

**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

2026–2025

Academic Program Description Form

University Name: Al-Muthanna University

Faculty/ Institute: Agriculture College

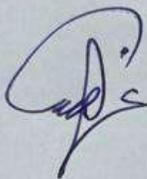
Scientific Department: Department of Combating Desertification

Academic or Professional Program Name: Bachelor of Agricultural Sciences

Final Certificate Name: Bachelor of Agricultural Sciences

Academic Preparation Date: 2-11-2025

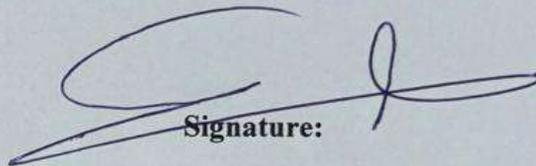
File Completion Date: 7-12-2025

Signature: 

Head of Department Name:

Prof. Dr. Ghanem Bahlol Noni

Date: 25-1-2026

Signature: 

Scientific Associate Name:

Prof. Dr. Hanoon Nahi Kadhum

Date: 26-1-2026

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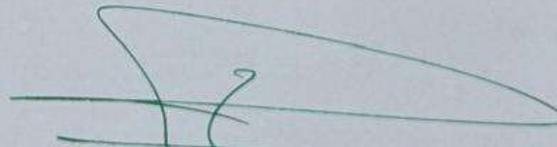
Department of Quality Assurance and University Performance

Director of the Quality Assurance and Performance Department:

Ass. Prof. Dr. Saad Kadhum Jabbar

Date: 27-1-2026

Signature:



Approval of the dean

Ass. Prof. Dr. Haider Abdul-Hussain Muhsen

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.

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			%100	

* 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 year / First semester	U015101	Democracy and Human Rights	2	–
	U015102	Computers applications	–	3
	0C15101	Principles of field crops	2	3
	0C15102	Principles of soil	2	3
	0015101	Engineering Drawing	1	3
	0015102	Botany	2	3
Second semester	U025101	English language	2	–
	U025102	Arabic language	2	–
	0C25101	Principles of Chemistry	2	3
	0C25102	Principles of animal production	2	3
	0025101	Land geology	2	3
	0025102	Desert environment	2	3

Second year / first semester	0015201	Horticultural and Landscape Gardening	2	3
	0C15201	Microbiology	2	3
	0015202	General Physics	2	3
	0015203	Agricultural machinery and equipment	2	3
	U015201	English language	2	-
	U015202	Agricultural extension principles	2	-
	0025201	Pedology of desert soils	2	3
	0025202	Plant Protection Technology	2	3
Second semester	U025201	Arabic Language	2	-
	0C25201	Statistical and Mathematics	2	3
	U025202	The Crimes of Baath Regime in Iraq	2	-
	U025202	Computer	-	3
Third year/ first semester	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	-

Second semester	0025301	Irrigation and drainage technologies	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	-
Fourth year/first semester	0015401	Water quality	2	3
	0015402	Sustainable development in desert	2	-
	0015403	Groundwater management	2	3
	0015404	Geographic information systems	2	3
	0015405	Soil Microbiology	2	3
	0015406	Graduated research project	2	-
	U015401	English language	2	-
	0015407	Environmental stress	2	3
Second semester	0025401	Salinity and reclamation of desert soils	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	
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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

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.

MODULE DESCRIPTION FORM

Module Information			
Module Title	Democracy and Human Rights	Module Delivery	
Module Type	Basic learning activities	<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	U015101		
ECTS Credits	1		
SWL (hr/sem)	50		
Module Level	1		
Administering Department	All	College	College of Agriculture
Module Leader	Leqaa khalid	e-mail	leqaa.khalid@aaaa-un.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. During the academic year, students learn the basics of human rights and democracy, including their rights, how to defend them legally, and their domestic and international guarantees. 2. Gain knowledge in the field of democracy, its various systems, and their impact on human rights. 3. Develop students' personalities and enhance their awareness of democratic political systems, their details, and how to apply them in practice. They also learn the importance of being active in society by respecting the rights of others, 4. knowing that rights and freedoms end where their own rights and freedoms

	<p>begin, and fulfilling their duties rather than merely acquiring rights. .Promote a culture of peace based on justice and equality .</p>
<p>Module Outcomes</p> <p>Learning</p>	<ol style="list-style-type: none"> 1. Empowering the student to understand the basics of defending their rights and the rights of others, and their importance to them and to society in general, as well as to understand the limits of each individual's rights and freedoms. 2. Empowering the student to participate politically by understanding the importance of participating in elections and the impact of this participation on the course of elections and the subsequent formation of government. 3. Educating the student about the guarantees of their rights and freedoms and their sources. 4. Understanding the difference between rights and freedoms . 5. Educating the student about the scientific concept of democracy, its roots, types, and forms. 6. Learning how the democratic system affects human rights and the relationship between them. 7. Educating the student about the necessity of being an active citizen in society, as well as understanding the conditions of the voter and the conditions of the candidate for elections. 8. Understanding electoral systems and which is better. 9. Educating the student about international human rights law and a brief knowledge of international organizations and their mechanisms of operation, such as the United Nations, the Red Cross, and others
<p>Indicative Contents</p>	<p>Part One - Definition of Human Rights and Human Rights in Ancient Civilizations (Definition of rights, definition of human beings, and understanding of the importance of human rights for individuals and society, as well as a study of human rights in civilizations such as the Egyptian, Iraqi, Greek, and Roman civilizations) (4 hours)</p> <p>Part Two: Definition of Human Rights in the Divine Religions, the Most Important of which is Islam (2 hours)</p> <p>Sources of Human Rights Include (International sources such as the Universal Declaration of Human Rights and the two International Covenants, and Regional Sources including Regional Agreements such as the European and American Conventions and the Constitution) (2 hours)</p> <p>Human Rights Guarantees (such as Constitutional and Legal Guarantees) (2 hours)</p> <p>International and Regional Human Rights Agreements (2 hours)</p> <p>Public Freedoms and Their Types and Comparisons Between Them (2 hours)</p> <p>The Future of Human Rights, Globalization, and Human Rights (2 hours)</p> <p>Definition, History, and Types of Democracy (Study of the definition, origin, and development of democracy, its principles, and types such as direct and indirect democracy, presidential and parliamentary systems) (6 hours)</p> <p>Definition of elections and their conditions, types of electoral systems, and</p>

	definition of the House of Representatives (6 hours)
	The Relationship Between Democracy and Human Rights (2 hours)

Learning and Teaching Strategies

Strategies	<p>1- Increasing students' awareness of the importance of knowing their rights and duties toward society and the relationship between human rights and the democratic system.</p> <p>2- General education in a range of fields, including legal, political, and social, and enhancing students' self-confidence by linking theoretical material to practical reality.</p>
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Student Workload (SWL)

Structured SWL (h/sem)	33	Structured SWL (h/w)	2.2
Unstructured SWL (h/sem)	17	Unstructured SWL (h/w)	1.1
Total SWL (h/sem)	50		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (10)	5 and 10	LO #1, #2 #,3,and #6 #7#8
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	15% (10)	13	LO #5, #8 and #9
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
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Week 1	An introductory lecture on the subject and its importance.
Week 2	Definition of right, human being, human rights, and the importance of human rights. Human rights in the Islamic religion and ancient civilizations.
Week 3	International, regional, and local sources of human rights.
Week 4	Constitutional and legal guarantees of human rights and guarantees of human rights at the international level.
Week5	Human rights guarantees in Islam.
Week 6	The role of regional organizations in protecting human rights.
Week 7	Characteristics of human rights, definition of public freedoms, their types, and comparison between them and rights.
Week 8	International human rights law, international humanitarian law, and the International Committee of the Red Cross.
Week 9	The future of human rights and ways to develop them.
Week 10	Globalization and human rights.
Week 11	Definition of democracy, its historical development, and its principles.
Week 12	Democracy between universality and particularity.
Week 13	Forms of democracy / direct democracy.
Week 14	Semi-direct democracy and representative democracy / Pillars of the representative system / Forms of the representative system.
Week 15	The parliament and its types / Election and its conditions / Electoral college.
Week 16	Organizing the election process / Defining electoral districts / Electoral lists / Candidates / Electoral campaign / Voting. Electoral systems. The relationship between democracy and human rights and how they influence and are influenced by each other. Final exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Human Rights, Children, and Democracy / by Maher Saleh Allawi, Riyad Aziz Hadi, Ali Abdul Razzaq Muhammad, and others / Al-Atik / Beirut / 2009	yes

Recommended Texts	Abbas Al-Dulaimi / Human Rights: Theory and Practice Fakhri Rashid, Salah Yassin / International Organizations / Al-Atik Book Industry / Baghdad Issam Al-Attiya / Public International Law / Legal Library / Baghdad / 2012	no
Websites		

Grading Scheme				
Group	Grade	Evaluation	Marks %	Definition
Success Group (50 - 100)	A	Excellent	90 – 100	Outstanding Performance
	B	Very Good	80 – 89	Above average with some errors
	C	Good	70 – 79	Sound work with notable errors
	D	Satisfactory	60 – 69	Fair but with major shortcomings
	E	Sufficient	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX	Fail	(45-49)	More work required but credit awarded
	F	Fail	(0-44)	Considerable amount of work required
<p>Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>				

MODULE DESCRIPTION FORM

Module Information		
Module Title	<u>Computer Application</u>	Module Delivery
Module Type	<u>Basic learning activities</u> <small>12</small>	<input checked="" type="checkbox"/> Theory

Module Code	U025202		<input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
ECTS Credits	<u>2</u>			
SWL (hr/sem)	<u>50</u>			
Module Level	1	Semester (s) offered	2	
Administering Department	All Departments	College	College of Agriculture	
Module Leader		e-mail		
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	Master english language/ Linguistics	
Module Tutor		e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date		Version Number	1.0	

Relation with Other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes, Indicative Contents and Brief Description

Module Aims	1- Understand the concept of computer operating systems.
Module Learning Outcomes	2- Understand applications and software.
Indicative Contents	3- How to use a computer and manage applications
Course Description	1- Understand the concept of computer operating systems.

