

## Course Description Form

1. Course Name:	
Irrigation and drainage	
2. Course Code:	
IRDR 308	
3. Semester / Year:	
First semester 2023-2024	
4. Description Preparation Date:	
1 \ 2 \ 2023	
5. Available Attendance Forms:	
presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical + 3 practical / 3.5	
7. Course administrator's name (mention all, if more than one name)	
Name: mooatasim daood .S.gha & Noor Jamal Hussein Email: mooatasim@uomosul.edu.iq	
8. Course Objectives	
<ul style="list-style-type: none"> <li>- Enable the student to understand what is the science of irrigation what is the irrigation process</li> <li>- Enabling the student to become familiar with the classification of irrigation water</li> <li>- Enabling students to appreciate irrigation competencies</li> <li>- Enable the student to schedule irrigation and know the water needs of the crop</li> <li>- Enabling the student to know the different irrigation methods</li> <li>- Enable the student to learn about the characteristics of sprinkler and drip irrigation</li> </ul>	<p><b>practical:</b></p> <ul style="list-style-type: none"> <li>- Enable the student to recognize the mathematical relationships between soil parameters and knowledge of the depth of water in the soil</li> <li>- The student will be able to estimate the moisture content of the soil - work on the pressure device and estimate the ready water</li> <li>- He can estimate the tip</li> <li>- The student is able to estimate and calculate water consumption.</li> <li>- The student estimates the volume of water and drainage in the canals</li> </ul>
9. Teaching and Learning Strategies	
<p><b>theoretical:</b></p> <ul style="list-style-type: none"> <li>- Interactive lectures</li> <li>- Brainstorming</li> <li>- Dialogue and discussion</li> <li>- Assigning tasks and reporting</li> </ul>	<p><b>practical:</b></p> <ul style="list-style-type: none"> <li>- Assigning group work to reveal leadership skills</li> <li>- Assigning tasks and reporting for each experiment</li> </ul>



## 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical 3 practical	Theoretical:a1 What is the science of irrigation, the irrigation process, and what are the sources of water  Practical:a8What are the soil components and properties that matter for irrigation and drainage?	theory: Irrigation science  Practical: Mathematical relationships of soil components	theory: Audio methods, blackboard  practical : Laboratory work to estimate some properties	Short exams, assignments, discussions
2	2 Theoretical 3 practical	Theoretical: a2The student learns about rain -fed regions, and what purposes irrigation achieves  Practical: a9examples and applications of equivalent depth	Theoretical: Classification of rain -fed regions practical : Estimating the equivalent depth of soil water	Theoretical: The blackboard is a style of dialogue practical : Laboratory application and reporting	Short exams, assignments, discussions
3	2 Theoretical 3 practical	Theoretical: a3The student is familiar with the standards adopted in evaluating the quality of irrigation water in terms of salinity, sodicity, and toxicity  Practical b9Laboratory work to estimate soil moisture content	Theoretical: Standards adopted in Evaluating the quality of irrigation water practical : Estimating soil moisture conservation	Theoretical: Audio methods: writing on the blackboard  practical : Assigning tasks and reporting	Short exams, assignments, discussions
4	2 Theoretical 3 practical	Theoretical: a4The student will be able to estimate irrigation efficiencies (efficiency of transportation, irrigation, storage, and homogeneity)  Practical:b10 The student can work on the pressure device	Theoretical Irrigation efficiencies  Practical:pressure device	Theoretical: The solution method is on the board  Practical Laboratory work and writing reports	Short exams, assignments, discussions
5	2 Theoretical 3 practical	Theoretical: b1Applications and solutions of examples of irrigation efficiencies and uniformity coefficient  Practical: b11The student is able to estimate and calculate ready-made water	Applications and examples of irrigation efficiencies  Practical: Estimating field capacity and permanent wilting point	Theoretical: Examples on the board  practical : Make reports	Short exams, assignments, discussions
6	2 Theoretical 3 practical	Theoretical:a5 The student is able to learn about irrigation scheduling and what water needs are  Practical: a10The student can estimate water consumption	Theoretical: Scheduling irrigation and water needs  Practical: water consumption	Theoretical: The blackboard is a direct dialogue style  practical : Assigning tasks and reports	exams,
7	2 Theoretical 3 practical	Theoretical:b2 The student learns the stages of	Theoretical: Plant growth	Theoretical: Audio methods, writing	Short exams, assignments

