
Co2urse Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Human rights and basic freedoms in Iraq Blend Dealer Shawes		
Main references (sources)			From methodological books, help books, the Internet, and scientific research		
Recommended books and references (scientific journals, reports...)			Scientific journals in basic specializations		
Electronic References, Websites			https://www.un.org/ar/about-us/universal-declaration-of-human-rights		

Course Description Form

Course Name:	
3- General physics	
Course Code:	
0C15101	
Semester / Year:	
The first stage/ Chapter one	
Description Preparation Date:	
26\2\2024	
Available Attendance Forms:	
Actual presence	
Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 2 practical units 1	
Course administrator's name (mention all, if more than one name)	
Name: aula saad rasool Email: aula.abokehella	
Course Objectives	
Course Objecti	<p>General physics investigates natural states of matter, general properties of matter, and mechanical properties For the material.</p> <p>It includes introducing the student to the assumptions of kinetic theory, molecular dimensions and interfacial distances.</p> <p>Brownian motion</p> <p>Students learned about Boyle's law, compressibility and elasticity</p> <p>The student learns about water: its molecular structure, its hydrogen bonding, and properties as a solvent.</p> <p>Study the concept of viscosity, Newton's law of viscosity</p> <p>•Identify optical devices, X-rays.</p>
Teaching and Learning Strategies	
Strategy	<p>1-Explanation and clarification</p> <p>2- Lecture method</p> <p>3- Student groups</p> <p>4- Practical lessons</p> <p>5- Scientific trips</p> <p>6 - Self-learning method</p>

Course Structure					
Week	H ou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
First	2	The student gets to know the states of natural matter, the general properties of matter, and the mechanical properties of matter	General physics	Explanation, presentation of model and lecture	the exam
the second	2	The student will be familiar with the assumptions of kinetic theory, molecular dimensions and interspace distances, and Brownian motion	General physics	Explanation, presentation of model and lecture	the exam
the third	2	The student gets to know molecular speeds, molecular forces, collisions between molecules, and their properties of matter	General physics	Explanation, presentation of model and lecture	the exam
the fourth	2	The student gets to know mechanics: the laws of force and motion, the laws of motion in one dimension, and the free fall of bodies The student gets to know Newton's laws of motion: the first law of motion, the second law of motion, Newton's law of universal gravitation	General physics	Explanation, presentation of model and lecture	the exam
Fifth	2	The student gets to know water: molecular structure, its hydrogen bonding, and its properties as a solvent	General physics	Explanation, presentation of model and lecture	the exam
Sixth	2	The student gets to know surface tension, contact angle, and capillary property	General physics	Explanation, presentation of model and lecture	the exam
Seventh	2	The student will learn about diffusion and the osmotic phenomenon	General physics	Explanation, presentation of model and lecture	the exam
Eighth	2	The student will learn about viscosity, Newton's law of viscosity	General physics	Explanation, presentation of model and lecture	the exam
Ninth	2	The student gets to know the flow of fluids, fluid pressure, and Poiseuille's law	General physics	Explanation, presentation of model and lecture	the exam
The tenth	2	The student gets to know Stock's Law, its derivation and applications	General physics	Explanation, presentation of model and lecture	the exam
Eleventh	2	The student will be familiar with the	General	Explanation,	the exam

		relationships of volume and weight, density of objects, porosity, surface area and specificity	physics	presentation of model and lecture	
Twelfth	2	The student will be familiar with optical devices and X-rays	General physics	Explanation, presentation of model and lecture	the exam
Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
Learning and Teaching Resources					
Required textbooks (curriculum books, if any)		Daniel Schaum: A series of Schaum's summaries of theories and problems in university physics.			
Main references (sources)		1- Principles of general physics _ Dr. Aqeel Mahdi Kazem 2- Dr. Rahim Abdelkatal: University Physics, Part 1, Mechanics and Properties of Matter, Wave Motion, and Heat Iraqi academic scientific journals			
Recommended books and references (scientific journals, reports...)		Iraqi academic scientific journals			
Electronic Websites		Physics Pdf Book			

Course Description Form

Course Name:
4- Mathematic
Course Code:
U015101
Semester / Year:

The first stage/ autumn semester	
Description Preparation Date:	
26/2/2024	
Available Attendance Forms:	
Presence	
Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical hours Number of units: 2	
Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Mohammed Radwan Mahmood Email: raheemhalol@mu.edu.iq	
Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Enable the student to become familiar with mathematics in general and its applications in various experiments • – Enable the student to know and understand mathematics and perform the steps correctly and correctly in solving mathematical problems • – Providing the student with the skills to deal with different sections of mathematics and various uses of mathematical applications • –Enabling the student to solve complex problems and various applications in various fields
Teaching and Learning Strategies	
Strategy	1 Explanation and clarification 2 Lecture method 3 Student groups

4Practical lessons in laboratories					
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Classes and functions	A lecture	Quiz
2	2	Theoretical lecture	Mathematical deduction and the binomial theorem	A lecture	Quiz
3	2	Theoretical lecture	Partial fractures	A lecture	Quiz
4	2	Theoretical lecture	Matrices and determinants	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Solve the simultaneous equation using matrices	A lecture	Quiz
7	2	Theoretical lecture	Cramer's rule and coordinates	A lecture	Quiz
8	2	Theoretical lecture	Equation of a straight line in different forms	A lecture	Quiz
9	2	Theoretical lecture	Circle	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Parabola	A lecture	Quiz
12	2	Theoretical lecture	Ellipse	A lecture	Quiz
13	2	Theoretical lecture	Hyperbola	A lecture	Quiz
14	2	Theoretical lecture	Derivative and tangent rules Linking	A lecture	Quiz
15	2	Theoretical lecture	mathematics to statistics	A lecture	Quiz
Co2course 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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Calculus, Gilbert Strang		

Main references (sources)	1- Calculus Early Transcendentals, 12th Edition, Thomas, Pearson Education. 2- Calculus, Robert T. Smith & Ronald B. Minton, McGraw- Hill
Recommended books and references (scientific journals, reports...)	11-Intermediate Algebra, Lynn Marecek, Santa Ana College 2-Calculus, David Guichard and others
Electronic References, Websites	http://tutorial.math.lamar.edu/

Course Description Form

Course Name:
5- Horticulture
Course Code:
0C15103
Semester / Year:
Description Preparation Date:
01/09/2024
Available Attendance Forms:

Number of Credit Hours (Total) / Number of Units (Total)					
Course administrator's name (mention all, if more than one name)					
Name: Emad A.M.Aldahab Email: emad.aldahab@mu.edu.iq					
Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Introducing the student to the various horticultural crops, their economic, nutritional, medical and aesthetic importance, methods of cultivation and production, and identifying various horticultural facilities and methods establishing orchards. • Knowledge of horticulture departments • Know the difference between horticultural crops and field crops • Identify the factors affecting the success of growing horticultural crops • Identify the factors determining the establishment of orchards <ul style="list-style-type: none"> • Learn how to create public and private parks and plant trees in cities and central islands 			
Teaching and Learning Strategies					
Strategies		Introducing the student to the various horticultural crops, their economic, nutritional, medical and aesthetic importance, methods of cultivation and production, and identifying various horticultural facilities and methods establishing orchards.			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	2	Learn about horticulture, the history of the development	horticulture, the history of the development	Attend	a daily test

		of horticulture, its economic and nutritional importance	of horticulture, its economic and nutritional importance		
the second	2	Learn how to divide horticultural plants	divide horticultural plants	Attend	a daily test
the third	2	Identify environmental factors and their impact on horticultural crop production	environmental factors and their impact on horticultural crop production	Attend	a daily test
the fourth	2	Identify methods of reproduction of horticultural plants (sexual and asexual)	the methods of reproduction of horticultural plants (sexual and asexual)	Attend	a daily test
Fifth	2	Identifying nurseries and field farming patterns	nurseries and field farming patterns	Attend	a daily test
VI	2	Learn about agricultural and horticultural processes	agricultural and horticultural processes	Attend	a daily test
Seventh	2	Learn about agriculture under air-conditioned environments	agriculture under air-conditioned environments	Attend	a daily test
VIII	2	Getting to know the genetic, marketing	the genetic, marketing	Attend	a daily test
Ninth	2	Learn about care and storage	care and storage	Attend	a daily test
The tenth	2	Learn about breeding and	breeding and improving	Attend	a daily test

		improving horticultural plants	horticultural plants		
eleventh	2	Learn about garden architecture and design	garden architecture and design	Attend	a da test
twelveth	2	Learn about wa to exploit spac and roofs buildings growing horticultural plants	a ways to expl spaces and roofs buildings growing horticultural plants	Attend	a daily test
Thirteenth	2	Identify windbreaks and their role in reducing desertification conditions	windbreaks and their role in reducing desertification conditions	Attend	a daily test
fourteenth	2	Learn how to u modern mechanization serve horticultu plants	how to use modern mechanization to serve horticultu plants	Attend	a daily test
Fifteenth	2	Identifying (medicinal and aromatic plants, fruit trees, vegetable plants ornamental plants)	(medicinal and aromatic plants, fruit trees, vegetable plants ornamental plants)	Attend	a daily test

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

Course Name:	
6- statistics principle	
Course Code:	
0C15102	
Semester / Year:	
Description Preparation Date:	
Available Attendance Forms:	
Number of Credit Hours (Total) / Number of Units (Total)	
Course administrator's name (mention all, if more than one name)	
Name: sadeq Hadi Hussein	
Email: Sadeq.hadi@mu.edu.iq	
Course Objectives	
Course Objectives	- Active participation in answering questions

	<ul style="list-style-type: none"> - Weekly assignments in order to practice applying the laws - Monthly tests
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Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> - Introducing students to the principles, basics, and applications of statistics - Teaching students the importance of knowing the statistical standards applied in agricultural research
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Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			1- A historical overview, definition, importance and applications of statistics 2- Introducing statistical terminology and methods for obtaining random samples 3- Tabular and graphical presentation 4- Concentration metrics		

			<p>5- How to make a frequency distribution table</p> <p>6- Measures of relative dispersion</p> <p>7- The relationship between the arithmetic mean, median, and mode</p> <p>8- T-test and F-test</p> <p>9- Simple regression</p> <p>10- Correlation</p> <p>11- Probability distributions</p> <p>12- Normal distribution</p> <p>13- Analysis of variance</p>		
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Course Evaluation

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Learning and Teaching Resources

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

Course Description Form

Course Name:	
7- Geology	
Course Code:	
Semester / Year:	
firstL2023-2024	
Description Preparation Date:	
1\9\2023	
Available Attendance Forms:	
Actual presence	
Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 3 practical units 3.5	
Course administrator's name (mention all, if more than one name)	
Name:dr.aula saad rasool abokehella Email aula.abokehella@mu.edu.iq	
Course Objectives	
Course Objecti	<p>The student gets to know the classification and types of fertilizers and their importance</p> <ul style="list-style-type: none"> • For the student to learn about methods of adding fertilizers • The student should separate the positive and negative aspects of fertilizer and its harm to plants

	<ul style="list-style-type: none"> • For the student to recognize pollution from chemical fertilizers • The student should evaluate soil fertility
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Teaching and Learning Strategies

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

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2	The student gets to know the concept of Classification	Soil Classification	Explanation, presentation of model and lecture	the exam
the second	2	For the student to know the methods of Soil Classification	Classification	Explanation, presentation of model and lecture	the exam
the third	2	The student will be familiar with the means of Formation soil	Classification	Explanation, presentation of model and lecture	the exam
the fourth		The student will be familiar with the Soil survey	Classification	Explanation, presentation of model and lecture	the exam
Fifth	2	The student will be familiar with the conditions of soil formation	Classification	Explanation, presentation of model and lecture	the exam
Sixth	2	student gets to know the types Rocks	Classification	Explanation, presentation of model and lecture	the exam
Seventh	2	For the student to recognize the aspects the earth systems	Classification	Explanation, presentation of model and lecture	the exam
Eighth	2	The student will be familiar with the indicators for determining the effect of	Classification	Explanation, presentation of	the exam