Learning and Teaching Strategies

Strategies	<p>Headway's trusted methodology combines solid grammar and practice, vocabulary development, and integrated skills with communicative role-plays and personalization.</p> <p>Authentic material from a variety of sources enables students to see new language in context, and a range of comprehension tasks, language and vocabulary exercises, and extension activities practice the four skills. 'Everyday English' and 'Spoken grammar'</p>
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sections practice real-world speaking skills, and a writing section for each unit at the back of the book provides models for students to analyze and imitate.

Student Workload (SWL)

Structured SWL (h/sem)	33	Structured SWL (h/w)	2
Unstructured SWL (h/sem)↓	17	Unstructured SWL (h/w)	1.1
Total SWL (h/sem)	50		

Module Evaluation

		Time (hr)	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (5)	5, 10, 12, 15	All
	Assignments	6	20% (20)	2, 4, 6, 8, 10, 12	LO # 1, 3, 4, 5 and 6
	Seminars	2	5% (5)	Continuous	LO # 1-5
Summative assessment	Midterm Exam	2	20% (20)	7	LO # 1-3
	Final Exam	3	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	A general introduction to operating systems, types of operating systems, their functions, operating system versions, Windows 7 operating system
Week 2	Computer hardware components, computer software components
Week 3	Desktop and its components, Start menu, taskbar, customization, notification area
Week 4	Files and folders, deleting, copying and pasting, cutting
Week 5	Exam
Week 6	Programs and applications, windows and operations
Week 7	Shortcut icons, search
Week 8	Desktop wallpapers, Control Panel

Week 9	Office programs, Microsoft Word, its features and operation
Week 10	General settings, saving settings, opening files
Week 11	Exam
Week 12	Office programs, Microsoft Excel, its features and operation
Week 13	General settings, saving settings, opening files
Week 14	Excel program functions, function structure, function insertion method
Week 15	Practical applications

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	New Headway Beginner, by Liz and John Soars	Yes
Websites	https://www.learnenglish.de/ https://www.englishgrammar.org/ https://www.phrasebank.manchester.ac.uk/	

Grading Scheme

Grade	Evaluation	Marks %	Definition
A	Excellent	90 – 100	Outstanding Performance
B	Very Good	80 – 89	Above average with some errors
C	Good	70 – 79	Sound work with notable errors
D	Satisfactory	60 – 69	Fair but with major shortcomings
E	Sufficient	50 – 59	Work meets minimum criteria
FX	Fail	(45-49)	More work required but credit awarded
F	Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54). The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

Module Information			
Module Title	Principle of crops		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	0C15101		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	Module Level	Semester of Delivery	
Administering Department	Field Crops Department	College	Agriculture
Module Leader	Dr. Haider Abdulmoniem Mohammed	e-mail	haider.abdulmoniem70@mu.edu.iq
Module Leader's Acad. Title	Module Leader's Acad. Title	Module Leader's Qualification	Ph.D.
Module Tutor	Dr. Haider Abdulmoniem Mohammed	mail-e	haider.abdulmoniem70@mu.edu.iq
Peer Reviewer Name	Prof. Dr. Ghanem Bahloul Nouni	e-mail	ghanem-bahloul@mu.edu.iq
Scientific Committee Approval Date	01/10/2024	Version Number	1.0

Relation with other Modules			
Prerequisite module	none	Semester	-
Co-requisites module	none	Semester	-

Module Aims, Learning Outcomes and Indicative Contents

<p>Module Objectives</p>	<ul style="list-style-type: none"> - Study of the most important field crops in the world - Includes knowledge of the distribution of each crop in different regions of the world - Knowledge of the economic importance of field crops - Identify the methods of growing each crop and the factors affecting its productivity - Study the environmental conditions suitable for growing each crop <p>Methods used in storing and marketing important field crops worldwide -</p>
<p>Module Learning Outcomes</p>	<p>A- Cognitive Objectives</p> <ul style="list-style-type: none"> - The student will identify the most important field crops in Iraq and the world. - The student will classify crops according to their environmental needs. - The student will distinguish between crops and their importance in human and animal nutrition. - The student will know the scientific methods used to increase crop productivity. - The student will evaluate the importance of each field crop and which of them are best for investment in Iraq. <p>B- Program Skill Objectives</p> <ul style="list-style-type: none"> - Introduce the student to the economic importance of crops. - The student will be able to evaluate the most important field crops in Iraq and the world. - Teach the student the appropriate environmental conditions for each crop.
<p>Indicative Contents</p>	<ol style="list-style-type: none"> 1- Explain and clarify 2- Lecture method 3- Student groups 4- Practical lessons in agricultural fields 5- Scientific trips to learn about grain crops in Iraq

Learning and Teaching Strategies

Strategies

Developing the student's ability to identify the most important field crops and their impact on environmental conditions, and to identify and know their types.

Student Workload (SWL)

Structured SWL (h/sem)	78	Structured SWL (h/w)	9
Unstructured SWL (h/sem)	72	Unstructured SWL (h/w)	2
Total SWL (h/sem)	175		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO 1, 2
	Assignments	2	10% (10)	2 and 12	LO 3, 4
	Projects / Lab.	1	10% (10)	Continuous	LO 1-7
	Report	1	10% (10)	13	LO 1-7
Summative assessment	Midterm Exam	1hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly+Lab Syllabus)

Material Covered	
Week 1	Introduction to field crops: definition, origin, and development.

Week 2	Classification of field crops according to families, planting season, use, etc. (description of the most important plant families).
Week 3	Environmental factors and their relationship to crop growth (climatic factors).
Week 4	Light and its importance in growth.
Week 5	First month exam: Temperature and its relationship to crop distribution.
Week 6	Wind and its effect on crops.
Week 7	Mid-term exam.
Week 8	Distinguishing between the Poaceae and Legume families.
Week 9	Soil factors (soil structure).
Week 10	Soil texture, soil salinity, soil acidity.
Week 11	Factors in field crop distribution and spread.
Week 12	Classification of crops according to heat requirements.
Week 13	Summer crops.
Week 14	Winter crops.
Week 15	Crops and food security.
Week 16	Final Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		yes
Recommended Texts	Field Crop Management and Production Principles of Field Crops	Recommended Books and References Scientific Journals, Reports
Websites	Electronic references, websites, virtual library, library websites in some international universities	

Grading Scheme

Group	Grade	Evaluation	Marks %	Definition
Success Group (50 - 100)	A	Excellent	90 – 100	Outstanding Performance
	B	Very Good	80 – 89	Above average with some errors
	C	Good	70 – 79	Sound work with notable errors

	D	Satisfactory	60 – 69	Fair but with major shortcomings
	E	Sufficient	50 – 59	Work meets minimum criteria
Fail Group	FX	Fail	(45-49)	More work required but credit awarded
(0 – 49)	F	Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

Module Information			
Module Title	<u>Principle of soil science</u>		Module Delivery
Module Type	<u>Core</u>		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	<u>AGR-002</u>		
ECTS Credits	<u>6</u>		
SWL (hr/sem)	<u>150</u>		
Module Level	1	Semester of Delivery	1
Administering Department	Soil and water resources	College	Agriculture
Module Leader	Dr. Ghanem Bahloul Nouni	e-mail	ghanem-bahloul@mu.edu.iq

Module Leader's Acad. Title	Professor	Module Leader's Qualification	PhD
Module Tutor		e-mail	
Peer Reviewer Name	Dr. Ghanem Bahloul Nouni	e-mail	ghanem-bahlol@mu.edu.iq
Scientific Committee Approval Date	2024/10/10	Version Number	1.0

