Course Description/ The relationship of soil, water and plant

1. Course Title:
The relationship of soil, water and plant
2. :Course Code
SWPR451
3. Semester / Year:
first semester –fall- fourth stage -2024-2025
4. The history of preparation of this description
1/9/2024
5. Available Forms of Attendance:
Compulsory
6. Number of Credit Hours (Total) / Number of Units (Total):
2 theoretical + 3 practical / 3.5 units
7. Course administrator's name (if more than one name)
Name: Assist. Prof. Fatih Abid Hassan Name: Assist. Lecturer Reem Waleed Abdalgabbar
8. Course Objectives
- Enabling the student to understand the nature of the relationship between characteristics chemical and physical of soil, water and plant growth. -Enabling the student to recognize the properties of water and potential water and its relationships with soil and Plants. -Increasing the student's ability to know the importance of organic matter and its relationship with soil, water and plants. -Enabling the student to know how to deal with the problems of calcareous , salt, and sand soils. - Enable the student to learn about methods for measuring the water potential of soil and plants. - Introducing the student to the most important methods of measuring transpiration and leaf area. - Introducing the student to the most important methods of measuring soil salinity.

9. Teaching and Learning Strategies

- Interactive Lecture
- Brainstorming
- Dialogue and discussion
- Field Training
- Practical exercises
- Field Project
- Self-learning

10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Semester Exam 1, Final Exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning.	Soil- formation and nature	A1: The student shows the nature formation and emergence processes Soil and factors affecting it	2 Theoretical	1
،Practical quiz 1	Interactive lecture, brainstorming, dialogue and discussion, field training, self-learning.	Methods of designing agricultural experiments	A10: The student learns how design an agricultural experiment	3 Practical	
Semester Exam 1, Final Exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning.	Physical properties of soil (depth -soil texture) and t relationship with water and plar	B1:The student learns the reasons of the hard layer in Soil and how to treat it	2 Theoretical	2
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Comparing the growth development of systems roots different soils	A11: The student learns about the effect soil texture in nature Root growth and deepening and its spread	3 Practical	
Semester Exam 1, Final Exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Soil texture and its relationship with water and plants	A2:The student is familiar with the types of structure soil and its effect on plant growth	2 Theoretical	3
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, self-learning	Implementing an a pot experin inside the greenhouse about the effect of some phys properties of soil on plant growth	B4:The student learns how Design and implementation of the pot experiment	3 Practical	
Semester Exam1, Final Exam, Report	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Physical properties of soil (soil texture - air). Soil) and their relationship with water and plants	A3:The student learns about the effect of soil texture and soil air on growth Plant and their relationship With soil water	2 Theoretical	4

،Practical quiz 2	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Complete the pot experiment in the green house	B5 : The student gets to know how to carry out the pot experir	3 Practical	
Semester Exam1, Final Exam, Report	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Soil temperature and relationship with water and plar	A4:The student identifies the factors Influencing soil temperature- how does soil temperature affect soil temperature in plant growth	2 Theoreti cal	5
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Conduct some routine analyzes of the experimen, field capacity, soil texture, bulk density	B6:The student is familiar with assessment methods both field capacity ,Soil texture, bulk density .	3 Practical	
Quiz 1, Final Quiz	Interactive lecture, brainstorming, dialogue and discussion, self-learning	The exchange capacity of soil an relationship with water and plar	C1;The student learns about effect soil Cation exchange capa in plant growth and the fac affecting it	2 Theoreti cal	6
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Measurement of the cation exchange capacity of Soil and root and their effect on plant growth	B7:Familiarizes the student with assessment methods Exchange capacity of each soil and the roots	3 Practical	
Semester Exam2, Final Exam, Report	Interactive lecture, brainstorming, dialogue and discussion, self-learning	The soil reaction and its relationship with water and plants	B2;The student learns the effect of soil reaction on plant growth and the factors affecting it	2 Theoreti cal	7
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	Measuring the actual soil reaction and potential soil reaction and its relationship to both EC and CEC	B8:Familiarizes the student with assessment methods of the actual and potential soil reaction	3 Practical	
Semester Exam 2, Final Exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Soil salinity and its relationship v water and plants	A5:The student identifies the fac influencing soil salinity , how d soil salinity affect in plant growt	2 Theoreti cal	8
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Preparing saline soil	B9:The student can prepare Soils with different salt concentrations.	3 Practical	
Semester Exam 2, Final Exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	industrial culture	A6:The student learns about the types industrial culture and their benefits , the advantages and disadvantages of each.	2 Theoreti cal	9
Homework	Interactive lecture, brainstorming, dialogue and discussion, field	nutrient solutions	B10:The student can prepare different concentrated nutrient solutions	3 Practical	