		Geology		model and lecture	
Ninth	2	The student will be familiar with the means of increasing the ability of Field survey	Classification	Explanation, presentation of model and lecture	the exam
The tenth	2	The student will be familiar with the factors determining the quality of irrigation water and the indicators used determine the quality of irrigation water	Classification	Explanation, presentation of model and lecture	the exam
Eleventh	2	The student will be familiar with irrigation water classification systems	Classification	Explanation, presentation of model and lecture	the exam
Twelfth	2	The student will learn Fao classification	Classification	Explanation, presentation of model and lecture	the exam
Thirteenth	2	For the student to become familiar with problems of limestone soils	classification	Explanation, presentation of model and lecture	the exam
fourteenth	2	The student will be familiar with the means of increasing the ability of plants tolerate salinity	classification	Explanation, presentation of model and lecture	the exam
Fifteenth	2		Soil classification	Explanation, presentation of model and lecture	the exam
Course Evaluation					
1-Theoretical tests	25				
2- Practical tests	15				
3- Reports and studies	10				
4- Final exam	50				
Learning and Teaching Resources					
Required textbooks (curriculum books, if any)	11- soil classification dr. Ahmed ALmashedany				
Main references (sources)					
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals				
Electronic Websites	Referenc	Soil Science Society Of America Library Genesis			

Course Description Form

Course Name:	
8- English course	
Course Code:	
U015102	
Semester / Year: Semester	
first	
Description Preparation Date:	
Available Attendance Forms:	
Number of Credit Hours (Total) / Number of Units (Total)	
2hours weekly	
Course administrator's name (mention all, if more than one name)	
Name: Lafta Awad Atshan Email: lafta.awad@mu.edu.iq	
Course Objectives	
Course Objectives	English language skills
Teaching and Learning Strategies	
Strategy	

Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Sentences strictures		
2	2		Past tense		
3	2		Past simple		
4	2		Past continuous		
5	2		Present tenses		
6	2		Present Simple		
7	2		Present continuous		
8	2		Future tense		
9	2		Future simple		
10	2		Paragraphs writing		
11	2		Paragraphs writing		
12	2		Paragraphs writing		
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)			Cambridge English: Preliminary		
Recommended books and references (scientific journals, reports...)			Cambridge English: Preliminary		
Electronic References, Websites			An English videos		

Course Description Form

Course Name:	
9- computers	
Course Code:	
U015104	
Semester / Year:	
Semester	
Description Preparation Date:	
27/2/2024	
Available Attendance Forms:	
Attend	
Number of Credit Hours (Total) / Number of Units (Total)	
6	3
Course administrator's name (mention all, if more than one name)	
Name: Assistant Professor samer saud Email: @mu.edu.iq	
Course Objectives	
Course Objectives	* This course description provides a necessary summary of the most important characteristics the course and the learning outcomes that the student is expected to achieve, demonstrating whether he has made the most of the available learning opportunities, and this must be linked the program description.

	<p>1– Getting to know office programs, including (Excel).</p> <p>2– Managing databases using Excel</p> <p>1–The ability to work in all areas of computer use.</p> <p>2– Increasing the spirit of competition among students for the sake of academic excellence and obtaining good job opportunities.</p> <p>3– Increasing competition among students in order to obtain the opportunity to apply for postgraduate studies</p> <p>4– Providing assistance to other institutions.</p>
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Teaching and Learning Strategies

Strateg

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Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first			A historical overview of microbiology, definition of microbiology, its types, and its relationship to other sciences	Direct lecture	
second			Familiarity with office programs		
Third			The main interface of Excel		

forth			Save Excel workbooks, autosave, and save edits		
Fifth			Create and manipulate tables in Excel		
Sixth			Identify the types of data that can be entered into Excel cells		
Seventh			First month exam		
Eighth			Writing equations in Excel		
Ninth			Ready-made formulas		
tenth			Types of functions in Excel		
11			How to write a function and get result		
12			Second monthly exam		
13			Table and text formats		
14			Search, replace and alphabet		
15			Practical applications		
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					
Learning and Teaching Resources					
Required textbooks (curricular books, any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Form

1. Course Name:	
Engineering Drawing	
2. Course Code:	
0C25104	
3. Semester / Year:	
First semester / First	
4. Description Preparation Date:	
26\2\2024	
5. Available Attendance Forms:	
Actual presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
theoretical	practical 2 units 1
7. Course administrator's name (mention all, if more than one name)	
Name: Assistant Professor Dr. Ahmed Merza Abood Email : ahmedme@mu.edu.iq	
8. Course Objectives	
Course Objecti	<p>1- Teaching students, the basic concepts related to access to the simple basics of an engineering drawing for students of the College of Agriculture.</p> <p>2- Development the ability of preparing engineering designs for agricultural projects,</p> <p>3- Student be able to read various engineering drawings and implement them in</p>

	Reality.
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9. Teaching and Learning Strategies

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

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

		engineering drawing		presentation of model and lecture	Reports, and activities in class
Sixth	2	The student will be familiar with the vertical projection of points, straight lines, and flat surfaces	6	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Seventh	2	The student will be familiar with the vertical projection of points, straight lines, and flat surfaces	7	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class
Eighth	2	student will know the complete sections	8	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class
Ninth	2	student will recognize the semi-section area	9	Explanation, presentation of model and lecture	the exam, Quizzes, Reports, and activities in class

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

				model and lecture	Reports, and activities in class
Fifteenth	2	Student becomes familiar with drawing parallel surfaces.	15	Explanation, presentation of model and lecture	The exam, Quizzes, Reports, and activities in class

11. Course Evaluation

1- Monthly tests	30
2- Daily tests	10
3- Daily duties and attendance	10

12. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Engineering drawing for students of the College of Agriculture (Dr. Eng. Natiq Sabri - University of Mosul 1995)
Main references (sources)	Engineering drawing (Professor Abdul Rasul Al-Khafaf University of Technology 1990)
Recommended books and references (scientific journals, reports...)	Engineering drawing books for all engineering disciplines - Noor Library
Electronic Websites	Referenc https://www.gulf-up.com/uz2pnxd1v0st

Second stage

Course Description Form

Course Name:
10- Agricultural machinery and equipment
Course Code:
0C15203
Semester / Year: 2023-2024

Description Preparation Date:1-9-2023					
Available Attendance Forms: Attended					
Number of Credit Hours (60) / Number of Units (3)					
Course administrator's name (mention all, if more than one name)					
Name: JAWAD KADHIM AL ARIDHEE Email: jawadaridhee@mu.edu.iq					
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		
Teaching and Learning Strategies					
Strategy					
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Classification of tractors , Mechanical transmission methods		Theoretical + practical lecture	Test
2	4	Internal combustion engine parts		Theoretical + practical	Test

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

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					
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

Course Name:
11- Lands leveling and grading
Course Code:
0025202
Semester / Year: 2023-2024
Description Preparation Date:1-9-2023
Available Attendance Forms: Attended
Number of Credit Hours (60) / Number of Units (3)
Course administrator's name (mention all, if more than one name)
Name: JAWAD KADHIM AL ARIDHEE Email: jawadaridhee@mu.edu.iq
Course Objectives

Course Objectives	<p>Increasing the production of agricultural crops in quantity and quality due to the distribution of water in the field at approximately one depth</p> <p>Ease of irrigation, as the water is distributed evenly throughout the field. This means reducing the amount of water required by the irrigation process and reducing the effort and time required for this process, unlike uneven lands that require a large amount of irrigation water in addition to the greater time and effort to do</p>
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Teaching and Learning Strategies

Strategy	<p>1- Create a slope that provides an appropriate amount of water</p> <p>2- Leveling the field in the best way using the least possible amount of soil transport for the purpose of leveling</p>
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Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Definition of the Lands leveling and grading		Theoretical + practical lecture	Test
2	4	Types of leveling - application requirements		Theoretical + practical lecture	Test
3	4	the factors that must be followed before starting work to level and modify: soil factors, environmental factors, plants, and human factors		Theoretical + practical lecture	Test
4	4	Topographic variation: its relationship to of level - estimation methods - direct methods - indirect methods		Theoretical + practical lecture	Test
5	4	Land leveling without slope		Theoretical + practical lecture	Test

6	4	Field works - implementation methods - work stages - calculations and estimation		Theoretical + practical lecture	Test
7	4	the leveling ground with one slope		Theoretical + practical lecture	Test
8	4	the leveling ground with two slope		Theoretical + practical lecture	Test
9	4	Calculations, estimates and evaluation		Theoretical + practical lecture	Test
10	4	Selection of machines		Theoretical + practical lecture	Test
11	4	Types of machines - testing standards - efficiency and utilization of machines		Theoretical + practical lecture	Test
12	4	Laser leveling		Theoretical + practical lecture	Test
13	4	Make a leveling plan		Theoretical + practical lecture	Test
14	4	Times for leveling - and ways to succeed		Theoretical + practical lecture	Test

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

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

Course Name:
12- pasture management
Course Code:
0C25202
Semester / Year:
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
Course administrator's name (mention all, if more than one name)
Name: sadeq Hadi Hussein
Email: Sadeq.hadi@mu.edu.iq

Course Objectives					
Course Objectives		<ul style="list-style-type: none"> - Taking care of weekly duties - Active participation of students after asking questions - Repeat the lecture from last week by one or two students 			
Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> - Introducing students to farm management - The role of management in managing the resources involved in the production process 			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			1- Introduction to farm management 2-The nature of the costs 3- The principle of equal marginal returns 4- The principle of determining and determining the best		

			<p>level of production</p> <p>5- The principle of opportunity costs</p> <p>6-Comparative costs theory</p> <p>7- Farm budget</p> <p>8- Farm accounts and records</p> <p>9- Agricultural planning</p> <p>10- Measures of economic efficiency on the farm</p>		
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Course Evaluation

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Learning and Teaching Resources

Required textbooks (curricular books, if any)	Farm Business Management - Hashem Alwan Al-Samarrai
Main references (sources)	Economics of agricultural production - Salem Tawfiq Al-Najafi
Recommended books and references (scientific journals,	

Course Objectives	<ul style="list-style-type: none"> * Introducing the student to the nature of microbiology * Different types of microorganisms * The use of microorganisms in the agricultural field
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Teaching and Learning Strategies

Strategies	<ul style="list-style-type: none"> - Cognitive objectives * Enables the student to understand the nature of microorganisms * 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
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Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first			A historical overview of microbiology, definition of microbiology, its types, and its relationship to other sciences	Direct lecture	
second			Bacteria, their shapes and composition		

Third			Different metabolic activities of bacteria		
forth			Fungi, their general characteristics and types		
Fifth			Different metabolic activities of fungi and their classification		
Sixth			Monthly exam		
Seventh			Viruses, their definition, structure and types		
Eighth			Types of virus replication		
Ninth			Algae definition, structure and type		
tenth			Biofertilizers, their types and importance		
11			Second part of biofertilizers		
12			Second monthly exam		
13			Protozoa , its definition, structure and sections		
14			General Review		
15			Comprehensive exam		
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					
Learning and Teaching Resources					
Required textbooks (curricular books, any)			General microbiology		
Main references (sources)			Books related to the subject and scientific research		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

Course Name:
14- agriculture extension principle
Course Code:
0C25203
Semester / Year:
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
Course administrator's name (mention all, if more than one name)
Name: sadeq Hadi Hussein
Email: Sadeq.hadi@mu.edu.iq

Course Objectives

Course Objectives

- Participation in the classroom
- Requesting weekly assignments to be submitted
- Quick and surprise exam in the previous lecture
- Monthly tests
- Choose a title from the lectures and make a report that the student delivers in class

Teaching and Learning Strategies

Strategy

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

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			1- A historical overview of agricultural extension 2- Types of extension training 3- Communication		

			<p>process</p> <p>4- The process of adoption and spread of modern innovations</p> <p>5- Rural leadership</p> <p>6- Planning extension programs</p> <p>7- Agricultural extension methods and extension methods</p> <p>8- The philosophy of agricultural extension</p> <p>9- Learning and teaching</p> <p>10- The importance of using modern irrigation methods and their economic effects</p> <p>11- The role of agricultural extension in preserving archaeological areas</p> <p>12- Water crisis</p>		
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Course Evaluation