Relation with other Module			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	<ul style="list-style-type: none"> -Introducing students to the importance of soil science Introducing students to the basic components and properties of soil Using laboratory equipment to determine soil properties Introducing students to the branches of soil science
Module Learning Outcomes	<ul style="list-style-type: none"> Enabling students to understand and know how soil is formed Be able to use laboratory equipment Understand soil classes theoretically and experimentally Study soil chemical properties Understand modern methods of sample collection

	<p>Understand and compare soil properties</p> <p>Be able to determine soil fertility</p> <p>Learn how to classify soil</p> <p>Learn how to classify land</p> <p>Understand how to manage land</p>
<p>Indicative Contents</p>	<p>The guidance content includes the following:</p> <p>Theoretical Section</p> <p>What is Soil Principles - Introduction - Definition - Branches of Soil *</p> <p>Principles</p> <p>Soil Formation and Composition *</p> <p>Physical Properties *</p> <p>Soil Water</p> <p>Colloids and Soil Chemical Properties *</p> <p>Soil Salinity and Alkalinity and Reclamation of Salt-Affected Soils *</p> <p>Soil Fertility *</p> <p>Soil Biological Properties</p> <p>Soil Organic Matter</p> <p>Soil Classification and Management in Iraq *</p> <p>Practical Section:</p> <p>Soil Sample Collection</p> <p>Moisture Content Measurement</p> <p>Soil Apparent and True Density Measurement and Porosity Measurement</p> <p>Soil Percentage Estimation</p> <p>Soil Texture Determination</p>

	Soil Salinity and Reactivity Measurement Soil Organic Matter Estimation Soil Organic Matter Estimation Soil Mineral Carbonate Content Estimation
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Learning and Teaching Strategies

Strategies	<p>The strategies are based on the following:</p> <ul style="list-style-type: none"> -Forming groups that interact with each other to interpret and analyze soil phenomena -Using laboratory experiments -Scientific field trips -Using reverse lectures to deliver scientific information -Building students' leadership skills in presenting information and building scientific confidence
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Student Workload (SWL)

Structured SWL (h/sem)	78	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	72	Unstructured SWL (h/w)	8
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	4 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction - Branches of Soil Science
Week 2	Soil Formation and Composition
Week 3	Physical Properties
Week 4	Soil Texture
Week 5	Soil Water
Week 6	Soil Chemical Properties
Week 7	Midterm Exam
Week 8	Soil Colloids
Week 9	Soil Salinity and Alkalinity

Week 10	Reclamation of Salt-Affected Soils
Week 11	Soil Biological Properties
Week 12	Soil Fertility
Week 13	Soil Organic Matter
Week 14	Soil Classification in Iraq
Week 15	Land Management and Use in Iraq

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Explaining soil sample collection methods
Week 2	Identifying laboratory equipment and materials
Week 3	Measuring soil moisture content
Week 4	Measuring soil bulk and true density and porosity
Week 5	Estimating percentages of sand, clay, and silt and determining soil texture
Week 6	Measuring aggregate stability
Week 7	Measuring water conductivity
Week 8	Measuring soil salinity and soil pH
Week 9	Estimating some dissolved positive ions in soil solution
Week 10	Estimating some dissolved negative ions in soil solution
Week 11	Estimating soil lime and gypsum content
Week 12	Estimating soil organic matter
Week 13	Estimating some readily available elements in soil
Week 14	Estimating total numbers of fungi and bacteria in soil
Week 15	Excavating and describing a soil sample

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Principles of Soil Science - Abdullah Najm Al-Ani	Yes
Recommended Texts	Daniel Hillel. 1990. Introduction to Soil Physics. Translated by Dr. Mahdi Ibrahim Awda Ahmed Al-Zubaidi. 1989. Soil Salinity Walid Al-Aqidi and Shaker Al-Issawi. 1989. Soil Morphology	Yes
Websites		

Grading Scheme

Group	Grade	Evaluation	Marks %	Definition
Success Group (50 - 100)	A	Excellent	90 – 100	Outstanding Performance
	B	Very Good	80 – 89	Above average with some errors
	C	Good	70 – 79	Sound work with notable errors
	D	Satisfactory	60 – 69	Fair but with major shortcomings
	E	Sufficient	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX	Fail	(45-49)	More work required but credit awarded
	F	Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

Module Information

Module Title	<u>Engineering drawing</u>	Module Delivery
Module Type	<u>Core</u>	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar

Relationship to Other Subjects

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	<ul style="list-style-type: none"> -Introducing students to the importance of engineering drawing -Teaching students the basic principles of engineering drawing -Understanding the importance of engineering drawing for engineers and its applications -Representing objects using multiple projection systems and methods for drawing solids
Module Learning Outcomes	-Enabling the student to understand and know how to use engineering drawing tools.

	<ul style="list-style-type: none"> -Be able to distinguish the various lines used in engineering drawing. -Learn how to perform engineering operations. -Learn how to project point-to-point, line-segment projection, and plane surfaces. -Learn how to project vertically (three-dimensional projections). -Learn how to draw a full section and a half-cut projection. -Learn how to draw a sector parallel to the basic planes. -Learn how to draw three-dimensional drawings and their conditions. -Learn how to draw isometric drawings. -Learn how to draw parallelograms.
<p>Indicative Contents</p>	<p>The instructional content includes the following:</p> <ul style="list-style-type: none"> -Theoretical section -What is engineering drawing -Types of engineering drawing -The benefits of engineering drawing -What are engineering drawing tools? -Types of lines and some important engineering operations -Projections (point projection, line segment projection, plane projection, and the three vertical projections) -Sections (full section and half-cut projection) -Structured drawing and its types. <p>Practical Section:</p> <ul style="list-style-type: none"> -Learn about engineering drawing tools, how to use them, and how to install the board -Learn about line types -Learn about some important engineering operations and special

	<p>exercises on this topic</p> <ul style="list-style-type: none"> -Learn how to draw a projection of a point, a straight line, and a plane surface -Exercises on projections and how to correctly derive them -Derive the missing projection when two projections are available <p>Exercises on full-section and half-section projections Exercises on how to draw solid shapes and isometric drawings</p>
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Learning and Teaching Strategies

Strategies	<p>The strategies are based on the following:</p> <ul style="list-style-type: none"> -Forming groups that interact with each other to learn engineering drawing -Performing classroom exercises in the studio -Completing homework -Using all available teaching tools, such as the whiteboard, data show, and drawing board -Building a leadership spirit among students in presenting information and building academic confidence
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Student Workload (SWL)

Structured SWL (h/sem)	79	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	121	Unstructured SWL (h/w)	8
Total SWL (h/sem)	200		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7

	Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	4 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Engineering Drawing / Engineering Drawing Tools and Their Use
Week 2	Engineering Line / Drawing Board Layout (Table) / Types of Lines and Dimensions
Week 3	Arcs and Tangents
Week 4	Ellipse
Week 5	Full Section
Week 6	Vertical Projection of Points, Straight Lines, and Planes
Week 7	Vertical Projection of Geometric Objects (3D Projections)
Week 8	Full Section
Week 9	Half-Trunked Projection
Week 10	Parallel Sections to Basic Planes and Their Applications
Week 11	Exercises on Full Sections and Half-Trunked Projections
Week 12	Solid Drawing and Its Conditions
Week 13	Solid Drawing for Solid Drawing
Week 14	Isometric Drawing

Week 15	Scale Drawing using the Parallel Plane Method
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Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	An explanation of how to use engineering drawing tools.
Week 2	Learn how to mount and plan the board and draw a table.
Week 3	Learn the types of lines used.
Week 4	Learn some engineering operations on straight lines.
Week 5	Geometric shapes: triangle/square/pentagon/hexagon/octagon.
Week 6	Angles, tangents, and methods for drawing parabolas.
Week 7	Projection theory/Multiple projection system.
Week 8	Projections (shapes with flat surfaces).
Week 9	Projections (shapes with flat and inclined surfaces).
Week 10	Projections (shapes with flat and inclined surfaces, arcs, and holes).
Week 11	Full section and half-cut projection.
Week 12	Structured drawing: Introduction/Structured drawing methods.
Week 13	Isometric drawing (flat surfaces).
Week 14	Isometric drawing.
Week 15	Methods for placing dimensions on projections and isometric drawing.