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		plant growth and the related curve, as well as calculating the number of days between one irrigation and another  Practical: b12The student can estimate evaporation using an evaporation basin	stages, irrigation frequency  Practical: evaporation pan	style on the blackboard  practical : Assigning tasks and reporting	discussions
8	2 Theoretical 3 practical	Theoretical:a6 The student is able to learn about the different methods of irrigation and the ability to understand the advantages of surface irrigation  Practical: b13The student is able to estimate water drainage	Theoretical: Different ways to add water  Practical: Methods of water measurements	Theoretical: Auditory methods 'whiteboard method'  Practical: field observations	Short exams, assignments, discussions
9	2 Theoretical 3 practical	Theoretical:b3 The student is familiar with the irrigation method with irrigation, its characteristics, and estimating the depth of irrigation using the irrigation method  Practical: a11The student is able to estimate water drainage	Theoretical: irrigation method  Practical: Methods of measuring water - measuring facilities	Theoretical: Writing on the blackboard is a  practical direct dialogue method: Assigning tasks and reporting	Short exams, assignments, discussions
10	2 Theoretical 3 practical	Theoretical:b4 The student is able to learn about the advantages of sprinkler irrigation as well as devices  Practical: a12The student will be able to estimate rain in the field or laboratory	Theoretical: Sprinkler irrigation  Partical : the infiltration rate	Theoretical: Audio methods, blackboard  work: field and laboratory work	Short exams, assignments, discussions
11	2 Theoretical 3 practical	Theoretical:b5 The student is able to estimate the capacity of the sprinkler irrigation system, the capacity of one sprinkler  Practical: b14Applying the infiltration in basin	Theoretical: Sprinkler irrigation system capacity  Practical: infiltration in the basin method	Theoretical: Writing on the blackboard is a practical direct dialogue method: Assigning tasks and reporting	Short exams, assignments, discussions
12	2 Theoretical 3 practical	Theoretical:b6 The student is able to identify the characteristics and determinants of drip irrigation, and estimate the coefficient of consistency  Practical: a13The student is able to apply water consumption equations	Theoretical: Drip irrigation  Practical: Water consumption - experimental methods	Theoretical: Chalkboard style  practical : Applications in water consumption	Short exams, assignments, discussions
13	2 Theoretical 3 practical	Theoretical:a7 The student is able to know the types of drain, vertical drain , and the characteristics of open drain	Theoretical: Types of drain  Practical:	Theoretical: Audio methods, blackboard  Practical: Problems about calculating infiltration	Short exams, assignments, discussions

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		Practical: a14 Mathematical applications about the infiltration	Estimating the Infiltration rate		
14	2 Theoretical 3 practical	Theoretical:b7 The student learns about covered drain and what is the classification of drain according to the nature of their work Practical:a15 The student is able to identify what drainage	Theoretical: Covered drain  Practical: drainage	Theoretical: The blackboard is a direct dialogue style  cal : ing tasks and reporting	exams
15	2 Theoretical 3 practical	Theoretical:b8 By knowing the distance between the drain, the student will be able to know the depth of the drainage layer. Practical:a16 The student will be able to understand open and covered drain systems	Theoretical: Calculate the distance between the drain  Practical: drain systems	Theoretical: Audio methods style, blackboard practical : Display posters for assignments and reports	Short exams, assignments, discussions

### 11. Course Evaluation

	Evaluation	Time of evaluation	Degree	Relative weight
1	Theoretical final report + practical experience reports	Theoretical week 15. Practical week 1-15	7Theoretical + 6Practical	13%
2	Quiz -1-	Week 3	4 Theoretical + 2 practical	6%
3 4	Midterm Exam	Week 9	10 theoretical  + 5 practical	15%
5	Final practical test	Practical exams week	20%	20%
6	Final theoretical test	The week of theoretical exams	40%	40%
sum			100%	100%

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book on irrigation and drainage (Prof. Dr. Laith Khalil Ismail)
Main references (sources)	Irrigation, its basics and applications (Prof. Dr. Nabil Ibrahim and Prof. Dr. Issam Khader Al-Hadithi)
Recommended books and references (scientific journals, reports...)	<u>Mesopotamia Journal of Agriculture</u> and Al-Anbar Journal of Agricultural Sciences
Electronic References, Websites	The World Health Organization, and the US Food and Drug Administration.

Theoretical subject teacher: Mooatasim Daood Sulayman agha

Practical subject teacher: Noor Jamal Hussein

Chairman of the Scientific Committee: Prof. Dr. Arkan Muhammad Amir

Head of the Agricultural Machinery and Machinery Dep.; Nofal Issa Muhaimeed