Course Objectives	<p>* This course description provides a necessary summary of the most important characteristics the course and the learning outcomes that the student is expected to achieve, demonstrating whether he has made the most of the available learning opportunities, and this must be linked the program description.</p> <p>1– Getting to know office programs, including (Excel).</p> <p>2– Managing databases using Excel</p> <p>1–The ability to work in all areas of computer use.</p> <p>2– Increasing the spirit of competition among students for the sake of academic excellence a obtaining good job opportunities.</p> <p>3– Increasing competition among students in order to obtain the opportunity to apply for postgraduate studies</p> <p>4– Providing assistance to other institutions.</p>
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Teaching and Learning Strategies

Strateg	-
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Course Structure

Week	Hours	Require d Learning Outcom es	Unit or subject name	Learning method	Evaluation method
first			A historical overview of microbiology, definition of microbiology, its types, and its relationship to other sciences	Direct lecture	

second			Familiarity with office programs		
Third			The main interface of Excel		
forth			Save Excel workbooks, autosave, and save edits		
Fifth			Create and manipulate tables in Excel		
Sixth			Identify the types of data that can be entered into Excel cells		
Seventh			First month exam		
Eighth			Writing equations in Excel		
Ninth			Ready-made formulas		
tenth			Types of functions in Excel		
11			How to write a function and get result		
12			Second monthly exam		
13			Table and text formats		
14			Search, replace and alphabet		
15			Practical applications		
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					
Learning and Teaching Resources					
Required textbooks (curricular books, any)					

Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

Course Name:
16- English course
Course Code:
U015202
Semester / Year: Semester
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
2hours weekly
Course administrator's name (mention all, if more than one name)
Name: Lafta Awad Atshan

Email: lafta.awad@mu.edu.iq

Course Objectives

Course Objectives

English language skills

Teaching and Learning Strategies

Strategy

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Sentences strictures		
2	2		Past tense		
3	2		Past simple		
4	2		Past continuous		
5	2		Present tenses		
6	2		Present Simple		
7	2		Present continuous		
8	2		Future tense		
9	2		Future simple		
10	2		Paragraphs writing		
11	2		Paragraphs writing		
12	2		Paragraphs writing		

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Cambridge English: Preliminary

Recommended books and references (scientific journals, reports...)

Cambridge English: Preliminary

Electronic References, Websites

An English videos

Course Description Form

Course Name:
17- Principles of animal production
Course Code:
C152020
Semester / Year:
The first stage/ autumn semester
Description Preparation Date:
26/2/2024
Available Attendance Forms:
Presence

Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical hours and 3 practical hours. Number of units: 3					
Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Saad Atallah Abd sada Email: asadata@mu.edu.iq					
Course Objectives					
Course Objectives			<ul style="list-style-type: none"> It aims for the student to recognize the economic importance of animal production, as well as the sciences associated with it and the relationship of animal production to plant production. 		
Teaching and Learning Strategies					
Strategy		1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Introduction to animal production and its economic importance	A lecture	Quiz
2	2	Theoretical lecture	Factors affecting the production efficiency of farm animals	A lecture	Quiz
3	2	Theoretical lecture	Obstacles facing animal production in Iraq and ways to improve them	A lecture	Quiz

4	2	Theoretical lecture	Dairy cows, beef cows and dual-purpose cows	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Establishing and managing a flock of sheep and goats	A lecture	Quiz
7	2	Theoretical lecture	Buffalo, general characteristics of buffalo	A lecture	Quiz
8	2	Theoretical lecture	Poultry birds, the economic importance of poultry projects	A lecture	Quiz
9	2	Theoretical lecture	Nutrition and fodder	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Health care for poultry birds	A lecture	Quiz
12	2	Theoretical lecture	Genetic improvement in poultry	A lecture	Quiz
13	2	Theoretical lecture	Sheep and goats economic importance	A lecture	Quiz
14	2	Theoretical lecture	Classification and methods used for classification	A lecture	Quiz
15	2	Theoretical lecture	Sheep breeding	A lecture	Quiz
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Animal Production Zuhair Al-Jalili		
Main references (sources)			From methodological books, help books, the Internet, and scientific research		
Recommended books and references (scientific journals, reports...)			Scientific journals in basic specializations		
Electronic References, Websites			Animal Science Journal		

Course Description Form

Course Name:
18- Principles of soil science
Course Code:
0C15201
Semester / Year:
The first stage/ autumn semester
Description Preparation Date:
26/2/2024
Available Attendance Forms:
Presence
Number of Credit Hours (Total) / Number of Units (Total)

2 theoretical hours and 3 practical hours. Number of units: 3					
Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Raheem Alwan Halool Email: raheemhalol@mu.edu.iq					
Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • Introducing the student to the properties of soil • Knowing the types of soil clays • Classification of soils and lands in Iraq 			
Teaching and Learning Strategies					
Strategy		1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	General definitions and concepts of soil	A lecture	Quiz
2	2	Theoretical lecture	Origin and development of soil	A lecture	Quiz
3	2	Theoretical lecture	Physical properties of soil	A lecture	Quiz
4	2	Theoretical lecture	Physical properties of soil	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Soil water	A lecture	Quiz
7	2	Theoretical lecture	Colloids and soil chemical properties	A lecture	Quiz
8	2	Theoretical lecture	Types of soil clays and their respective	A lecture	Quiz
9	2	Theoretical lecture	characteristics	A lecture	Quiz

			Organic colloids		
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Soil salinity	A lecture	Quiz
12	2	Theoretical lecture	Classification of soils affected by salinity	A lecture	Quiz
13	2	Theoretical lecture	Biological properties of soil	A lecture	Quiz
14	2	Theoretical lecture	Important nutrients in the soil	A lecture	Quiz
15	2	Theoretical lecture	Classification of soils and lands in Iraq	A lecture	Quiz

Co2urse Evaluation

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)	Soil Science Abdullah Najim Al-Ani
Main references (sources)	From methodological books, help books, the Internet, and scientific research
Recommended books and references (scientific journals, reports...)	Scientific journals in basic specializations
Electronic References, Websites	https://mail.almerja.com/reading.php?idm=195342

Course Description Form

Course Name:
19– Principles of protection
Course Code:
0C25201
Semester / Year:
The first stage/ autumn semester

Description Preparation Date:					
26/2/2024					
Available Attendance Forms:					
Presence					
Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical hours and 3 practical hours. Number of units: 3					
Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Dr. Malik Hassan Kareem Email: malikhassan@mu.edu.iq					
Course Objectives					
Course Objectives			<ul style="list-style-type: none"> It aims to familiarize the student with entomology and its related sciences, insects, their benefits and harms. 		
Teaching and Learning Strategies					
Strategy		1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Theoretical lecture	Introduction to entomology	A lecture	Quiz
2	2	Theoretical lecture	Insect feeding methods and auxiliary factors	A lecture	Quiz
3	2	Theoretical lecture	Methods of insect reproduction	A lecture	Quiz
4	2	Theoretical lecture	Methods of insect	A lecture	Quiz

			resistance		
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	The economic mastitis and important factors	A lecture	Quiz
7	2	Theoretical lecture	The nature of life and damage of rodents	A lecture	Quiz
8	2	Theoretical lecture	Economic importance of pests	A lecture	Quiz
9	2	Theoretical lecture	Definitions of disease terms	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Plant pathogens	A lecture	Quiz
12	2	Theoretical lecture	Non-parasitic pathogens	A lecture	Quiz
13	2	Theoretical lecture	Stages of disease development	A lecture	Quiz
14	2	Theoretical lecture	Methods of controlling plant diseases	A lecture	Quiz
15	2	Theoretical lecture	Rodent control	A lecture	Quiz
Co2urse Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)			General entomology Ibrahim Qaddouri Al-Qaddo		
Main references (sources)			From methodological books, help books, the Internet, and scientific research		
Recommended books and references (scientific journals, reports...)			Scientific journals in basic specializations		
Electronic References, Websites			https://www.uoanbar.edu.iq/eStoreImages/Bank/926.pdf		

Course Description Form

Course Name:					
20- Arabic Language					
Course Code:					
U025201					
Semester / Year:					
The first stage/spring semester					
Description Preparation Date:					
26/2/2024					
Available Attendance Forms:					
Presence					
Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical hours Number of units: 2					
Course administrator's name (mention all, if more than one name)					
Name: Ass. Lecturer Amer Mousa Kadhum Email: amermousak@mu.edu.iq					
Course Objectives					
Course Objectives			Teaching the student grammar and parsing, as well as rhetoric in the Holy Quran.		
Teaching and Learning Strategies					
Strategy		1 Explanation and clarification 2 Lecture method 3 Student groups 4 Practical lessons in laboratories			
Course Structure					
Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	2	Theoretical lecture	Rhetoric in the Holy Quran	A lecture	Quiz
2	2	Theoretical lecture	Interpretation of twenty verses	A lecture	Quiz
3	2	Theoretical lecture	Arabic / Grammar and parsing	A lecture	Quiz
4	2	Theoretical lecture	The subject and the predicate	A lecture	Quiz
5	2	Exam	Exam	Exam	Exam
6	2	Theoretical lecture	Copiers	A lecture	Quiz
7	2	Theoretical lecture	Imperfect verbs	A lecture	Quiz
8	2	Theoretical lecture	Effects	A lecture	Quiz
9	2	Theoretical lecture	Preparation	A lecture	Quiz
10	2	Exam	Exam	Exam	Exam
11	2	Theoretical lecture	Hamza and dictates	A lecture	Quiz
12	2	Theoretical lecture	Rules for writing ta'	A lecture	Quiz
13	2	Theoretical lecture	Ages of Arabic literature	A lecture	Quiz
14	2	Theoretical lecture	Old poetry	A lecture	Quiz
15	2	Theoretical lecture	Writing common mistakes	A lecture	Quiz

Co2urse Evaluation

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

Learning and Teaching Resources

Required textbooks (curricular books any)	Arabic language Rafid Sabbah
Main references (sources)	From methodological books, help books, the Internet, and scientific research
Recommended books and references (scientific journals,	Scientific journals in basic specializations

reports...)	
Electronic References, Websites	https://www.wuduh1.com/2023/10/books-arabic.html

Course Description Form

Course Name:	
21- farm of desert lands	
Course Code:	
0015202	
Semester / Year:	
the first	
Description Preparation Date:	
1/9/2023	
Available Attendance Forms:	
Number of Credit Hours (Total) / Number of Units (Total)	
Course administrator's name (mention all, if more than one name)	
Name: Dhafer Abdulrheem Shaker Email: dhaferabdshaker@mu.edu.iq	
Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Learn how to maintain desert soil. • Identify methods for multiplying vegetable crops. • Identifying vegetable crops that can be grown in desert areas. • Reaching maximum production by using the optimal farming method and the best modern irrigation methods. • Using protected agriculture in vegetable production.