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Engineering Drawing for Agricultural College Students - Dr. Eng. Natiq Sabri Hassan	Yes

	University of Mosul	
Recommended Texts	Engineering Drawing - Abdul Rasoul Al-Khafaf 1990 University of Technology	Yes As pdf
Websites		

Grading Scheme				
Group	Grade	Evaluation	Marks %	Definition
Success Group (50 - 100)	A	Excellent	90 – 100	Outstanding Performance
	B	Very Good	80 – 89	Above average with some errors
	C	Good	70 – 79	Sound work with notable errors
	D	Satisfactory	60 – 69	Fair but with major shortcomings
	E	Sufficient	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX	Fail	(45-49)	More work required but credit awarded
	F	Fail	(0-44)	Considerable amount of work required
<p>Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>				

MODULE DESCRIPTION FORM

Module Information		
Module Title	<u>botany</u>	Module Delivery
Module Type	<u>Core</u>	<input checked="" type="checkbox"/> Theory

Module Code	DEC-112		<input type="checkbox"/> Lecture	
ECTS Credits	<u>7</u>		<input checked="" type="checkbox"/> Lab	
SWL (h/Sem)	<u>175</u>		<input type="checkbox"/> Tutorial	
			<input type="checkbox"/> Practical	
			<input type="checkbox"/> Seminar	
Module Level	1	Semester of Delivery	1	
Administering Department	Combating desertification	College	Agriculture	
Module Leader	Imad Abdel Karim Muhammad Reda	e-mail	emad.aldahab@mu.edu.iq	
Module Leader's Acad. Title	assistant professor	Module Leader's Qualification	PhD	
Module Tutor		e-mail		
Peer Reviewer Name	Ghanem Bahlol Noni	e-mail	ghanem-bahlol@mu.edu.iq	
Scientific Committee Approval Date	10/09/2024	Version Number	1.0	

Relation with other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	<p>Learn the basic concepts of botany and its relationship to other sciences</p> <p>Learn the importance of plants in the survival and continuity of life</p> <p>Study the plant cell and its characteristics</p>
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	<p>Learn about seed germination and water relationships in plants</p> <p>Learn about the different plant organs, morphologically and anatomically</p> <p>Learn about vegetative and reproductive characteristics</p> <p>Plant tissues</p> <p>Study monocotyledonous and dicotyledonous plants</p>
Module Learning Outcomes	<ul style="list-style-type: none"> -Identify plants and their relationship to life -Identify plant cells and how they differ from animal cells -Identify plant parts morphologically and anatomically -Identify seed germination and water relationships in plants
Indicative Contents	<ul style="list-style-type: none"> -Identify plant organs morphologically -Dissect plant organs, understand their structures, and identify tissues -Identify water relationships in plants

Learning and Teaching Strategies

Strategies	<p>Explanation and clarification</p> <p>Lecture method -</p> <p>Student groups -</p> <p>Practical lessons in agricultural fields -</p> <p>Field trips to learn about the most important plants found in Iraq and their - families</p> <p>Self-study method -</p>
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Student Workload (SWL)

Structured SWL (h/Sem)	79	Structured SWL (h/w)	5
Unstructured SWL (h/Sem)	96	Unstructured SWL (h/w)	6
Total SWL (h/Sem)	175		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	6,12	LO #1, 2, 3,4 and 5
	Assignments	1	10% (10)	9	LO # 2 and 6
	Lab	2	10% (10)	5,15	LO # 1,4, and 5
	Seminar	1	10% (10)	13	All
	Midterm Exam	2hr	10% (10)	7	LO # 1-3
Summative assessment	Final Exam	4hr	50% (50)	16	All
			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Material Covered	
Week 1	Botany and Its Development

Week 2	The Plant Cell and Its Basic Concepts
Week 3	Living Components of the Plant Cell
Week 4	Plant Tissues
Week 5	Seed Germination and Water Relationships in Plants
Week 6	Root Morphology and Anatomy
Week 7	Stem Morphology and Anatomy
Week 8	Leaf Morphology and Anatomy
Week 8	Midterm Exam
Week 9	Flower Morphology and Anatomy
Week 10	Pollination, Fertilization, and Fruit Setting
Week 11	Metabolism and Photosynthesis
Week 12	Fruits
Week 13	Plant Organ Functions (Respiration, Transpiration, Absorption)
Week 14	Plant Classification Methods
Week 15	Second Month Exam

Delivery Plan (Weekly Lab. Syllabus)

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Microscope: Parts and Function
Week 2	Preparing Temporary Slides
Week 3	Preparing Permanent Slides

Week 4	Components of Nonliving Cells
Week 5	Types of Roots
Week 6	Types of Stems
Week 7	Types of Leaves
Week 8	Types of Flowers
Week 9	Midterm Exam
Week 10	Types of Fruits
Week 11	Seeds and Germination
Week 12	Root Sections
Week 13	Stem Sections
Week 14	Leaf Sections
Week 15	End-of-Term Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Botany Illustrated - Introduction to Plants, Major Groups	No
Recommended Texts	General Plant Fundamentals, Mohamed Abdel Wahab El Naghi, Wafaa Mahrous Amer, Adel Ahmed Fathy	No
Websites	Plant taxonomy and Anatomy	No

Grading Scheme

Group	Grade	Evaluation	Marks %	Definition
Success Group (50 - 100)	A	Excellent	90 – 100	Outstanding Performance
	B	Very Good	80 – 89	Above average with some errors
	C	Good	70 – 79	Sound work with notable errors
	D	Satisfactory	60 – 69	Fair but with major shortcomings
	E	Sufficient	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX	Fail	(45-49)	More work required but credit awarded
	F	Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

English Language MODULE DESCRIPTION FORM

Module Information				
Module Title	<u>English Language</u>		Module Delivery	
Module Type	<u>S</u>		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	<u>UNI001</u>			
ECTS Credits	<u>2</u>			
SWL (hr/sem)	<u>50</u>			
Module Level	<u>1</u>	Semester of Delivery		
Administering Department	Combating desertification	College	Agricuture	

Module Leader	Safaa Abdel Hassan Hamdan	e-mail	safaa.hamdan@mu.edu.iq
Module Leader's Acad. Title	Teacher	Module Leader's Qualification	MS.C
Module Tutor	Safaa Abdel Hassan Hamdan	e-mail	safaa.hamdan@mu.edu.iq
Peer Reviewer Name	Prof. Dr. Ghanem Bahloul Nouni	e-mail	ghanem-bahloul@mu.edu.iq
Scientific Committee Approval Date	2024/09/01	Version Number	1.0

Relation with other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	<p>to enable the learner to communicate effectively and appropriately in real life situation:</p> <p>b. to use English effectively for study purpose across the curriculum;</p> <p>c. to develop interest in and appreciation of Literature;</p> <p>d. to develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing;</p> <p>e. to revise and reinforce structure already learnt.</p>
Module Learning Outcomes	<p>to develop the students' abilities in grammar, oral skills, reading, and study skills</p> <ol style="list-style-type: none"> 1. Students will increase their awareness of correct usage of English grammar in writing and speaking. 2. Improve their speaking ability in English both in terms of fluency and comprehensibility. 3. Receive feedback on their performance through oral presentations. 4. Increase their reading speed and comprehension of academic articles. 5. Improve their reading fluency skills through extensive reading. 6. Expand their vocabulary by keeping a vocabulary journal. 7. Strengthen their ability to write academic papers, essays and summaries using the process approach.
Indicative Contents	<p>The course aims to develop communicative competence in English for intercultural contexts by teaching language items and communicative strategies essential for such scenarios, while at the same time giving students ample chances to output such items. The aims of this course are reflected in the content, which contains several themes, such as cultural awareness, intercultural awareness and English as a global language. Indicative content includes understanding the uniqueness of your own culture and other cultures, as well as being aware of the role culture plays in communication in English as a global language. In addition, this course allows for discussions about what it means for English to be a global language of communication and how misunderstandings and miscommunications when using English occurs. The course also includes practice in the pronunciation features that help</p>

improve intelligibility in intercultural contexts, namely the Lingua Franca Core.

Learning and Teaching Strategies

Strategies	<ol style="list-style-type: none"> 1. Cultivate relationships Speaking with students to know each student, helps you understand who they are, where they come from and, perhaps, gain some insight into what teaching and learning styles are most effective for them. 2. Teach language skills across all curriculum topics 3. Speak slowly and be patient: Speaking in a slower, measured cadence Being a bit more aware of your pronunciation 4. Prioritize “productive language” 5. Using a variety of methods to engage learning 6. Using visual aids by the use of pictures, diagrams, charts and other visual tools. 7. Coordinate with the ESL teacher: Such discussions can yield insights into individual students and their learning styles or challenges; they can also be helpful for sharing information about curriculum topics, potentially providing ESL teachers with ideas for highly relevant vocabulary words that can reinforce academic lessons. 8. Pre-teach new vocabulary words that may be unfamiliar to ELLs, or even to give them a copy of the article or link to the material ahead of time. 9. Build in some group work. 10. Respect moments of silence: Many new language learners tend to be a little reticent and quiet, opting for silence over speaking up and saying something “wrong” in a language that is still unfamiliar. Research-based strategies for differentiating instruction to promote student learning
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Student Workload (SWL)

