MODULE DESCRIPTION FORM

Module Information					
Module Title	**SOIL and WATER SUITBILTY**			**Module Delivery**	
Module Type	**Core learning activity**			☒Theory ☐Lecture ☐Lab ☐Tutorial ☒Practical ☐Seminar	
Module Code	**SWS2190**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	2	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	assistant professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2026/2/1		**Version Number**		

Relation with other Modules			
Prerequisite module	APT2130	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Understand the concept of soil and water suitability. 2. Analyze the impact of environmental and social changes on achieving sustainability. 3. Study the role of government policies and innovation in supporting sustainable development. 4. Raise awareness of the importance of achieving social justice within the goals of sustainability.
Module Learning Outcomes	1. Interpret the concepts and goals of sustainable development. 2. Assess the impact of climate and policies on resource sustainability. 3. Analyze the role of education and technology in achieving sustainable development. 4. Propose innovative strategies to enhance sustainability in various sectors.
Indicative Contents	1. Introduction to the Sustainable Development Goals and Global Challenges. 2. Natural Resource Management and Climate Change. 3. Policies Supporting Sustainability in the Fields of Energy and Agriculture. 4. Innovation and Social Justice in Achieving a Sustainable Future.

	Total hrs = 62 = SSWL - (Exam hrs) = 62-2= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	1. Interactive lecture, Brainstorming 2. Dialogue and discussion 3. Assigning reports 4. Quizzes 5. Show examples for writing scientific reports in the correct formats.

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	5.8
Total SWL (h/sem)	150		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (15)	3, 9 ,11	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects	1	10% (10)	Continuous	All
	Report	1	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 Theory Syllabus)	
	Material Covered
Week 1	• Definition of soil, components and types of soils
Week 2	• Physical properties of soil (texture, density, permeability)
Week 3	• Physical properties of soil (structure, color, texture)
Week 4	• Soil chemical properties (pH, Electrical Conductivity, Nutrients)
Week 5	• Chemical properties of soil (Soil Colloids, Cation Exchange)
Week 6	• Fertile soil and factors affecting its fertility
Week 7	Midterm Exam
Week 8	• Soil degradation and its causes
Week 9	• Soil salinity and its effect on agriculture
Week 10	• Desertification and ways to combat it
Week 11	• Soil suitability for agricultural crops

Week 12	• Definition of water resources, types of water (surface, groundwater, rainwater)
Week 13	• Water pollution and its causes
Week 14	• Impact of water quality on agricultural production
Week 15	• Global Challenges Facing Sustainable Development
Week 16	• Preparatory week before the final Exam

Delivery Plan (Weekly practical Syllabus)

	Material Covered
Week 1	• Collect soil, water samples, and prepare them for the laboratory.
Week 2	• Measure soil texture (percentage of sand, silt, and clay).
Week 3	• Determine the apparent density and porosity.
Week 4	• Measurement of soil's ability to hold water (field capacity).
Week 5	• Measurement of acidity and acidity (pH&EC).
Week 6	• Estimation of essential nutrients (N, P, K).
Week 7	Midterm Exam
Week 8	• Estimation of essential nutrients (Ca, Mg).
Week 9	• Organic carbon (OC) estimation
Week 10	• Carbonate and bicarbonate measurement
Week 11	• Calcium carbonate measurement.
Week 12	• Total dissolved salts (TDS) analysis.
Week 13	• Estimation of color, turbidity, and odor.
Week 14	• Temperature: Its effect on water quality.
Week 15	• Preparatory week before the final Exam

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	مبادئ علم التربة، تأليف الدكتور عبدالله العاني (1982) تحليل التربة والنبات-دليل مختبري، ايكاردا، جون راين وعبد الرشيد (2001)	yes
Recommended Texts	Soils and land suitability for arable farming of southeast central district, Food and Agriculture Organization of the United Nations, A. REMMELZWA (1989).	No
Websites		

Grading Scheme				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A –** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(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.

أ. م. د. يوسف يعقوب هلال
رئيس قسم المكائن والآلات الزراعية

رئيس اللجنة العلمية
أ.د. عادل احمد مراد