Teaching and Learning Strategies					
Strategy					
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	2	Identify the environmental requirements of vegetable crops grown in desert areas	the environmental requirements of vegetable crops grown in desert areas	Attend	a daily test
the second	2	Identifying the agricultural patterns adopted for farming desert areas	the agricultural patterns adopted for farming desert areas	Attend	a daily test
the third	2	Identifying vegetable crops that can be grown in desert areas: the Solanaceae family.	vegetable crops that can be grown in desert areas: the Solanaceae family.	Attend	a daily test
the fourth	2	Getting to know the cucurbit family.	know the cucurbit family.	Attend	a daily test
Fifth	2	Identifying the Allium family and the Tuber family.	the Allium family and the Tuber family.	Attend	a daily test
VI	2	Identify the original homeland of the olive tree	the original homeland of the olive tree	Attend	a daily test
Seventh	2	Identify pollination in olives	pollination in olives	Attend	a daily test
VIII	2	Identify the environmental needs of olives	the environmental needs of olives	Attend	a daily test
Ninth	2	Learn about the botanical description of the palm tree	the botanical description of palm tree	Attend	a daily test
The tenth	2	Identifying palm propagation (with pits, shoots, and shoots)	palm propagation (with pits, shoots, and shoots)	Attend	a daily test
eleventh	2	Identify woody plants, their advantages and characteristics	woody plants, their advantages and characteristics	Attend	a daily test
twelveth	2	Learn about the benefits and uses of trees	the benefits and uses of trees	Attend	a daily test
Thirteenth	2	Identify the divisions of trees	the divisions of trees		

		based on their tolerance to environmental conditions	based on their tolerance to environmental conditions	Attend	a daily test
fourteenth	2	Learn about the methods of reproduction of trees and shrubs	the methods of reproduction of trees and shrubs	Attend	a daily test
Fifteenth	2	Identify the most important trees and shrubs	the most important trees and shrubs	Attend	a daily test
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)		Cultivation of desert lands. Written by Abdullah Qasim Abdullah and Yahya Hussein. Basics of growing and producing vegetables in protected and open lands Desert. Written by Sayed Fathi			
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Third stage

Course Description Form

Course Name:
22- Water harvesting
Course Code:
0025307
Semester / Year: Third
Description Preparation Date: 2023-2024
Available Attendance Forms: In person + electronic
Number of Credit Hours (Total) / Number of Units (Total)

Number of Credit Hours (Total) 30 hours					
Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Muhammad Radwan Mahmoud Email: modrn@mu.edu.iq					
Course Objectives					
Course Objectives <ul style="list-style-type: none"> • Strengthening efforts aimed at using and properly managing water resources. • Develop a future vision for developing water harvesting technologies to support water resource • Increasing the volume of irrigation water available for agricultural use, by adding dams, tail irrigation canals, and drilling wells, in addition to development projects in this field and water supply projects. 			The student will be familiar with the mechanism of water harvesting Introducing the student to Water harvesting		
Teaching and Learning Strategies					
Strategy		Strategic teaching and learning methods Audio methods (teaching explanation of the topic) Style of writing on the blackboard The method of direct dialogue between the teacher and the student, with student's evaluation in class participation Conduct experiments.			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first week	2Theoretical		Introduction (definition of water harvesting, main components of water harvesting system, determining factors of water harvesting system, benefits of water harvesting)		Exams , reports, discussions
second week	2Theoretical		Rainwater harvesting techniques		Exams , reports, discussions

the third week	2Theoretical		Techniques for harvesting valley water (floods)		Exams , reports, discussions
fourth week	2Theoretical		Reliability of water provision,		Exams , reports, discussions
The fifth week	2Theoretical		, storage capacity estimate		Exams , reports, discussions
the sixth week	2Theoretical		total rainfall amount, catchment area estimate		Exams , reports, discussions
Seventh week	2Theoretical		First monthly exam		Exams , reports, discussions
The eighth week	2Theoretical		Factors of circulating rainwater harvesting system		
Week nine	2Theoretical		Principles of planning for water harvesting projects		Exams , reports, discussions
The tenth week	2Theoretical		Water tanks		Exams , reports, discussions
Week eleven	2Theoretical		Sediments in tanks and their shelf life		Exams , reports, discussions
The twelfth week	2Theoretical		Dams, types of dams, their components, and dam collapse		Exams , reports, discussions
The thirteenth week	2Theoretical		Dams, types of dams, their components, and dam collapse		Exams , reports, discussions
The fourteenth week	2Theoretical		Dams, types of dams, their components, and dam collapse		Exams , reports, discussions
The fifteenth week			The second monthly exam		

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)	Justine Anschutz, Antoinette Kome, Marc Nederlof, Rob de Neef, Ton van de Ven 2012, Water harvesting and soil moisture retention
Main references (sources)	Water harvesting and soil moisture retention Translated into Arabic Muhammad Radwan
Recommended books and references	Iraqi -reviewed journals

صادر 2)

Email: bashar_mezher@mu.edu.iq

Course Objectives

Course Objectives

The soil chemistry course aims to explain principles used in studying the chemical composition of soil. During this course, the student is introduced to all the chemical properties of soil and how to estimate and calculate them practically and in the field. During this course, all chemical properties of soil are linked to other branches of soil science.

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.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	5	The importance of studying soil chemistry,	Soil chemistry	Explanation, presentation the model and lecture	Exam
the second	5	Ion exchange equations, physicochemical equations	Soil chemistry	Explanation, presentation the model and lecture	Exam
the third	5	chemical equations, soil anion exchange capacity	Soil chemistry	Explanation, presentation the model and lecture	Exam
the fourth		Solubility balance in soil	Soil chemistry	Explanation, presentation the model and lecture	Exam
Fifth		Carbonate	Soil chemistry	Explanation, presentation the model and lecture	Exam

		equilibrium, CO ₂ -H ₂ O system, CaCO ₃ -H ₂ O-CO ₂ system in soil			
Sixth	5	Phosphorus balance, ionization phosphorus soil, phospho reactions	soil chemist	Explanation, presentation the model and lecture	Exam
Seventh	5	Chemical potential of ic in the soil syst - soil solution	Soil chemist	Explanation, presentation the model and lecture	Exam
Eighth	5	phosphorus dissolution Soil acidity a alkalinit	Soil chemist	Explanation, presentation the model and lecture	Exam
Ninth	5	curves in Al ₂ O ₃ -Fe ₂ O ₃ -CaO-P ₂ O ₅ -H ₂ system	Soil chemist	Explanation, presentation the model and lecture	Exam
Tenth	5	the importance studying degree of s reaction	Soil chemist	Explanation, presentation the model and lecture	Exam
Eleventh	5	sources of acid in the se methods measuring acidity a alkalinity	Soil chemist	Explanation, presentation the model and lecture	Exam
Twelfth	5	effect of degree reaction on cation exchar capacity.	Soil chemist	Explanation, presentation the model and lecture	Exam

Thirteenth		Equilibrium curves, buffering, acid	Soil chemist	Explanation, presentation the model and lecture	Exam
Fourteen		alkalinity of soil in dry and semi arid areas calcareous soils and gypsum soils.	Soil chemist	Explanation, presentation the model and lecture	Exam
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					
Learning and Teaching Resources					
Required textbooks (curricular books, 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/10.1002/97811190762.wsts0025		

Course Description Form

Course Name:
24- Soil fertility
Course Code:
0025302
Semester / Year:
Second
Description Preparation Date:

26\2\2024					
Available Attendance Forms:					
Actual presence					
Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		3 practical		units 3.5	
Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Jaber Jassim Abu Talisha Email: Jaberalardy@mu.edu.iq					
Course Objectives					
Course Objectives	<p>The student gets to know the science of soil fertility</p> <ul style="list-style-type: none"> • 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 the importance to plants 				
Teaching and Learning Strategies					
Strategy	<p>1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method</p>				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2	The student gets to know growth and the factors affecting it	Fertilize technolo	Explanation, presentation of t model and lecture	exam

the second	2	The student gets to know the types of nutrients	Fertilizer technology	Explanation, presentation of model and lecture	the exam
the third	2	The student recognizes the movement and absorption of elements in the soil	Fertilizer technology	Explanation, presentation of model and lecture	the exam
the fourth	2	The student gets to know the types of elements in the soil	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Fifth	2	The student gets to know the necessary elements	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Sixth	2	The student gets to know the major elements	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Seventh	2	The student gets to know the small elements	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Eighth	2	The student gets to know the use and encouraging elements for growth	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Ninth	2	For the student to recognize distinction between elements	Fertilizer technology	Explanation, presentation of model and lecture	the exam
The tenth	2	For the student to get to know Factors affecting the readiness of elements	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Eleventh	2	The student gets to know nitrogen and its factors	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Twelfth	2	The student gets to know phosphorus and potassium and their factors	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Thirteenth	2	The student gets to know sulfur, calcium, magnesium, and trace elements	Fertilizer technology	Explanation, presentation of model and lecture	the exam
fourteenth	2	The student will be familiar with the evaluation of soil fertility	Fertilizer technology	Explanation, presentation of model and lecture	the exam

Fifteenth	2	The student will be familiar with the organic matter	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
Learning and Teaching Resources					
Required textbood (curricular books, if any)		Soil fertility 2014/a. Dr. Nour El-Din Shawky Ali			
Main references (source)		Fertilizer technologies and uses, 2012, Prof. Dr. Nour El-Din Shawqi Ali			
Recommended books and references (scientific journals, reports...)		Iraqi academic scientific journals			
Electronic Websites		Soil Science Society Of America Library Genesis			

Course Description Form

Course Name:
25- a desert environment
Course Code:
0025303
Semester / Year:
the second
Description Preparation Date:

28/1/2024					
Available Attendance Forms:					
Presence					
Number of Credit Hours (Total) / Number of Units (Total)					
30 hours/(2) units					
Course administrator's name (mention all, if more than one name)					
Name: Emad A.M.Aldahab Email: emad.aldahab@mu.edu.iq					
Course Objectives					
Course Objectives			Learn about the desert environment Factors leading to desertification Desert patterns		
Teaching and Learning Strategies					
Strategy		Strategy for the skill of thinking and making the appropriate decision, meaning that the student makes a good decision when thinking about the desert environment and ways to overcome its negative effects			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	2	Learn about the classification of deserts	classification of deserts	Attend	a daily test
the second	2	Learn about the geography of deserts	geography of deserts	Attend	a daily test
the third	2	Identify climatic characteristics	climatic characteristics	Attend	a daily test

		characteristics hot deserts	hot deserts		
the fourth	2	Identify the relationship between rain and soil water content	relationship between rain and soil water content	Attend	a daily test
Fifth	2	First month exam	First month exam		
VI	2	Solve exercises related to the relationship between rain and soil water content in the desert	relationship between rain and soil water content in the desert	Attend	a daily test
Seventh	2	Recognizing dehydration	dehydration	Attend	a daily test
VIII	2	Identify dry regions and desertification	dry regions and desertification	Attend	a daily test
Ninth	2	Identify the patterns of dry regions and deserts	the patterns of dry regions and deserts	Attend	a daily test
The tenth	2	Identify desert plants and their types	desert plants and their types	Attend	a daily test
eleventh	2	Second month exam	Second month exam		
twelveth	2	Learn about the ways desert plants adapt to the desert climate	ways desert plants adapt to the desert climate	Attend	a daily test
Thirteenth	2	Identify the changes in the desert and climate of Iraq	the changes in the desert and climate of Iraq	Attend	a daily test
fourteenth	2	Learn how to develop the desert environment	develop the desert environment	Attend	a daily test

Fifteenth	2	Identifying living patterns of residents in the desert environment	living patterns of residents in the desert environment	Attend	a daily test
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

Course Name:
26- the economics of nature
Course Code:
0C15301
Semester / Year:
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
Course administrator's name (mention all, if more than one name)

Name: sadeq Hadi Hussein

Email: Sadeq.hadi@mu.edu.iq

Course Objectives

Course Objectives

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

Teaching and Learning Strategies

Strategy

- 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
- 4- Developing the student's ability to make people aware that natural resources belong to future generations as well as their current use

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			1- Natural resource economics 2- Land economics 3- Oil 4- Water resources		

			<p>5- Human resources</p> <p>6- Environment</p> <p>7- Public goods and external factors</p> <p>8- General expenses</p> <p>9- Public revenues</p> <p>10- Preserving natural resources</p> <p>11- Sources of environmental pollution</p> <p>12- Means of preserving natural resources</p>		
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Course Evaluation					
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Natural Resource Economics - Hassoun Muhammad Ali					
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Learning and Teaching Resources					
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Required textbooks (curricular books, if any)	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

Course Name:					
27- Soil-Plant-Water					
Course Code:					
0025306					
Semester / Year:					
Description Preparation Date:					
Available Attendance Forms:					
Number of Credit Hours (Total) / Number of Units (Total)					
Course administrator's name (mention all, if more than one name)					
Name: Qassim A. Talib Alshujairy Email: qassimtalib@mu.edu.iq					
Course Objectives					
Course Objectives				study Soil-Plant-Water course are to provide students with a understanding of the relationships between soil, water, and plants	
Teaching and Learning Strategies					
Strategy		e strategies for a course on soil-plant-water interactions often involve a combination of theoretical knowledge, practical applications, and field experiences			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			Understanding Soil Properties: Soil-Water Movement: Plant-Water Relations: Soil-Water-Plant Interactions: Irrigation and Water Management:		

			Soil and Water Conservation: Soil-Water Quality: Sustainable Agriculture: Climate Change Impacts: Applied Research and Technology: Fieldwork and Practical Skills:		
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

Course Name:
28- Desertification
Course Code:
0015303
Semester / Year:
Description Preparation Date:
Available Attendance Forms:

Number of Credit Hours (Total) / Number of Units (Total)					
Course administrator's name (mention all, if more than one name)					
Name: Dhafer Abdulrheem Shaker Email: :dhaferabdshaker@mu.edu.iq					
Course Objectives					
Course Objectives					
Teaching and Learning Strategies					
Strategy					
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			Introduction to the concept of desertification The problem of desertification, describing the forms of desertification and its causes The harms of desertification, its risks, and the losses resulting from it, desertification globally, Arably, and locally Origin of desertification. Vegetation, salinity, drought First month exam Combat Desertification. Agriculture and permaculture Water resources and combating desertification		

			<p>Sand dunes as a manifestation of desertification</p> <p>Area distribution of sand dunes locally and their spread globally.</p> <p>The origin of the sand dune problem. Sand dunes and sand dunes.</p> <p>Means and methods for measuring desertification and sand dunes</p> <p>Second month exam</p> <p>Erosion measurement.</p> <p>Measuring the ability of soil to be removed.</p> <p>Measuring loss and addition</p> <p>Drought and aridity</p> <p>Global Warming</p> <p>Water harvesting</p>		
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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

Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Recommended books and references (scientific journals, reports...)