Structured SWL (h/sem)	33	Structured SWL (h/w)	2.2
Unstructured SWL (h/sem)	17	Unstructured SWL (h/w)	1.1
Total SWL (h/sem)	50		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3,6,9	LO #1, #7
	Assignments	2	10% (10)	10	LO #3, #4 and #6
	Projects / Lab.	0	0 %		
	Essays	1	10% (10)	14	LO #5
Summative	Midterm Exam	2hr	20% (10) 40	7	LO #1 - #7

assessment	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Unit-1 (Hello)
Week 2	Unit-2 (Your world)
Week 3	Unit-3 (Personal information)
Week 4	Unit-4 (Family and friends)
Week 5	Unit-5 (It's my life)
Week 6	Unit-6 (Every day)
Week 7	Mid-term Exam
Week 8	Unit-7 (Places I like)
Week 9	Unit-8 (Where I live)
Week 10	Unit-9 (Happy birthday)
Week 11	Unit-10 (We had a good time)
Week 12	Unit-11 (we can do it)
Week 13	Unit-12 (Thank you very much)
Week 14	Unit-13 (Here and now)
Week 15	Unit-14 (It's time to go)
Week 16	final-term Exam

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Headway. Beginner. Student's Book by Liz and John Soars, 2019.	Yes
Recommended Texts		No
Websites	https://elt.oup.com/student/headway/beg/?cc=global&selLanguage=en	

Grading Scheme

Group	Grade	Evaluation	Marks %	Definition
Success Group (50 - 100)	A	Excellent	90 – 100	Outstanding Performance
	B	Very Good	80 – 89	Above average with some errors
	C	Good	70 – 79	Sound work with notable errors
	D	Satisfactory	60 – 69	Fair but with major shortcomings
	E	Sufficient	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX	Fail	(45-49)	More work required but credit awarded
	F	Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Course Description Form

Module Information		
Module Title	<u>Arabic Language</u>	Module Delivery
Module Type	<u>Basic</u>	<input checked="" type="checkbox"/> Theory

Module Code	<u>UNI-102</u>	<input type="checkbox"/> Lecture	
ECTS Credits	<u>2</u>	<input type="checkbox"/> Lab	
SWL (hr/sem)	<u>50</u>	<input type="checkbox"/> Tutorial	
		<input type="checkbox"/> Practical	
		<input type="checkbox"/> Seminar	
Module Level	1	Semester of Delivery	1
Administering Department	Combating desertification	College	Agriculture
Module Leader	Dr. Ghanem Bahloul Noni	e-mail	ghanem-bahloul@mu.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	Master
Module Tutor		e-mail	
Peer Reviewer Name	Laith Hussein Hassan	e-mail	Laithh.alelyawi@uokufa.edu.iq
Scientific Committee Approval Date	2024/09/16	Version Number	1.0

Relation with other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	<p>Reading without intonation</p> <p>Reducing spelling errors</p> <p>Reducing grammatical errors</p> <p>Learning about the history of the Arabic language</p> <p>Introducing students to the features and characteristics of the language of the Holy Quran.</p>
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Module Learning Outcomes	<p>Learn to read without intonation</p> <p>Ignore spelling errors</p> <p>Understand the history of the Arabic language</p> <p>Learn Arabic grammar</p> <p>Introduce students to the advantages of the Arabic language</p>
Indicative Contents	<p>The origin of the Arabic language, the importance of the Arabic language, the characteristics of Arabic</p> <p>Number and the counted, writing the hamza and its types, the difference between ta' and ha', the extended ta' and the tied ta' in writing</p> <p>The extended and shortened alif, the absolute object, the object in it</p> <p>Punctuation marks and their effect on understanding the text, common errors in the Arabic language</p> <p>Islam's stance on poetry and poets, rhetoric and its types</p> <p>In and its sisters, kana and its sisters</p>

Learning and Teaching Strategies

Strategies	<p>This is done through giving lectures and problem-solving exercises, in addition to holding discussion groups, conducting debates and poetry competitions, and performing some tasks in the form of articles and speeches in the Arabic language</p>
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Student Workload (SWL)

Structured SWL (h/sem)	33	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	17	Unstructured SWL (h/w)	1
Total SWL (h/sem)	50		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #2
	Assignments	2	10% (10)	2, 12	LO # 1, 5
	Projects	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	The Origins of the Arabic Language
Week 2	The Importance of the Arabic Language
Week 3	Characteristics of Arabic
Week 4	Number and the Counted
Week 5	Writing the Hamza and Its Types
Week 6	The Difference Between the Ta', the Ha', the Extended Ta', and the Connected Ta' in Writing
Week 7	Midterm Exam
Week 8	The Extended and Shortened Alif

Week 9	The Absolute Object and the Object in It
Week 10	Punctuation Marks and Their Effect on Text Comprehension
Week 11	Common Mistakes in the Arabic Language
Week 12	Islam's Position on Poetry and Poets
Week 13	Rhetoric and Its Types
Week 14	In and Its Sisters
Week 15	can and Its Sisters

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Al-Bayan wa al-Tabyeen, Ibn Malik's Alfiyya	Yes
Recommended Texts	Nahj al-Balagha	No
Websites		

Grading Scheme

Grade	Evaluation	Marks %	Definition
A	Excellent	90 – 100	Outstanding Performance
B	Very Good	80 – 89	Above average with some errors
C	Good	70 – 79	Sound work with notable errors
D	Satisfactory	60 – 69	Fair but with major shortcomings
E	Sufficient	50 – 59	Work meets minimum criteria

FX	Fail	(45-49)	More work required but credit awarded
F	Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

Module Information			
Module Title	Principles Of Animal Production	Module Delivery	
Module Type	Core learning activities	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	APD-1201		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1		
Administering Department	Animal Production	College	Agriculture
Module Leader	Dr. Ghanem Bahloul Noni	e-mail	E-mail: : ghanem-bahloul@mu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Dr. Hassan Awad Fazaa	e-mail	hassanawied@mu.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	<p>Enables the student to gain knowledge:</p> <ol style="list-style-type: none"> 1. Give an idea of importance of animal production, types of farm animals ,animal husbandry. 2. Give an idea of importance of reproduction , nutrition and management 3. Animals Housing and Records
Module Learning Outcomes	<ol style="list-style-type: none"> 1. Familiarity with general information about animal production and its economic and nutritional importance. 2. Discuss the factors affecting production efficiency and how to improve it. 3. Explain and clarify the obstacles facing livestock and ways to improve it. 4. Introducing students to livestock, their types, and how to care for them. 5. Introducing students to dual-purpose cattle and local and international sheep and goat breeds. 6. Defining how to establish and care for a flock of sheep and goats. 7. Defining the specifications of global and local buffalo and their different breeds. 8. We are introducing students to the importance of poultry projects and meat and egg production. 9. Providing an overview of Farm animals feed materials and the process for preparing balanced nutritional rations. 10. Explanation and clarification of health programs for animals, how to prevent diseases and ways to improve the health of animals and increase their productivity. 11. A detailed explanation of the importance of raising calves and heifers and providing the necessary needs for their rearing. 12. A detailed description of the reproductive system of cows and a statement of its importance in the reproductive process, and how to increase the reproductive efficiency of the animal and increase the birth rate. 13. Explain animal breeding and improvement programs and discuss the importance of breeding, selection, and exclusion of weak animals.

	14. A detailed explanation of the importance of camels and the equine species and how to manage and care for them.
Indicative Contents	<p>Indicative content includes the following.</p> <ol style="list-style-type: none"> 1. Disseminating the culture of livestock's nutritional and economic importance as a major source of agricultural wealth and having a major role in the Country's economy. 2. Following modern methods and techniques in animal management, milking operations, and large animal slaughterhouses. 3. Teaching students the role of successful management (human factor or the breeder himself) of small and large ruminant fields. 4. Spreading the culture of benefiting from animal by-products such as manure waste and animal waste, and benefiting from animals in work. 5. Identifying the types of farm animals and the most important projects related to their breeding. 6. Solving administrative problems in cattle, sheep, and goat breeding fields.

Learning and Teaching Strategies	
Strategies	<ol style="list-style-type: none"> 1. Enabling students to think and analyze topics related to the intellectual framework of the Principles of Animal Production subject 2. Enabling students to think and analyze topics related to animal species and the most important projects related to their breeding. 3. Enabling students to think and analyze topics related to identifying administrative problems in animal fields and working to address them. 4. Enabling students to think and analyze to identify the role of management (the role of the human factor or the breeder himself) in the success of animal fields of various types.