	training, practical exercises, self-learning				
Semester Exam2	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Water composition and its physical and chemical properties	A7:The student is familiar with the nature of structure water and its most important properties Physical and chemical	2 Theoretical	10
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	transpiration measuring Methods in plants	B11:The student is familiar with the most important measurement methods of transpiration	3 Practical	
Final Exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Water and its relationships in the soil	A8:The student gets to know the types Soil water and types Its movement in the soil and its relationship to plant growth	2 Theoretical	11
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Methods for measuring soil and plant water potential	B12:Enable the student to recognize on methods of measuring water potential for soil and leaves	3 Practical	
Final Exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	The movement of water from soil to plants and atmosphere	C2:The student learns about the theory of catenary which explains movement water from soil to plant	2 Theoretical	12
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Estimating the relative moisture content in leaves	B13:The student can measure the relative moisture content of leaves	3 Practical	
Final Exam	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Water stress and plant growth	C3:The student is familiar with the effects of drought on the plant and bearing methods And avoid drought .	2 Theoretical	13
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Effect of water tension on leaf area. Measure the leaf area	B14:The student learns methods of Measure leaf area .	3 Practical	
Quiz2, Final Quiz, Report	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Organic matter in soil and its relationship with water and the plant	B3:The student understands the importance of the Organic matter and its sources and the steps to analyze it and specifications of acids Organic matter resulting from decomposition	2 Theoretical	14
Practical quiz3	Interactive lecture, brainstorming, dialogue and discussion, field	Measurement of free proline concentration in leaves	B15:Enable the student to measure Proline acid concentrationt in leaves.	3 Practical	

	training, practical exercises, self-learning				
Quiz3, Final Quiz	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Microorganisms and t relationship with soil and water And the plant	A9:The student recognizes the Importance of soil microorganisms and its relationship with water and plants	2 Theoreti cal	15
Homework	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Discussing the results of the pots experiment in the green house	A12:Introducing the student to the steps write a report on the results Plastic house experiment and discuss the results	3 Practical	

11. Course Evaluation

% Relative weight	Grade	Calendar date (week)	Evaluation methods	t
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Sixth week	Quiz (1)	3
2	2	Fourteenth week	Quiz (2)	4
1	1	Fifteenth week	Quiz (3)	5
7.5	7.5	Sixth week	Semester Exam (1)	6
7.5	7.5	The first week is difficult	Semester Exam (2)	7
40	40	Final Semester Exams	Final theoretical test	8
5	5	Week seven	Report3	9
2	2	Fourteenth week	Report4	10
1	1	First week	Practical Quiz (1)	11
0.5	0.5	Fourth week	Practical Quiz (2) Quiz	12
1	1	Fourteenth week	Practical Quiz (3) Quiz	13
5.5	5.5	,11,10,8,7,5,3, 13 weeks	and homework	14
20	20	Final Semester Exams	Final Practical Test	15
100%	%100	100	Total	

12. Learning and Teaching Resources

The relationship of soil, water and plants - Dr. Saad Allah Al-Nuaimi	Required textbooks (methodology, if an
Water in plant life - Dr. Riad Abdel Latif	Main references (sources)
The relationship of soil, water and plants - Dr. Qutaiba Muhammad Hassa Plant physiology. Dr.. Abdul Azim Kazem	Recommended books and references (scientific journals, reports...)
	Electronic References, Websites

Theoretical subject lecturer
Assist. Pro. Fatih Abid Hassan

Practical subject lecturer
Assist. Lecturer Reem Waleed Abdalgabbar

:

Chairman of the Scientific Committee:
Dr. Abdul Qader Abash Sabak

Head of the Department of Soil Sciences:
Dr. Khalid Anwar Khalid