Electronic References, Websites

Course Description Form

Course Name:

29- **Soil physics**

Course Code:

0015305

Semester / Year:					
THIRD					
Description Preparation Date:					
26\2\2024					
Available Attendance Forms:					
Actual presence					
Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		3 practical		units 3.5	
Course administrator's name (mention all, if more than one name)					
Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq					
Course Objectives					
Course Objectives	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.				
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				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation

					method
First	4	Introduction and definition of soil science, soil physics and some related relationships	Soil physics	Explanation, presentation of model and lecture	the exam
the second	4	Physical soil properties, soil texture, particle size distribution, and Stock's law	Soil physics	Explanation, presentation of model and lecture	the exam
the third	4	The specific area of soil physics and methods for determining soil properties physically and chemically	Soil physics	Explanation, presentation of model and lecture	the exam
the fourth	4	Soil Structure: its definition, importance, and how to study it	Soil physics	Explanation, presentation of model and lecture	the exam
Fifth	4	Methods of studying soil structure and evidence of soil structure	Soil physics	Explanation, presentation of model and lecture	the exam
Sixth	4	Stability of soil aggregates, methods of studying them, and factors affecting the formation of aggregates	Soil physics	Explanation, presentation of model and lecture	the exam
Seventh	4	Soil water and general water properties, soil air, air capacity and gas exchange in the soil	Soil physics	Explanation, presentation of model and lecture	the exam
Eighth	4	Water properties related to porous media (soil), soil water energy and methods of expressing and measuring it	Soil physics	Explanation, presentation of model and lecture	the exam
Ninth	4	Soil temperature, soil temperature, and heat flow in the soil	Soil physics	Explanation, presentation of model and lecture	the exam
The tenth	4	Water flow in saturated soils and water flow in unsaturated soils	Soil physics	Explanation, presentation of model and lecture	the exam
Eleventh	4	Water infiltration in soils and methods for measuring it and equations	Soil physics	Explanation, presentation of model and lecture	the exam
Twelfth	4	Irrigation and drainage characteristics and the physical properties of surface soil	Soil physics	Explanation, presentation of model and lecture	the exam
Thirteenth	4	Water balance and energy balance in the field	Soil physics	Explanation, presentation of model and lecture	the exam
fourteenth	4	Evaluation of the water balance equation, water consumption and evapotranspiration	Soil physics	Explanation, presentation of model and lecture	the exam
Fifteenth	4		Soil physics	Explanation, presentation of model and lecture	the exam

Course Evaluation	
1-Theoretical tests	25
2- Practical tests	15
3- Reports and studies	10
4- Final exam	50
Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	1- Soil Physics, written by Dr. Hisham Mahmoud Hassan 2000 2- Basics of soil physics, translation. Mahdi Ibrahim Odeh 1999
Main references (sources)	Basics of soil physics, translation. Mahdi Ibrahim Odeh 1990
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Referenc Soil physics

Course Description Form

Course Name:	30- remote sensing	
Course Code:	0025304	
Semester / Year:	THIRD	
Description Preparation Date:	26\2\2024	
Available Attendance Forms:	Actual presence	
Number of Credit Hours (Total) / Number of Units (Total)	2 theoretical 3 practical units 3.5	
Course administrator's name (mention all, if more than one name)	Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq	

Course Objectives					
Course Objectives	<p>1- It examines the concept of remote sensing, and the elements and applications of remote sensing</p> <p>2- Researches the interactions of electromagnetic energy and spectral reflectivity and factors affecting them</p> <p>3- Knowing the sensors, their types and characteristics, as well as examining aerial and satellite images</p> <p>4- Studying methods for classifying satellite images</p> <p>5- The student's knowledge of geographic information systems (GIS) and their uses</p>				
Teaching and Learning Strategies					
Strategy	<p>1-Explanation and clarification</p> <p>2- Lecture method</p> <p>3- Student groups</p> <p>4- Practical lessons</p> <p>5- Scientific trips</p> <p>6 - Self-learning method</p>				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	History and target of remote sensing	remote sensing	Explanation, presentation of model and lecture	the exam
the second	4	Electromagnetic energy and parts of the electromagnetic spectrum	remote sensing	Explanation, presentation of model and lecture	the exam
the third	4	Energy interaction with environmental components	remote sensing	Explanation, presentation of model and lecture	the exam
the fourth	4	Spectral reflectivity and factors affecting it	remote sensing	Explanation, presentation of model and lecture	the exam
Fifth	4	Aerial photography and its	remote sensing	Explanation,	the exam

		stages of development		presentation of model and lecture	
Sixth	4	Types of aerial photographs and their characteristics	remote sensing	Explanation, presentation of model and lecture	the exam
Seventh	4	Rules for classifying aerial photographs	remote sensing	Explanation, presentation of model and lecture	the exam
Eighth	4	Types of characteristics of satellite platforms	remote sensing	Explanation, presentation of model and lecture	the exam
Ninth	4	Types and characteristics of sensors	remote sensing	Explanation, presentation of model and lecture	the exam
The tenth	4	Types and properties of satellite data	remote sensing	Explanation, presentation of model and lecture	the exam
Eleventh	4	Satellite data sensing	remote sensing	Explanation, presentation of model and lecture	the exam
Twelfth	4	Methods of classifying satellite images	remote sensing	Explanation, presentation of model and lecture	the exam
Thirteenth	4	Remote sensing applications	remote sensing	Explanation, presentation of model and lecture	the exam
fourteenth	4	Geographic information systems	remote sensing	Explanation, presentation of model and lecture	the exam
Fifteenth	4		remote sensing	Explanation, presentation of model and lecture	the exam

Course Evaluation

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

Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Remote sensing science: Prof. Dr. Ahmed Saleh Al-Mashhadani and M.D. Ahmed Madloul. 2014.
Main references (sources)	Basics of remote sensing (Canada center for remote sensing)
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals

Electronic Websites	Referenc	Google earth ,USGS
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Course Description Form

Course Name:	
31- Design and analysis experiments	
Course Code:	
0C15302	
Semester / Year:	
THIRD	
Description Preparation Date:	
26\2\2024	
Available Attendance Forms:	
Actual presence	
Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 3 practical units 3.5	
Course administrator's name (mention all, if more than one name)	
Name: Dr. Hadi Awad hasony Email: hadi_habeb2000@mu.edu.iq	
Course Objectives	
Course Objecti	<p>1* Informing the student that there are areas that depend on conducting experiments, and these experiments must be designed on scientific foundations</p> <p>* When analyzing experiments, it is done according to scientific methods and logical steps</p> <p>* Upon obtaining accurate results of the experiment, it leads us to make the appropriate decision</p> <p>* Introducing the student to many types of designs, as each experiment has a specific design</p> <p>* Introducing the student to how to test the significance of each mathematical model</p>

	<p>* Informing the student that there are tests conducted before the experiment and tests proposed after the experiment</p> <p>* Informing the student that there are values that can be lost during the experiment and that they can be estimated</p>
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Teaching and Learning Strategies

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

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	A historical overview of statistics, definition of statistics,		Explanation, presentation of model and lecture	the exam
the second	4	division of statistics Measures of central tendency, measures of centralization		Explanation, presentation of model and lecture	the exam
the third	4	Measures of dispersion		Explanation, presentation of model and lecture	the exam
the fourth	4	Hypothesis testing, statistical errors, hypothesis t-test		Explanation, presentation of model and lecture	the exam
Fifth	4	Chi-square test		Explanation, presentation of model and lecture	the exam
Sixth	4	General concepts and definitions in designing and analyzing experiments,		Explanation, presentation of model and lecture	the exam
Seventh	4	Types of agricultural experiments, complete randomized design		Explanation, presentation of model and lecture	the exam

Eighth	4	lsd test		Explanation, presentation of model and lecture	the exam
Ninth	4	Randomized complete block design		Explanation, presentation of model and lecture	the exam
The tenth	4	Duncan's test		Explanation, presentation of model and lecture	the exam
Eleventh	4	Latin square design		Explanation, presentation of model and lecture	the exam
Twelfth	4	Global experiments		Explanation, presentation of model and lecture	the exam
Thirteenth	4	Factorial experiments with two factors		Explanation, presentation of model and lecture	the exam
fourteenth	4	Factorial experiments with three factors		Explanation, presentation of model and lecture	the exam
Fifteenth	4	Correlation and simple linear regression		Explanation, presentation of model and lecture	the exam

Course Evaluation

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

Learning and Teaching Resources

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

Course Description Form

Course Name:					
32- English course					
Course Code:					
U015301					
Semester / Year: Semester					
Description Preparation Date:					
Available Attendance Forms:					
Number of Credit Hours (Total) / Number of Units (Total)					
2hours weekly					
Course administrator's name (mention all, if more than one name)					
Name: Lafta Awad Atshan Email: lafta.awad@mu.edu.iq					
Course Objectives					
Course Objectives				English language skills	
Teaching and Learning Strategies					
Strategy					
Course Structure					
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation

		Outcomes	name	method	method
1	2		Sentences strictures		
2	2		Past tense		
3	2		Past simple		
4	2		Past continuous		
5	2		Present tenses		
6	2		Present Simple		
7	2		Present continuous		
8	2		Future tense		
9	2		Future simple		
10	2		Paragraphs writing		
11	2		Paragraphs writing		
12	2		Paragraphs writing		