Student Workload (SWL)			
Structured SWL (h/sem)	78	Structured SWL (h/w)	5.2
Unstructured SWL (h/sem)	97	Unstructured SWL (h/w)	6.4
Total SWL (h/sem)	175		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		15% (15)	Continuous	All
	Report		5% (5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction of importance of animal production.
Week 2	Interrelated animal production & plant production , Sciences related to animal production
Week 3	Capabilities & constraint of animal production in Iraq
Week 4	Breed of dairy & beef cattle
Week 5	Buffaloes + First Exam.
Week 6	Milk production in the world and its influencing factors.
Week 7	Sheep & goat breeding
Week 8	Nutrition requirements, Compound stomach
Week 9	Barns.
Week 10	Reproductive in farm animals . Second Exam
Week 11	Genetic improvement in poultry.
Week 12	Other agricultural animals - camels - their management and care.
Week 13	Third Exam.
Week 14	Other Farm Animals - Horses - Their Management and Care
Week 15	Fish culture & production

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Lab 1: Visit the farm of Agriculture College
Week 2	Lab 2: Observation of field operations
Week 3	Lab 3: Milking cows, learning about the lactation system of cattle and the automatic milking device.
Week 4	Lab 4: Suckling young calves.
Week 5	Lab 5: Scientific Trip.

Week 6	Lab 6: First Exam.	
Week 7	Lab 7: Reproductive physiology & Artificial insemination.	
Week 8	Lab 8 :Hatching , Selection of hatching eggs.	
Week 9	Lab 9: Feedstuffs.	
Week 10	Lab 10 Barns.	
Week 11	Animal diseases	
Week 12	Second Exam	
Week 13	Applied in animal management	
Week 14	Observation of field operations	
Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Principles of Animal Production. Al-Jalili et.al.).	Yes
Recommended Texts	Basics of animal production, written by A. Dr.. Ahmed Suleiman Mahmoud and A. Dr.. Mahmoud Riyad Al Mahdi (2013).	No
Websites	https://nicehatchincubators.com/the-principles-of-poultry-husbandry/	

Grading Scheme

Grade	Evaluation	Marks %	Definition
A	Excellent	90 – 100	Outstanding Performance
B	Very Good	80 – 89	Above average with some errors
C	Good	70 – 79	Sound work with notable errors
D	Satisfactory	60 – 69	Fair but with major shortcomings
E	Sufficient	50 – 59	Work meets minimum criteria
FX	Fail	(45-49)	More work required but credit awarded
F	Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Course Description Form

Course Name:	
1- Geology	
Course Code:	
Semester / Year:	
Fourd	
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 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 • For the student to recognize pollution from chemical fertilizers • The student should evaluate soil fertility
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>

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 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 Geology	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	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	the exam

				model and lecture	
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			

MODULE DESCRIPTION FORM

Module Information			
Module Title	desert environment		Module Delivery
Module Type	(C) College Requirment		
Module Code	DEC-122		
ECTSCredits	8		
SWL(hr./Sem)	200		
Module Level	1	semester of Delivery	2+1
Administration Department	Combating • Desertification	Collage	College of Agricultural Engineering Sciences
Module Leader	Asst. Prof. Dr. Imad Abdel Karim Muhammad Reda	e-mail	emad.aldahab@mu.edu.iq
Module Leader's Acad11tle		Module Leader's Qualification	
Module Tutor	•	e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	22/9/2024	Version Number	1.0

Relation with other Modules			
Prerequisite module	None		Semester
Co-requisites module	None		Semester

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	<p>The Desert Environment course, offered to students in the Department of Combating Desertification in the College of Agricultural Engineering Sciences, aims to provide students with basic knowledge about the characteristics of desert environments and their environmental and agricultural impacts. Students learn about the climatic and environmental challenges facing deserts and how to cope with the scarcity of natural resources such as water. They are also taught soil conservation strategies and desertification control techniques, including sustainable land management. The course focuses on the study of desert ecosystems, their biodiversity, and how to promote the cultivation of plants suitable for these conditions. Additionally, the course addresses practical methods for developing agricultural projects in desert areas, enhancing environmental awareness and scientific research skills related to desertification and arid environments</p>
Module Learning Outcomes	<p>Understanding Desert Ecosystems: Students will gain a comprehensive understanding of the characteristics and functioning of desert ecosystems, including climate, soil, and biodiversity</p> <p>Desertification Control Techniques: Students will be able to apply sustainable land management and desertification control techniques to mitigate the effects of land degradation in arid environments</p> <p>Water Resource Management: Students will learn how to efficiently manage scarce water resources in desert environments, including the use of innovative irrigation methods and water conservation</p> <p>Environmental Impact Assessment: Students will develop skills to assess the environmental impact of human activities in desert areas and propose solutions that enhance ecological balance</p> <p>Practical Agricultural Solutions: Students will be able to design and implement agricultural</p>
Indicative Contents	<p>This course covers the characteristics of desert environments and their associated ecosystems, with a focus on water resource management and conservation strategies. The causes of desertification and sustainable methods for combating it are addressed, along with a review of the biodiversity of plants and animals adapted to desert conditions. The content also covers</p>

Learning and Teaching Strategies

Strategies	<p>Theoretical Lectures: Introducing basic concepts about desert environments and Practical and Field Learning: Conducting field visits to desert areas to study local soils and plants and applying practical techniques to combat desertification.</p> <p>Project-Based Learning: Assigning students to prepare research projects on sustainable agriculture strategies or the reclamation of degraded lands in desert environments.</p> <p>Group Discussions: Encouraging students to participate in discussions on environmental issues related to desertification and their solutions, which promotes critical thinking.</p> <p>Cooperative Learning: Organizing working groups where students collaborate to solve environmental problems and challenges associated with desert environments</p>
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Student Workload (SWL)

Structured SWL (h/Sem)	78	Structured SWL (h/w)	5
Unstructured SWL (h/Sem)	122	Unstructured SWL (h/w)	8.1
Total SWL (h/Sem)	200		

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10%(10)	4,8,12	(1-3); (4-7); (10-11)
	Assignments	2	10%(10)	5,9	(1-4);(4-8)
	Projects / Lab. report	1	15%(15)	continue	all
		1	5%(5)	11	all
Summative assessment	Midterm Exam	2hr.	10%	10	1-9
	Final Exam	3hr.	50%	16	all
Total assessment					

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week1	Ecology and its Relationship to Other Sciences
Week2	Divisions and Components of Ecology
Week3	Definition of the Desert Environment
Week4	Characteristics of the Desert Environment
Week5	Location of the Desert Environment
Week6	Climate of the Desert Environment
Week 7	Problems of the Desert Environment
Week 9	Applications of Artificial Intelligence in Predicting Climate Change and Analyzing the Desert Environment
Week9	First Exam
Week 10	Plants of the Desert Environment
Week11	Definition of Deserts, Their Types, and Characteristics

Week12	Classification of Iraqi Deserts
Week13	Desert Soils
Week14	Reclamation of Desert Soils
Week15	Artificial Intelligence in Ecosystem Restoration and Identifying Plants Suitable for Desert Environments
Week16	Second Exam

15

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week1	Analyzing desert soil properties
Week2	Measuring desertification rates
Week3	Measuring factors affecting different environments: temperature, wind speed, light, turbidity, evaporation, and current speed
Week4	Cultivating plants adapted to desert environments
Week5	Managing water resources in deserts
Week6	Environmental analysis of desert plants
Week7	Evaluating desert biodiversity
Week 8	Exam One
Week9	Analysis of the impact of climate change on deserts
Week10	Soil conservation techniques
Week11	Reintroducing degraded plants
Week12	Analysis of groundwater in deserts
Week13	Preparing small-scale models of desert ecosystems

Week 14	Using modern technologies to combat desertification
Week 15	Exam Two

Learning and Teaching Resources		
	Text	Available In the Library?
Required Texts	The Hot Desert Environment: Written by Dr. Abdul Salam Mahmoud Nouri and Dr. Abdullah bin Mohammed Al-Ansari Development and the Environment in Desert and Arid Lands: Written by Dr. Ibrahim Abdul Bari Badr The Hot Desert Environment: Prepared by Al-Jawhara Al-Shaib	Not available in free education at the college and in the college library

Grading Scheme			
Grade	Evaluation	Marks %	Definition
A	Excellent	90 – 100	Outstanding Performance
B	Very Good	80 – 89	Above average with some errors
C	Good	70 – 79	Sound work with notable errors
D	Satisfactory	60 – 69	Fair but with major shortcomings
E	Sufficient	50 – 59	Work meets minimum criteria
FX	Fail	(45-49)	More work required but credit awarded
F	Fail	(0-44)	Considerable amount of work required
<p>Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>			

Second stage

Course Description Form

Course Name:	
2- Agricultural machinery and equipment	
Course Code:	
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 lecture	Test
3	4	Four – stroke cycle& Two – stroke cycle		Theoretical + practical lecture	Test
4	4	Timer device		Theoretical + practical lecture	Test
5	4	Clutch Device		Theoretical + practical lecture	Test
6	4	Gearbox and Transmission devices		Theoretical + practical lecture	Test
7	4	Fuel System		Theoretical + practical lecture	Test
8	4	Cooling System		Theoretical + practical lecture	Test
9	4	Lubrication System		Theoretical + practical 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:
3- Lands leveling and grading
Course Code:
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 +	Test

				practical lecture	
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:
4- pasture management
Course Code:
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

- 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

- 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		

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

Course Objectives					
Course Objectives		<ul style="list-style-type: none"> * Introducing the student to the nature of microbiology * Different types of microorganisms * The use of microorganisms in the agricultural field 			
Teaching and Learning Strategies					
Strategies	<ul style="list-style-type: none"> - Cognitive objectives <ul style="list-style-type: none"> * 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 <ul style="list-style-type: none"> - Development of bacteria and fungi - Isolate and purify it - Testing its sensitivity to antibiotics 				
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 a scientific research		

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

Course Description Form

Course Name:
6- agriculture extension principle
Course Code:
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		

			<p>training</p> <p>3- Communication 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>		
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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.**

1- Getting to know office programs, including (Excel).

2- Managing databases using Excel

1-The ability to work in all areas of computer use.

2- Increasing the spirit of competition among students for the sake of academic excellence a obtaining good job opportunities.

3- Increasing competition among students in order to obtain the opportunity to apply for postgraduate studies

4- Providing assistance to other institutions.

Teaching and Learning Strategies

Strateg

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Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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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 results		
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:
8- English course
Course Code:
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:
9- Principles of animal production
Course Code:
001110
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	A lecture	Quiz

			animal production in Iraq and ways to improve them		
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
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Course Description Form

Course Name:
10- Principles of soil science
Course Code:
0C1301
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 characteristics	A lecture	Quiz
9	2	Theoretical lecture	Organic colloids	A lecture	Quiz
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

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)	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:

11- Principles of protection

Course Code:					
0C1210					
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	A lecture	Quiz

			entomology		
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 resistance	A lecture	Quiz
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:	
12- Arabic Language	
Course Code:	
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

	3Student groups 4Practical lessons in laboratories
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Course Structure

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

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, reports...)	Scientific journals in basic specializations
Electronic References, Websites	https://www.wuduh1.com/2023/10/books-arabic.html

Course Description Form

Course Name:	
13- Cultivation of desert lands	
Course Code:	
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

	<p>desert areas.</p> <ul style="list-style-type: none"> • Reaching maximum production by using the optimal farming method and the best modern irrigation methods. • Using protected agriculture in vegetable production.
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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 are	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	palm propagation		

		(with pits, shoots, and shoots)	(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 based on their tolerance to environmental conditions	the divisions of trees 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:
14- Water harvesting
Course Code:
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, tanks, irrigation canals, and drilling wells, in addition to development projects in this field and water supply projects. 			<p>The student will be familiar with the mechanism of water harvesting</p> <p>Introducing the student to Water harvesting</p>		
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	2	Theoretical	Introduction (definition of		Exams ,

week			water harvesting, main components of water harvesting system, determining factors of water harvesting system, benefits of water harvesting)		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 Anschütz, 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	صادر 2)
Recommended books and references (scientific journals, reports...)	Iraqi -reviewed journals /https://www.elsevier.com	
Electronic References, Websites	https://icwrae-psipw.org/papers/2006/Arabic/Water/A9.pdf	

Course Description Form

Course Name:
15- Soil Chemistry
Course Code:
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

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	Soil chemistry	Explanation, presentation the model and lecture	Exam

		equations			
the third	5	chemical equations, s anion exchar capacity	Soil chemist	Explanation, presentation the model and lecture	Exam
the fourth		Solubility balance in soil	Soil chemist	Explanation, presentation the model and lecture	Exam
Fifth		Carbonate equilibrium, CO ₂ -H ₂ O system, CaCO ₃ H ₂ O-CO ₂ system in soil	Soil chemist	Explanation, presentation the model and lecture	Exam
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	Soil chemist	Explanation, presentation the model and lecture	Exam

		measuring acidity and alkalinity			
Twelfth	5	effect of degree of reaction on cation exchange capacity.	Soil chemistry	Explanation, presentation of the model and lecture	Exam
Thirteenth		Equilibrium curves, buffering, acidity	Soil chemistry	Explanation, presentation of the model and lecture	Exam
Fourteenth		alkalinity of soils in dry and semi-arid areas and calcareous soils and gypsum soils.	Soil chemistry	Explanation, presentation of 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:	
16- Soil fertility	
Course Code:	
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	<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	The student gets to know growth and the factors affecting it	Fertilizer technology	Explanation, presentation of model and lecture	the 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 of and encouraging elements for growth	Fertilizer technology	Explanation, presentation of model and lecture	the exam
Ninth	2	For the student to recognize the 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 text books (curricular books, if any)	Soil fertility 2014/a. Dr. Nour El-Din Shawky Ali
Main references (sources)	Fertilizer technologies and uses, 2012, Prof. Dr. Nour El-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:					
17- a desert environment					
Course Code:					
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 good decision when thinking about the desert environment and ways to overcome its negative effects			
Course Structure					
Week	Hours	Required	Unit or subject	Learning	Evaluation

		Learning Outcomes	name	method	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 of hot deserts	climatic characteristics of hot deserts	Attend	a daily test
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 examination	First month examination		
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 examination	Second month examination		

		exam	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:

18- the economics of nature

Course Code:

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"> -Active participation in the classroom -Rapid exams -Monthly tests are proof of understanding the lecture
Teaching and Learning Strategies	
Strategy	<ol style="list-style-type: none"> 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 5- Human resources 6- Environment 7- Public goods and external factors 8- General expenses 9- Public revenues 10- Preserving natural resources 11- Sources of environmental pollution 12- Means of preserving natural resources		
Course Evaluation					
Natural Resource Economics - Hassoun Muhammad Ali					
Learning and Teaching Resources					

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:	
19- Soil-Plant-Water	
Course Code:	
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 derstanding of the relationships between soil, water, and plants

Teaching and Learning Strategies

Strategy The strategies for a course on soil-plant-water interactions often involve a combination of theoretical knowledge, practical applications, and field experiences

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:					
20- Desertification					
Course Code:					
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,		

			<p>and the losses resulting from it, desertification globally, Arably, and locally</p> <p>Origin of desertification.</p> <p>Vegetation, salinity, drought</p> <p>First month exam</p> <p>Combat Desertification.</p> <p>Agriculture and permaculture</p> <p>Water resources and combating desertification</p> <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					
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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					
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(scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

Course Name:	
21- Soil physics	
Course Code:	
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 Objecti	1- Researches the study of soil physics and the physical properties of soil 2- Study how to measure the physical properties of soil 3- Applying measurements of physical properties to solve scientific problems related agriculture and the environment 4- Understanding the relationship between physical soil properties 5- Knowing the movement of water in the soil and the flow of water in saturated and unsaturated soils.
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 and methods for determining soil 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 for 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 soil	Soil physics	Explanation,	the exam

		and water flow in unsaturated soils		presentation of model and lecture	
Eleventh	4	Water infiltration in soil and methods for measuring it and its 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 1990			
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:	
22- remote sensing	
Course Code:	
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 Objecti	<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 stages of development	remote sensing	Explanation, presentation of model and lecture	the exam
Sixth	4	Types of aerial photographs and their characteristics	remote sensing	Explanation, presentation of model and lecture	the exam
Seventh	4	Rules for classifying aerial photographs	remote sensing	Explanation, presentation of model and lecture	the exam
Eighth	4	Types of characteristics of satellite platforms	remote sensing	Explanation, presentation of model and lecture	the exam
Ninth	4	Types and characteristics of sensors	remote sensing	Explanation, presentation of model and lecture	the exam
The tenth	4	Types and properties of satellite data	remote sensing	Explanation, presentation of model and lecture	the exam
Eleventh	4	Satellite data sensing	remote sensing	Explanation, presentation of model and lecture	the exam
Twelfth	4	Methods of classifying satellite images	remote sensing	Explanation, presentation of model and lecture	the exam
Thirteenth	4	Remote sensing applications	remote sensing	Explanation, presentation of model and lecture	the exam
fourteenth	4	Geographic information systems	remote sensing	Explanation,	the exam

				presentation of model and lecture	
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 M.D. Ahmed Madloul. 2014.			
Main references (sources)		Basics of remote sensing (Canada center for remote sensing)			
Recommended books and references (scientific journals, reports...)		Iraqi academic scientific journals			
Electronic Websites		Referenc Google earth ,USGS			

Course Description Form

Course Name:
23- Design and analysis experiments
Course Code:
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>				
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>				
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 lin 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:
24- English course
Course Code:
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:
25- Irrigation
Course Code:
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 Objecti	<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 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 s	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 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 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)	<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	<p>Soil Science Society Of America</p> <p>Library Genesis</p>

Course Description Form

Course Name:	
26- Plant Physiology	
Course Code:	
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:
27- Hydrology
Course Code:
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

Objectives of a hydrology course are to provide students with a comprehensive understanding of the principles and processes of water distribution, movement, and properties of water on

Teaching and Learning Strategies

Strategy

Lectures: Traditional classroom lectures are often used to present fundamental concepts, theories, and principles of hydrology. Lectures provide an opportunity for instructors to convey information, discuss theoretical frameworks, and highlight key concepts.