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

Learning and Teaching Resources

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

Course Description Form

Course Name:
33- Irrigation
Course Code:
0025301

Semester / Year:	
second	
Description Preparation Date:	
26\2\2024	
Available Attendance Forms:	
Actual presence	
Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 3 practical units 3.5	
Course administrator's name (mention all, if more than one name)	
Name: Dr. AULA HUSSEIN ALI Email: Aula.alobeidi@mu.edu.iq	
Course Objectives	
Course Objectives	<p>1– Researches the science of irrigation, its sources, methods of controlling it, exploiting and delivering it to agricultural fields</p> <p>2– Study to evaluate the quality of irrigation water and its suitability for irrigation.</p> <p>3– Know how to plan, design and implement irrigation facilities</p> <p>4– It examines the relationship of water with soil, the movement of water in the soil, and the flow of water</p> <p>5– Calculating plant water consumption, water requirements, and irrigation scheduling in addition to irrigation water measurements</p> <p>6– It examines drainage, sources of excess water, and the relationship of drainage to plant growth and productivity, soil salinity, salt balance, and washing requirements.</p>
Teaching and Learning Strategies	
Strategy	<p>1-Explanation and clarification</p> <p>2- Lecture method</p> <p>3- Student groups</p> <p>4- Practical lessons</p> <p>5- Scientific trips</p> <p>6 - Self-learning method</p>
Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	4	The concept of irrigation, sources of irrigation water, physical characteristics related to irrigation	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
the second	4	Irrigation water quality	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
the third	4	The relationship of water with soil - moisture, movement of water in the soil	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
the fourth	4	Irrigation water measurements	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Fifth	4	Plant water consumption, water needs and irrigation scheduling	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Sixth	4	Transport and distribution of irrigation water, movement of water in pipes and open channels	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Seventh	4	Adequacy and efficiency of irrigation and consistency of irrigation	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Eighth	4	Traditional irrigation methods	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Ninth	4	Modern irrigation methods	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
The tenth	4	Drainage concept, sources of excess water	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Eleventh	4	The relationship of drainage to plant growth and productivity	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Twelfth	4	Drainage, soil salinity, leaching requirements and salt balance	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Thirteenth	4	Types of drains: open, covered	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
fourteenth	4	Distribution patterns of the drain network, distance between drains, maintenance of drains	Irrigation and drainage	Explanation, presentation of model and lecture	the exam
Fifteenth	4		Irrigation and drainage	Explanation, presentation of	the exam

		model and lecture
Course Evaluation		
1-Theoretical tests	25	
2- Practical tests	15	
3- Reports and studies	10	
4- Final exam	50	
Learning and Teaching Resources		
Required textbooks (curriculum books, if any)	<p>1-Irrigation, its basics and applications, written by Dr. Nabil Ibrahim Al-Tayef and Dr. Issam Khudair Hamza Al-Hadithi 1988 Ministry of Higher Education and Scientific Research - University of Baghdad.</p> <p>2-Irrigation and drainage, written by Dr. Laith Khalil Ismail 2000 Ministry of Higher Education and Scientific Research - University of Mosul</p> <p>3- Drainage (investigations, designs, implementation and maintenance). Dr. Mohsen Muhareb Awad Al-Lami and Dr. Al Saleh Abdul-Jabbar Al-Janabi. Iraq . Ministry of Higher Education and Scientific Research. University of Al Mosul .</p>	
Main references (sources)	<p>1-Irrigation, its basics and applications, written by Dr. Nabil Ibrahim Al-Taif and Dr. Issam Khudair Hamza Al-Hadithi 1988 Ministry of Higher Education and Scientific Research - University of Baghdad</p> <p>2- Modern irrigation technologies and other topics in the water issue, written by Dr. Issam Khudair Al-Hadithi, Dr. Ahmed Madloul Al-Kubaisi, and Dr. Yas Khudair Hamza Al-Hadithi, 2010, Ministry of Higher Education and Scientific Research - Anbar University</p> <p>3- Irrigation and drainage, written by Dr. Laith Khalil Ismail 2000 Ministry of Higher Education and Scientific Research - University of Mosul</p>	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals	
Electronic Websites	Referenc	<p>Soil Science Society Of America</p> <p>Library Genesis</p>

Course Description Form

Course Name:	
34- Plant Physiology	
Course Code:	
0015302	
Semester / Year:	
Second	
Description Preparation Date:	
26\2\2024	
Available Attendance Forms:	
Actual presence	
Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 3 practical units 3.5	
Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. jabir jasim abwtlisha	
Email: Jaberalardy@mu.edu.iq	
Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • The student gets to know Plant Physiology • The student should classify of cells • The student should detail the benefits and harms of Metabolism , Respiration , Transpiration • The student should know about plant hormones
Teaching and Learning Strategies	
Strategy	<ol style="list-style-type: none"> 1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips

6 - Self-learning method

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2		Plant Physiology	Components a plant cell	the exam
the second	2		Plant Physiology	Osmosis	the exam
the third	2		Plant Physiology	Passive active absorption	the exam
the fourth	2		Plant Physiology	Photosynthesis	the exam
Fifth	2		Plant Physiology	Respiration	the exam
Sixth	2		Plant Physiology	Growth Hormones	the exam
Seventh	2		Plant Physiology	Inhibitors Hormones	the exam
Eighth	2		Plant Physiology	Enzymes	the exam
Ninth	2		Plant Physiology	Transpiration	the exam
The tenth	2		Plant Physiology	Guttation and bleeding	the exam
Eleventh	2		Plant Physiology	Colloidal solutions	the exam
Twelfth	2		Plant Physiology	Vernalization	the exam

Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
Learning and Teaching Resources					
Required textbo (curricular books, if any)		Plant Physiology . 2000. Dr.Mouaid Alyonis			
Main references (source		Plant Physiology			
Recommended books and references (scientific journals, reports...)		Iraqi academic scientific journals			
Electronic Referenc Websites		Plant Physiology Journal .			

Course Description Form

Course Name:
35- Hydrology
Course Code:
0015301
Semester / Year:
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)

Course administrator's name (mention all, if more than one name)					
Name: Qassim A. Talib Alshujairy Email: qassimtalib@mu.edu.iq					
Course Objectives					
Course Objectives			s of a hydrology course are to provide students with ive understanding of the principles and processes distribution, movement, and properties of water on		
Teaching and Learning Strategies					
Strategy		<p>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.</p> <p>Laboratory Work: Hands-on laboratory sessions allow students to apply theoretical knowledge in practical situations. In hydrology courses, students may engage in activities such as water quality testing, flow measurements, and experiments related to hydrological processes.</p> <p>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.</p>			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			1. Understanding the Water Cycle 2. Watershed Analysis 3. Quantifying Precipitation and Runoff 4. Groundwater Hydrology 5. Hydrological Modeling 6. Hydrological Data Collection 7. Water Quality 8. Climate Change and Hydrology 9. Water Resource Management 10. Hydrological Engineering 11. Environmental Impact Assessment		

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	
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

Course Name:
36- Soil water plant and analysis
Course Code:

0015304					
Semester / Year: Chapter Two/Four					
Description Preparation Date:					
Available Attendance Forms:					
Actual presence					
Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical 0 practical units 2					
Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. G. B. Noni Email: ghanem-bahlol@mu.edu.iq					
Course Objectives					
Course Objectives		<p>For the student to know the types of analytical methods</p> <ul style="list-style-type: none"> • The student learns how to analysis water , soil and plant • The student should evaluate the scientific reality to maintain analytical methods 			
Teaching and Learning Strategies					
Strategy		<p>1- Explanation and clarification</p> <p>2- Lecture method</p> <p>3- Student groups</p> <p>4- Practical lessons</p> <p>5- Scientific trips</p> <p>6 - Self-learning method</p>			
Course Structure					
Week	Hou rs	Required Learning Outcomes	Unit or subject	Learning method	Evaluatio n method

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

		samples		the 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 , and p analytical	Explanation, presentation of the model and lecture	the exam
Eighth		The student gets to know the quantitative and volumetric methods	Water , and p analytical	Explanation, presentation of the model and lecture	the exam
Ninth		The student gets to know the quantitative and weighing methods	Water , and p analytical	Explanation, presentation of the model and lecture	the exam
Tenth		: The student will learn about electrical of a Analytical methods	Water , and p analytical	Explanation, presentation of the model and	the exam

				lecture	
Eleventh	5	The student gets to know About analytical of spectroscopy	Water , and plant analytical	Explanation, presentation of the model and lecture	the exam the exam
Twelfth		The student gets to know Atomic emission methods			
thirteenth		: The student knows how the Atomic absorption methods	Water , and plant analytical	Explanation, presentation of the model and lecture	the exam
Fourteenth		: The student gets to know Metal analysis methods	Water , soil plant analytical	Explanation, presentation of the model and lecture	the exam
Fifteenth		The student gets to	Water , soil plant analytical	Explanation,	the exam

		know the types of X-ray analysis methods		presentation of the model and lecture	
Course Evaluation					
Theoretical tests 40					
2- Practical tests -					
3- Reports and studies 10					
4- Final exam 50					
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					

Forth stage

Course Description Form

Course Name:					
37- Soil salinity and its melioratio					
Course Code:					
0025401					
Semester / Year:					
Semester					
Description Preparation Date:					
27/2/2024					
Available Attendance Forms:					
Attend					
Number of Credit Hours (Total) / Number of Units (Total)					
4		3			
Course administrator's name (mention all, if more than one name)					
Name: Assistant Professor Dr. bashar mezher jader Email: bashar_mezher@mu.edu.iq					
Course Objectives					
Course Objectives		It investigates the spread of saline soils in the world and Iraq and its impact on agricultural production. It includes studying sources of salts in nature and soils and means of transport them, studying the effect of salts on plant growth and methods for increasing plants' resistance to salinity.			
Teaching and Learning Strategies					
Strategy	<ul style="list-style-type: none"> • Make the learner active and effective in educational situations. • Teach students to respect different opinions and value others • Benefit from other people's ideas and information. 				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	5	The problem of salinity and impact on agricultural production, problem of salinity in Iraq in past and present	Salinity and reclamation	Explanation presentation the model lecture	exam

second	5	Sources of salt components	Salinity and reclamation	1	Explanation presentation the model lecture	Exam
third	5	The effect of soil salinity on plants	Salinity and reclamation	1	Explanation presentation the model lecture	Exam
the fourth	5	Classification and naming of soils affected by salts	Salinity and reclamation	and 1	Explanation presentation the model lecture	Exam
Fifth	5	Irrigation water quality	Salinity and reclamation	1	Explanation, presentation the model lecture	Exam
Sixth	5	Controlling salinity and ways to deal with it	Salinity and reclamation	1	Explanation presentation the model lecture	Exam
Seventh		Land reclamation (decisions and requirements).	Salinity and reclamation	1	Explanation presentation the model lecture	Exam
Eighth		Lands that need reclamation	Salinity and reclamation	and 1	Explanation presentation the model lecture	Exam
Ninth	5	Reclamation of salty lands	Salinity and reclamation	1	Explanation presentation the model lecture	Exam
Tenth	5	Reclamation of sandy lands	Salinity and reclamation	1	Explanation presentation the model lecture	Exam
Eleventh	5	Gypsum lands and their reclamation	Salinity and reclamation	1	Explanation presentation the model lecture	Exam
Twelfth		Limestone lands and their reclamation	Salinity and reclamation	1	Explanation presentation the model lecture	Exam
Thirteenth	5	Waterlogged lands and their reclamation	Salinity and reclamation	1	Explanation presentation	Exam

				the model lecture	
fourteen		Desert lands and their reclamation	Salinity and reclamation	Explanation presentation the model lecture	Exam
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Soil salinity Soil melioration		
Main references (sources)			Books related to the subject a scientific research		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites			https://www.sciencedirect.com/topics/earth-and-planetary-sciences/soil-salinity		

Course Description Form

Course Name:
38- Soil microbiology
Course Code:
0015405
Semester / Year:

four					
Description Preparation Date:					
26\2\2024					
Available Attendance Forms:					
Actual presence					
Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical		3 practical		units 3.5	
Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. G. B. Noni Email: ghanem-bahlol@mu.edu.iq					
Course Objectives					
Course Objecti	<p>The student gets to know the classification and types of Soil microbiology and their importance</p> <ul style="list-style-type: none"> • 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 				
Teaching and Learning Strategies					
Strategy	<p>1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method</p>				
Course Structure					
Week	H ou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method

first	2	Historical overview, definition, and	Soil Microbiology	Explanation, presentation of model and lecture	the exam
the second	2	importance of studying soil microbiology Sections of soil microbiology	Soil Microbiology	Explanation, presentation of model and lecture	the exam
the third	2	Soil microbial groups: bacteria, fungi, algae, actinomycetes, archaea, mycorrhizae.	Soil Microbiology	Explanation, presentation of model and lecture	the exam
the fourth	2	Organic matter: carbon cycle, enzymatic activity in soil	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Fifth	2	Biotransformations of N, nitrogen cycle, urea decomposition, nitrification process, mineralization and assimilation, C/N ratio	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Sixth	2	Biological nitrogen fixation	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Seventh	2	Biological transformations of phosphorus: its cycle and the role of microorganisms; its transformations	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Eighth	2	Biological transformations of phosphorus: its cycle and the role of microorganisms; its transformations	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Ninth	2	Biological transformations of sulfur: sulfur cycle, mineralization, microbial metabolism, oxidation, and reduction of inorganic sulfur compounds.	Soil Microbiology	Explanation, presentation of model and lecture	the exam
The tenth	2	Biotransformations of iron: oxidation, reduction, and decomposition of organic iron compounds	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Eleventh	2	Biotransformations of iron: oxidation, reduction, and decomposition of organic iron compounds	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Twelfth	2	Decomposition of pesticides in soil	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Thirteenth	2	Relationships between microorganisms and the area surrounding the root (rhizosphere) and the activity of microorganisms in this area	Soil Microbiology	Explanation, presentation of model and lecture	the exam