Laboratory Work: Hands-on laboratory sessions allow students to apply theoretical knowledge to practical situations. In hydrology courses, students may engage in activities such as water quality testing, flow measurements, and experiments related to hydrological processes.

Fieldwork: Field trips or fieldwork exercises provide students with direct exposure to real-world hydrological environments. This could include visits to watersheds, rivers, lakes, or groundwater monitoring sites to observe and analyze hydrological features and processes.

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:
28- Soil water plant and analysis
Course Code:
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 name	Learning method	Evaluatio n method

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 samples	Water , soil plant analytical	Explanation, presentation of the model and	the exam

				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 lecture	the exam

Eleventh		The student gets to know About analytical of spectroscopy	Water , and p analytical	Explanation, presentation of the model and lecture	the exam
Twelfth	5	The student gets to know Atomic emission methods			the exam
th		: The student knows how the Atomic absorption methods	Water , and p analytical	Explanation, presentation of the model and lecture	the exam
Fourteen		: 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 know the types of X-	Water , soil plant analytical	Explanation, presentation of	the exam

		ray analysis methods		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:

29- Soil salinity and its melioratio					
Course Code:					
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	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	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:
30- Soil microbiology
Course Code:
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:
31- Environmental stress
Course Code:

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 of effect</p> <p>Introducing the student to the environmental stress resulting from extreme conditions and its effects on plants that 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	Unit or subject name	Learning	Evaluation

		Outcomes		method	method
The first week	2Theoretic 3 Practica		An introduction to the type stress Stress measurement methods		Exams , reports, discussions
second week	2Theoretic 3 Practica		Mechanism of the effect of stress on metabolism)construction and demolition Stress simulation methods		Exams , reports, discussions
the third week	2Theoretic 3 Practica		Water stress The movement of water in the plant at The occurrence of water tension		Exams , reports, discussions
fourth week	2Theoretic 3 Practica		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 Practica		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 Practica		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 Practica		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 Practica		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 str On physiological processes High temperature stress Scientific experiments on stro The heat		Exams , reports, discussions
Week eleven	2Theoretic 3 Practical		Salt stress (problem soil wavy, Causes of soil salinity, types Plants and their adaptation t stress Saline, effect of salt stress On plant anatomy, effect Salt stress during operations physiological(Scientific experiments on salinity- Anatomical and morphologic comparison Among plants exposed to salinity Plants growing in a different environment Salty		Exams , reports, discussions
The twelfth week	2Theoretic 3 Practical		External factors affecting On responding to stress Saline, stress number Hydroxychloroquine Salinity measurement method		Exams , reports, discussions
The thirteenth week	2Theoretic 3 Practical		Photostress Scientific experiments on stres Photosynthesis- anatomical comparison and morphology among plants Exposed to light stress And non-stressed plants		Exams , reports, discussions
The fourteenth week	2Theoretic 3 Practical		Pollutant stress Anatomical and morphologica 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. Wily

صادر 2)

	Pub. PP: 336. Shabala S. (2017). Plant Stress Physiology. 2nd Edition. CABI Pub. PP: 376		
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:
32- Geographic information systems
Course Code:
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
<p>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 related to them.</p> <p>Specific objectives: The student should be able to:</p> <ol style="list-style-type: none"> 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	<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>
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Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The first week	2Theoretic 3 Practica		Introduction to geographi technologies (the concept technologies, the importance, types. complementary relations between geographi technologies)		Exams , reports, discussions
second week	2Theoretic 3 Practica		Remote sensing (understo (definition), its histor development. Its importa and areas of its gene 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 applicati (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 Practical		Geographic Information Systems (GIS) (introduction to information systems, understanding (nature of currency), definition features)		Exams , reports, discussions
Seventh week	2Theoretic 3 Practical		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 Practical		Data Descriptive and temporal data		Exams , reports, discussions
The tenth week	2Theoretic 3 Practical		Databases in geographic information systems and their types		Exams , reports, discussions
Week eleven	2Theoretic 3 Practical		Structure and installation databases in geographic information systems		Exams , reports, discussions
The twelfth week	2Theoretic 3 Practical		A practical lesson on how create databases in geographic information systems		Exams , reports, discussions
The thirteenth week	2Theoretic 3 Practical		Applications of Arc GIS 1 (definition, contents, (display window, tables, layout, scripts))		Exams , reports, discussions
The fourteenth week	2Theoretic 3 Practical		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:	
33- Professional ethics	
Course Code:	
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 <ul style="list-style-type: none"> • Knowledge of general work ethics • Knowledge of rights and duties at work
Teaching and Learning Strategies	
Strategy	

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 (scientific journals, reports...)			Reports		
Electronic References, Websites			Ethics		

Course Description Form

Course Name:
34- Water Quality
Course Code:

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			The course describes the concept of hydrology and the hydrological and hydrological cycle. scientific terms used in the field of water science are also discussed. In this course, the student learns about the partial structure of water and natural and chemical properties. The flow of fluids in open pipes and channels in porous media is also explained and interpreted.		
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	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 classificatio 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 balar 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
Tenth	5	Water harvesting	Water quality	Explanation, presentation the model a lecture	Exam
Eleventh	5	The relationshi	Water quality	Explanation, presentation	Exam

		between irrigation water quality, agricultural yield, soil and climate		the model and lecture	
Twelfth	5	The relationship between irrigation water quality and irrigation technologies	Water quality	Explanation, presentation of the model and lecture	Exam
Thirteenth	5	Technologies for using surface water irrigation	Water quality	Explanation, presentation of the model and lecture	Exam
Fourteenth	5	Wastewater treatment and techniques for its reuse in irrigation	Water quality	Explanation, presentation of 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, if any)	Water quality
Main references (sources)	Books related to the subject and scientific research
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://wqa.org/

Course Description Form

Course Name:	
35- sustainable development	
Course Code:	
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 <ul style="list-style-type: none"> • The student should classify

	<p>sustainable development and its benefits to the environment</p> <ul style="list-style-type: none"> • 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
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Teaching and Learning Strategies

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

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
The	5	The student gets to	Sustainable	Explanation,	the exam

first		know the ecosystems of sustainable	development	presentation of the model and lecture	
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 conservation	Sustainable development	Explanation, presentation of the model and lecture	the exam
Sixth	5	: The student learns about energy conservation	Sustainable development	Explanation, presentation of the model and lecture	the exam

Seventh	5	: The student gets to know the preservation of seeds and seeds	Sustainable development	Explanation, presentation of the model and lecture	the exam
Eighth	5:	The student gets to know capital in the sustainable agricultural system	Sustainable development	Explanation, presentation of the model and lecture	the exam
Ninth	5:	The student gets to know the management of the animal and plant ecosystem	Sustainable development	Explanation, presentation of the model and lecture	the exam
Tenth	\5	: The student will learn about enhancing and preserving natural life	Sustainable development	Explanation, presentation of the model and lecture	the exam
Eleventh	5	The student gets to know Recycling and preserving items	Sustainable development	Explanation, presentation of the model and lecture	the exam
Twelfth	5	The student gets to know the economics of			

		natural resources			
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:	
36- Basics of livestock production	
Course Code:	
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	Identify the general economic aspects Identify the economic aspect of agricultural projects and calculating economic feasibility Analysis of cost and revenue items for the agricultural project Identify the role of the agricultural sector in the economic structure of the state
Teaching and Learning Strategies	
Strategy	
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)	*Principles of animal production *Basics of livestock production
Main references (sources)	-The basics of sheep and goat production, Dr. Jalal Elia Al-Qass 2- Milk cattle production, Dr. Naguib Tawfiq
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

Course Name:					
37- Wind and water erosion					
Course Code:					
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		
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:					
38- Groundwater management					
Course Code:					
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	Unit or subject name	Learning	Evaluation

		Outcomes		method	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 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
twelfth	2	Identify soil erosion and its types	soil erosion and its types	Attend	a daily test
Thirteenth	2	Identify methods of controlling soil erosion	methods of controlling soil 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:	
39- English course	
Course Code:	
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:	
40- Desert soil management	
Course Code:	
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	<ol style="list-style-type: none"> 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

Thirteen	6	Identify the risks of erosion	The risks of erosion	Presence	Daily test
fourteen	6	Identify the most important desert plants	Most important desert plants	Presence	Daily test
Fifteen	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:					
41– Soil survey and classification					
Course Code:					

Semester / Year:					
Fourd					
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	H	Required Learning Outcomes	Unit or	Learning	Evaluatio

	hours		subject name	method	assessment 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	Soil survey	Explanation,	the exam

		means of increasing the ability of plants tolerate salinity	classification	presentation of 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)		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			