		Factors affecting the growth of			
fourteenth	2	microorganisms, growth	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Fifteenth	2	Factors affecting the growth of microorganisms, growth	Soil Microbiology	Explanation, presentation of model and lecture	the exam
Course Evaluation					
1-Theoretical tests		25			
2- Practical tests		15			
3- Reports and studies		10			
4- Final exam		50			
Learning and Teaching Resources					
Required textbooks (curriculum books, if any)		11- Soil microbiology. 2012. Dr. Hadi Hassan.			
Main references (sources)					
Recommended books and references (scientific journals, reports...)		Iraqi academic scientific journals			
Electronic Websites		Soil Science Society Of America Library Genesis			

Course Description Form

Course Name:
39- Environmental stress
Course Code:
0015407

Semester / Year: Fourth					
Description Preparation Date: 2023-2024					
Available Attendance Forms: In person + electronic					
Number of Credit Hours (Total) / Number of Units (Total)					
Number of Credit Hours (Total) 75 hours					
Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Muhammad Radwan Mahmoud Email: modrn@mu.edu.iq					
Course Objectives					
<p>Course Objectives</p> <p>Course objectives</p> <p>Objectives of the study subject This course description provides a summary of the most important characteristics of the course and learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the learning opportunities available must be linked to the program description</p>			<p>the student will be familiar with the mechanism of effect of environmental stress on plants, and the forms effect</p> <p>introducing the student to the environmental stress resulting from extreme conditions and its effects on plants</p> <p>plants resist that effect, and what the damage resulting from that effect are</p>		
Teaching and Learning Strategies					
Strategy		<p>Strategic teaching and learning methods</p> <p>Audio methods (teaching explanation of the topic)</p> <p>Style of writing on the blackboard</p> <p>The method of direct dialogue between the teacher and the student, with student's evaluation in class participation</p> <p>Conduct experiments.</p>			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The	2Theoretic		An introduction to the type		Exams ,

first week	3 Practical		stress Stress measurement methods		reports, discussions
second week	2Theoretic 3 Practical		Mechanism of the effect of stress on metabolism)construction and demolition Stress simulation methods		Exams , reports, discussions
the third week	2Theoretic 3 Practical		Water stress The movement of water in the plant at The occurrence of water tension		Exams , reports, discussions
fourth week	2Theoretic 3 Practical		The effect of water stress on Physiological processes Anatomical comparison between plants Stress-prone plants Water balanced		Exams , reports, discussions
The fifth week	2Theoretic 3 Practical		The effect of water stress on: Metabolic components Morphological comparison between Plants exposed to stress And balanced plants		Exams , reports, discussions
the sixth week	2Theoretic 3 Practical		Divide plants according to their needs waterproof, Plants adapt to water stress Anatomical features The morphology of plants Drought resistance		Exams , reports, discussions
Seventh week	2Theoretic 3 Practical		Hardening, the effect of soil darkening the plants Practical experiments on hardening And the darkening of the soil		Exams , reports, discussions
The eighth week			First monthly exam		
Week nine	2Theoretic 3 Practical		Thermal stress Plant division and acclimatization for different temperatures Methods for measuring temperature in plants And soil, and the relationship between temperature		Exams , reports, discussions
The tenth week	2Theoretic 3 Practical		Low temperature stress Effect of low temperature stress On physiological processes		Exams , reports, discussions

			High temperature stress Scientific experiments on stress The heat		
Week eleven	2Theoretical 3 Practical		Salt stress (problem soil wavy, Causes of soil salinity, types Plants and their adaptation to stress Saline, effect of salt stress On plant anatomy, effect Salt stress during operations physiological(Scientific experiments on salinity- Anatomical and morphological comparison Among plants exposed to salinity Plants growing in a different environment Salty		Exams , reports, discussions
The twelfth week	2Theoretical 3 Practical		External factors affecting On responding to stress Saline, stress number Hydroxychloroquine Salinity measurement method		Exams , reports, discussions
The thirteenth week	2Theoretical 3 Practical		Photostress Scientific experiments on stress Photosynthesis- anatomical comparison and morphology among plants Exposed to light stress And non-stressed plants		Exams , reports, discussions
The fourteenth week	2Theoretical 3 Practical		Pollutant stress Anatomical and morphological comparison Among plants exposed to pollution And plants not exposed to pollution		Exams , reports, discussions
			The second monthly exam		
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)					

Main references (sources)	Matthew, A.J and P. M. Hasegawa (2003). Plant Abiotic Stress. 2nd Edition. Wiley Pub. PP: 336. Shabala S. (2017). Plant Stress Physiology. 2nd Edition. CABI Pub. PP: 376		صادر 2)
Recommended books and references (scientific journals, reports...)	Iraqi -reviewed journals /https://www.elsevier.com		
Electronic References, Websites	/https://www.elsevier.com /https://scholar.google.com		

Course Description Form

Course Name:
40- Geographic information systems
Course Code:
0015404
Semester / Year: Fourth
Description Preparation Date: 2023-2024
Available Attendance Forms: In person + electronic
Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total) 75 hours
Course administrator's name (mention all, if more than one name)
Name: assi. Prof. Dr. ali Fadhil Email: alifadhil@mu.edu.iq
Course Objectives
General objectives: Introducing students to the general concepts of geographical technologies, a number of programs used, and introducing them to a number of concepts of the educational process and applications rela to them. Specific objectives: The student should be able to: 1. Knowledge of the basic foundations and principles of geographical techniques and their methods, tools and

techniques.

2. Knowing the practical application process, its impact, and its relationship to the educational material.
3. Know the importance of geographic techniques in preparing digital maps.
4. Knowledge of the historical background for the development of geographical techniques and the scientific methods and methods associated with them.
5. Know the importance of geographical techniques in preparing agricultural research.
6. Applying the scientific concepts the student has learned in his practical life.

In addition to working on achieving the six levels (remembering - understanding - application - analysis - synthesis - evaluation).

In presenting the learning material by following multiple methods and methods.

Teaching and Learning Strategies

Strategy

Strategic teaching and learning methods

Audio methods (teaching explanation of the topic)

Style of writing on the blackboard

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

Conduct experiments.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first week	2Theoretic 3 Practica		Introduction to geographic technologies (the concept of geographic technologies, the importance, types. The complementary relations between geographic technologies)		Exams , reports, discussions
second week	2Theoretic 3 Practica		Remote sensing (understanding (definition), its historical development. Its importance and areas of its general applied uses.		Exams , reports, discussions
the third week	2Theoretic 3 Practica		Types of remote sensing and its techniques		Exams , reports, discussions
fourth week	2Theoretic 3 Practica		Google Earth application (definition, contents)		Exams , reports, discussions

The fifth week	2Theoretic 3 Practica		How to improve space visualization (bands, various operations on space visualization		Exams , reports, discussions
the sixth week	2Theoretic 3 Practica		Geographic Information Systems (GIS) (introduction to information system understanding (nature of currency), definition features)		Exams , reports, discussions
Seventh week	2Theoretic 3 Practica		Components of geographic information systems		Exams , reports, discussions
The eighth week			Types of data and information in geographic information systems (spatial data).		
Week nine	2Theoretic 3 Practica		Data Descriptive and temporal data		Exams , reports, discussions
The tenth week	2Theoretic 3 Practica		Databases in geographic information systems and their types		Exams , reports, discussions
Week eleven	2Theoretic 3 Practica		Structure and installation databases in geographic information systems		Exams , reports, discussions
The twelfth week	2Theoretic 3 Practica		A practical lesson on how create databases in geographic information systems		Exams , reports, discussions
The thirteenth week	2Theoretic 3 Practica		Applications of Arc GIS 10.1 (definition, contents, (display window, tables, layout, scripts))		Exams , reports, discussions
The fourteenth week	2Theoretic 3 Practica		Working with the scene or display window (opening the project, zooming in and out of features, moving them, showing, hiding, arranging activating topics)		Exams , reports, discussions
			Dealing with the charts window (creating it, editing it, displaying it)		

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

Learning and Teaching Resources

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

Course Description Form

Course Name:	
41- Professional ethics	
Course Code:	
U025401	
Semester / Year:	
2023 – 2024	
Description Preparation Date:	
28 -2-2024	
Available Attendance Forms:	
Number of Credit Hours (Total) / Number of Units (Total)	
One hour per week on Semester	
Course administrator's name (mention all, if more than one name)	
Name: Prof.Dr.Falah Hasan Issa Email: flah70-hasan@mu.edu.iq	
Course Objectives	
Course Objectives	Creating a community prepared to deal with the la

	market • Knowledge of general work ethics • Knowledge of rights and duties at work
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Teaching and Learning Strategies

Strategy	
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Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			1- The concept of work ethics 2- The importance of ethics in general 3- The importance of ethics for the individual 4- The importance of ethics for society 5- Ethics required in the workplace 6- The decline in work ethics 7- Patterns of behavior and ethics at work 8- Types of corruption according to the field in which it arose 9- Corruption according to the affiliation of the individuals involved in corruption 10- Manifestations of administrative and financial corruption 11- The ethics of the teaching profession and its impact on the educator's personality and performance 12- Sources of ethics in the teaching profession 13- The characteristics that should be present in the educator		

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	google
Recommended books and references	Reports

- Benefit from other people's ideas and information.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	5	Water properties	Water quality	Explanation, presentation the model a lecture	Exam
the second	5	Irrigation water qual in Iraq	Water quality	Explanation, presentation the model a lecture	Exam
the third	5	Irrigation water classific systems	Water quality	Explanation, presentation the model a lecture	Exam
the fourth	5	Approved indicators evaluating irrigation water qual	Water quality	Explanation, presentation the model a lecture	Exam
Fifth	5	Suitability irrigation water	Water quality	Explanation, presentation the model a lecture	Exam
Sixth	5	Irrigation water qual	Water quality	Explanation, presentation the model a lecture	Exam
Seventh	5	The role irrigation water a salt balan in the soil	Water quality	Explanation, presentation the model a lecture	Exam
Eighth	5	Water Pollution	Water quality	Explanation, presentation the model a lecture	Exam
Ninth	5	Water desalinatio	Water quality	Explanation, presentation the model a lecture	Exam

				lecture	
Tenth	5	Water harvesting	Water quality	Explanation, presentation the model a lecture	Exam
Eleventh	5	The relationship between irrigation water quality, agricultural yield, soil a climate	Water quality	Explanation, presentation the model a lecture	Exam
Twelfth	5	The relationship between irrigation water qual and irrigation technologies	Water quality	Explanation, presentation the model a lecture	Exam
Thirteenth	5	Technologies for using s water irrigation	Water quality	Explanation, presentation the model a lecture	Exam
Fourteenth	5	Wastewater and techniques for its s use irrigation	Water quality	Explanation, presentation the model a lecture	Exam

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)

Water quality

Main references (sources)

Books related to the subject a scientific research

Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://wqa.org/

Course Description Form

Course Name:
43- sustainable development
Course Code:
0015402
Semester / Year: Chapter Two/Four
Description Preparation Date:
Available Attendance Forms:
Actual presence
Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical 0 practical units 2
Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Jaber Jassim Abu Talisha

Email: Jaberalardy@mu.edu.iq

Course Objectives

Course Objectives

For the student to know the types of sustainable development

- The student should classify sustainable development and its benefits to the environment
- The student should detail the harms of environmental pollution
- The student learns how to enhance the natural vital aspect
- The student should evaluate the scientific reality to maintain a sustainable environment

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

Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first	5	The student gets to know the ecosystems of sustainable	Sustainable development	Explanation, presentation of the model and lecture	the exam
The second	6	agriculture is for the student to become familiar with the use of renewable resources	Sustainable development		
Third	5	The student learns about reducing toxic substances in the environment	Sustainable development	Explanation, presentation of the model and lecture	the exam
Fourth	5	The student gets to know soil conservation	Sustainable development	Explanation, presentation of the model and lecture	the exam
Fifth	5	: The student learns about water	Sustainable development	Explanation, presentation of the	the exam

		conservation	t	model and lecture	
Sixth	5	: The student learns about energy conservation	Sustainable developmen t	Explanation, presentation of the model and lecture	the exam
Seventh	5	: The student gets to know the preservation of seeds and seeds	Sustainable developmen t	Explanation, presentation of the model and lecture	the exam
Eighth	5:	The student gets to know capital in the sustainable agricultural system	Sustainable developmen t	Explanation, presentation of the model and lecture	the exam
Ninth	5:	The student gets to know the management of the animal and plant ecosystem	Sustainable developmen t	Explanation, presentation of the model and lecture	the exam
Tenth	\5	: The student will learn about enhancing and preserving natural life	Sustainable developmen t	Explanation, presentation of the model and lecture	the exam

Eleventh	5	The student gets to know Recycling and preserving items	Sustainable development	Explanation, presentation of the model and lecture	the exam
Twelfth	5	The student gets to know the economics of natural resources	Sustainable development	Explanation, presentation of the model and lecture	the exam
thirteenth	5	: The student knows how to manage human capital	Sustainable development	Explanation, presentation of the model and lecture	the exam
Fourteen	5	: The student gets to know sustainable agriculture	Sustainable development	Explanation, presentation of the model and lecture	the exam
Fifteenth	5	The student gets to know the types of sustainable natural energ	Sustainable development	Explanation, presentation of the model and lecture	the exam

Course Evaluation

Theoretical tests 40

2- Practical tests -

3- Reports and studies 10

4- Final exam 50	
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

Course Name:
44- Basics of livestock production
Course Code:
0025402
Semester / Year: the second 2024
Description Preparation Date:2024/1/20
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total) 30(3 unit)
Course administrator's name (mention all, if more than one name)
Name: Hassan Awied Fazaa Email: hassanawied@mu.edu.iq
Course Objectives

Course Objectives	<p>Identify the general economic aspects</p> <p>Identify the economic aspect of agricultural projects and calculating economic feasibility</p> <p>Analysis of cost and revenue items for the agricultural project</p> <p>Identify the role of the agricultural sector in the economic structure of the state</p>
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Teaching and Learning Strategies

Strategy	
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Course Structure

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

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)	<p>*Principles of animal production</p> <p>*Basics of livestock production</p>
Main references (sources)	<p>-The basics of sheep and goat production, Dr. Jalal Elia Al-Qass</p> <p>2- Milk cattle production, Dr. Naguib Tawfiq</p>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

Course Name:					
45- Wind and water erosion					
Course Code:					
0025404					
Semester / Year:					
Description Preparation Date:					
Available Attendance Forms:					
Number of Credit Hours (Total) / Number of Units (Total)					
Course administrator's name (mention all, if more than one name)					
Name: Dhafer Abdulrheem Shaker Email: : dhaferabdshaker@mu.edu.iq					
Course Objectives					
Course Objectives					
Teaching and Learning Strategies					
Strategy					
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

			Mechanics and processes of wind and water erosion Wind erosion Water erosion Erosion and its impact on human activities First month exam Runoff Soil erosion and its types Methods of controlling soil erosion Environmental problems related to soil degradation The impact of soil maintenance on its sustainable productivity Second month exam The concept of non-erodible soil aggregates Sand dunes Windbreaks Small earth dams and water reservoirs		
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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
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Learning and Teaching Resources
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Required textbooks (curricular books, if any)	
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Main references (sources)	
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Recommended books and references (scientific journals, reports...)	
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Electronic References, Websites	
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Course Description Form

Course Name:	
46- Groundwater management	
Course Code:	
0015403	
Semester / Year:	
the first	
Description Preparation Date:	
1/9/2023	
Available Attendance Forms:	
Number of Credit Hours (Total) / Number of Units (Total)	
Course administrator's name (mention all, if more than one name)	
Name: Dhafer Abdulrheem Shaker Email: dhaferabdshaker@mu.edu.iq	
Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Identify the foundations of wind and water erosion. • Identify the impact of erosion on human activities. • Identify the danger of erosion on agricultural lands. • Compare and differentiate between wind erosion and water erosion.

Teaching and Learning Strategies					
Strategy					
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	2	Identify the impact of soil maintenance on its sustainable productivity	the impact of soil maintenance on its sustainable productivity	Attend	a daily test
the second	2	Identify the concept of non-erodible soil aggregates	the concept of non-erodible soil aggregates	Attend	a daily test
the third	2	Identify sand dunes	sand dunes	Attend	a daily test
the fourth	2	Identify windbreaks	windbreaks	Attend	a daily test
Fifth	2	Identify small earth dams and water reservoirs	small earth dams and water reservoirs	Attend	a daily test
VI	2	Identify erosion and weathering of groundwater	erosion and weathering of groundwater	Attend	a daily test
Seventh	2	Learn about the conservation and maintenance of soil and water	the conservation and maintenance of soil and water	Attend	a daily test
VIII	2	Identify wind erosion	wind erosion	Attend	a daily test
Ninth	2	Identify water erosion	water erosion	Attend	a daily test
The tenth	2	Identify erosion and its impact on human activities	erosion and its impact on human activities	Attend	a daily test
eleventh	2	Identify surface runoff	surface runoff	Attend	a daily test
twelveth	2	Identify soil erosion and its types	soil erosion and its types	Attend	a daily test
Thirteenth	2	Identify methods of controlling soil	methods of controlling soil		

		erosion	erosion	Attend	a daily test
fourteenth	2	Identify environmental problems related to soil degradation	environmental problems related to soil degradation	Attend	a daily test
Fifteenth	2	Identify the mechanics and process of wind and water erosion	the mechanics and process of wind and water erosion	Attend	a daily test
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)		Water and wind erosion and its impact on lands. Written by: Dr. Dhafer Ibrahim Al-Azzawi, Dr. Ismail Fadel Al Bayati			
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

Course Name:
47- English course
Course Code:
U015401
Semester / Year: Semester
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
2hours weekly

Course administrator's name (mention all, if more than one name)					
Name: Lafta Awad Atshan Email: lafta.awad@mu.edu.iq					
Course Objectives					
Course Objectives				English language skills	
Teaching and Learning Strategies					
Strategy					
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Sentences strictures		
2	2		Past tense		
3	2		Past simple		
4	2		Past continuous		
5	2		Present tenses		
6	2		Present Simple		
7	2		Present continuous		
8	2		Future tense		
9	2		Future simple		
10	2		Paragraphs writing		
11	2		Paragraphs writing		
12	2		Paragraphs writing		
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					
Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)				Cambridge English: Preliminary	
Recommended books and references (scientific journals, reports...)				Cambridge English: Preliminary	

Electronic References, Websites	An English videos
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Course Description Form

Course Name:	
48- Desert soil management	
Course Code:	
0025403	
Semester / Year:	
23-2024	
Description Preparation Date:	
3/3/2024	
Available Attendance Forms:	
Attendance	
Number of Credit Hours (Total) / Number of Units (Total)	
2 theory/ 4 practical / 3 units	
Course administrator's name (mention all, if more than one name)	
Name: Dr. Saleh Shehab Sabah Email: saleh.sabah79@mu.edu.iq	
Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Identify the types of oil soils • How to deal with these soils • Achieving maximum focus on the relationship of effective oil soils to growing crops in them • Develop an agricultural plan that prevents accumulated climate damage and poor soil management • Determine the location of the soil and the direction of the winds to place windbreaks and influence winds and floods
Teaching and Learning Strategies	
Strategy	1- Explanation and clarification 2- Lecture method

- 3- Student groups
- 4- Practical lessons in agricultural fields
- 5- Scientific trips to relevant departments and research stations
- 6- Self-learning method

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	6	Learn about desert soil management, definitions and terms	Related to soil management	Presence	Daily test
second	6	Identify the components of the desert environment	Components of the desert environment	Presence	Daily test
third	6	Learn about soil surveying and management	Soil surveying and management	Presence	Daily test
fourth	6	Learn about the mechanism of land use evaluation	The mechanism of land use evaluation	Presence	Daily test
Fifth	6	Identify the soil classification mechanism	Soil classification mechanism	Presence	Daily test
Sixth	6	Identify the suitability of soil for growing crops and vice versa	Suitability of soil for growing crops and vice versa	Presence	Daily test
Seventh	6	Learn about the agricultural cycle application	Learn about the agricultural cycle application	Presence	Daily test
Eighth	6	Get to know the administrative map	The administrative map	Presence	Daily test

Ninth	6	Identify the legal description of the land's location	The legal description of the land's location	Presence	Daily test
Tenth	6	Identify the Reclamation procedures	Reclamation procedures	Presence	Daily test
Eleventh	6	Identify civilian units	Civilian units	Presence	Daily test
Twelfth	6	Learn about climate problems	Climate problems	Presence	Daily test
Thirteenth	6	Identify the risks of erosion	The risks of erosion	Presence	Daily test
fourteenth	6	Identify the most important desert plants	Most important desert plants	Presence	Daily test
Fifteenth	6	Studying the effect of root systems on soil properties	Effect of root systems on soil properties	Presence	Daily test

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Desert soil management lectures / College of Agriculture, Al-Muthanna University
Recommended books and references (scientific journals, reports...)	Al-Muthanna University Electronic Library
Electronic References, Websites	https://agr.mu.edu.iq

Course Description Form

Course Name:	
49- Soil survey and classification	
Course Code:	
0025407	
Semester / Year:	
Fourth	
Description Preparation Date:	
26\2\2024	
Available Attendance Forms:	
Actual presence	
Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical 3 practical units 3	
Course administrator's name (mention all, if more than one name)	
Name: aula saad rasool Email : aula.abokehella @mu.edu.iq	
Course Objectives	
Course Objecti	Soil classification systems in the world <ul style="list-style-type: none"> • The old system of soil classification • The modern quantitative system for soil classification • Rules and organizational structure
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

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2	The student gets to know the concept of Classification	Soil survey classification	Explanation, presentation of model and lecture	the exam
the second	2	For the student to know the methods of Soil Classification	Soil survey classification	Explanation, presentation of model and lecture	the exam
the third	2	The student will be familiar with the means of Formation soil	Soil survey classification	Explanation, presentation of model and lecture	the exam
the fourth		The student will be familiar with the Soil survey	Soil survey classification	Explanation, presentation of model and lecture	the exam
Fifth	2	The student will be familiar with the conditions of soil formation	Soil survey classification	Explanation, presentation of model and lecture	the exam
Sixth	2	student gets to know the types Rocks	Soil survey classification	Explanation, presentation of model and lecture	the exam
Seventh	2	For the student to recognize the aspects the earth systems	Soil survey classification	Explanation, presentation of model and lecture	the exam
Eighth	2	The student will be familiar with the indicators for determining the effect of Geology	Soil survey classification	Explanation, presentation of model and lecture	the exam
Ninth	2	The student will be familiar with the means of increasing the ability of Field survey	Soil survey classification	Explanation, presentation of model and lecture	the exam
The tenth	2	The student will be familiar with the factors determining the quality of irrigation water and the indicators used determine the quality of irrigation water	Soil survey classification	Explanation, presentation of model and lecture	the exam

Eleventh	2	The student will be familiar with irrigation water classification systems	Soil survey classification	Explanation, presentation of model and lecture	the exam
Twelfth	2	The student will learn Fao classification	Soil survey classification	Explanation, presentation of model and lecture	the exam
Thirteenth	2	For the student to become familiar with problems of limestone soils	Soil survey classification	Explanation, presentation of model and lecture	the exam
fourteenth	2	The student will be familiar with the means of increasing the ability of plants tolerate salinity	Soil survey classification	Explanation, presentation of model and lecture	the exam

Course Evaluation

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

Learning and Teaching Resources

Required textbooks (curriculum books, if any)	11- soil classification dr. Ahmed ALmashedany
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic Websites	Soil Science Society Of America Library Genesis

