Course Description Form

1. Course Name:

Irrigation and drainage

2. Course Code:

IRDR 308

3. Semester / Year:

First semester 2025-2026

4. Description Preparation Date:

1 \ 9 \ 2025

5. Available Attendance Forms:

Combined (Attendance + distance education)

6. Number of Credit Hours (Total) / Number of Units (Total)

2 theoretical + 2 practical/ 60/ 3 units/

7. Course administrator's name (mention all, if more than one name)

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8. Course Objectives

- Enable the student to understand what is the science irrigation and what is the irrigation process - Enabling the student to become familiar with classification of irrigation water - Enabling students to appreciate irrigation competenc - Enable the student to schedule irrigation and know water needs of the crop - Enabling the student to know the different irrigat methods - Enable the student to learn about the characteristics sprinkler and drip irrigation	**practical:** **- Enable the student to recognize the mathematical relationships between soil parameters and knowledge of the depth of water in the soil** **- The student will be able to estimate the moisture content of the soil - work on the pressure device and estimate the ready wa** **- He can estimate the tip** **- The student is able to estimate and calculate water consumption.** **- The student estimates the volume of wate and drainage in the canals**

9. Teaching and Learning Strategies

theoretical: - Interactive lectures - Brainstorming - Dialogue and discussion - Assigning tasks and reporting	practical: - Assigning group work to reveal leadership skills - Assigning tasks and reporting for each experiment

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2 Theoreti 2 practical	Theoretical:a1 What is the science of irrigatio the irrigation process, and what are the sourc of water Practical:a8What are soil components properties that matter irrigation and drainage	theory: Irrigation science Practical: Mathematical relationships of soil components	theory: Audio methods, blackboard practical : Laboratory worl to estimate some properties	Short exams, assignments, discussions
2	2 Theoreti 2 practical	Theoretical: a2The student learns about rain-fed regions and what purposes irrigation achieves Practical: a9examples and applications of equivalent depth	Theoretical: Classification of rai fed regions practical : Estimating the equivalent depth of soil water	Theoretical: The blackboar a style of dialog practical : Laboratory application reporting	Short exams, assignments, discussions
3	2 Theoreti 2 practical	Theoretical: a3The student is famil with the standards adopted in evaluating quality of irrigation water in terms of salinity, sodicity, and toxicity Practical b9Laboratory work estimate soil moist content	Theoretical: Standards adopted i evaluating t quality of irrigation wa practical : Estimating soil moisture conservation	Theoretical: Audio methods: writing on the blackboard practical : Assigning tasks and reporting	Short exams, assignments, discussions
4	2 Theoreti 2 practical	Theoretical: a4The student will b able to estimate irrigation efficiencie (efficiency of transportation, irrigation, storage, a homogeneity) Practical:b10 The student can work on t pressure device	Theoretical Irrigation efficiencie Practical: press device	Theoretical: The solution method is on th board Practical Laboratory w and writ reports	Short exams, assignments, discussions
5	2 Theoreti 2 practical	Theoretical: b1Applications and solutions of examples irrigation efficiencies a uniformity coefficient Practical: b11The stud is able to estimate	Applications and examples of irrigatio efficiencies Practical: Estimatin field capacity and permanent wilting	Theoretical: Examples on th board practical : Make reports	Short exams, assignments, discussions

		calculate ready-m water	point		
6	2 Theoreti 2 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 irrigatio and water needs Practical: water consumption	Theoretical: The blackboard a direct dialogu style practical : Assigning ta and reports	exams,
7	2 Theoreti 2 practical	Theoretical:b2 The student learns the stages of plant growth and the related curve, well as calculating the number of days betwe one irrigation and another Practical: b12The stude can estimate evaporat using an evaporation basin	Theoretical: Plant growth stages irrigation frequency Practical: evaporat pan	Theoretical: Audio methods, writing style on blackboard practical : Assigning ta and reporting	Short exams, assignments, discussions
8	2 Theoreti 2 practical	Theoretical:a6 The student is able to learn about the differe methods of irrigation and the ability to understand the advantages of surface irrigation Practical: b13 student is able estimate water draina	Theoretical: Different ways to a water Practical: Meth of wa measurements	Theoretical: Auditory metho 'whiteboard method Practical: field observations	Short exams, assignments, discussions
9	2 Theoretical:b3 2 practicaldent is familiar with the irrigation method wit irrigation, its characteristics, and estimating the depth o irrigation using the irrigation method Practical: a11 student is able estimate water draina		Theoretical: e irrigation method Practical: Methods of measuring water - measuring facilities	Theoretical: Writing on the blackboard is a practical direct dialogue metho Assigning ta and reporting	Short exams, assignments, discussions
10	2 Theoreti 2 practical	Theoretical:b4 The student is able to learn about the advantages of sprinkle irrigation as well as	Theoretical: Sprinkler irrigatio	Theoretical: Audio methods, blackboard work: field	Short exams, assignments, discussions

		devices Practical: a12The student will be able to estimate rain in the fie or laboratory	Partical : the tip	laboratory wor	
11	2 Theoreti 2 practical	Theoretical:b5 The student is able to estimate the capacity the sprinkler irrigation system, the capacity o one sprinkler Practical: b14Applyin the infiltration basin	Theoretical: Sprinkler irrigation system capaci Practical: infiltration in the basin method	Theoretical: Writing on the blackboard is a practical direct dialogue metho Assigning ta and reporting	Short exams, assignments, discussions
12	2 Theoreti 2 practical	Theoretical:b6 The student is able to identify the characteristics and determinants of drip irrigation, and estima the coefficient of consistency Practical: a13The student is able to appl water consumption equations	Theoretical: Drip irrigation Practical: Water consumption experimental metho	Theoretical: Chalkboard sty practical : Applications ir water consump n	Short exams, assignments, discussions
13	2 Theoreti 2 practical	Theoretical:a7 The student is able to know the types of trocars, vertical trocars, and the characteristics of op trocars Practical: a14Mathematical applications about t infiltration	Theoretical: Types of drain Practical: Estimat the Infiltration rate	Theoretical: Audio methods, blackboard Practical: Problems about calculating infiltration	Short exams, assignments, discussions
14	2 Theoreti 2 practical	Theoretical:b7 The student learns abo covered drain and what is the classification of dra according to the natu of their work Practical:a15 The student is able to iden what drainage	Theoretical: Covered drain Practical: drainage	Theoretical: The blackboard a direct dialogu style ical : gning tasks reporting	exams
15	2 Theoreti 2 practical	Theoreticalb8 By knowing the dista	Theoretical: Calculate the distan	Theoretical: Audio methods	Short exams, assignments,

		between the drain, the student will be able to know the depth of the drainage layer. Practical:a16 T student will be able understand open covered drain system	between the drain Practical: dr systems	style, blackboard practical : Display post for assignme and reports	discussions

11. Course Evaluation

	Evaluation	Time of evalution	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. La Khalil Ismail)
Main references (sources)	Irrigation, its basics and applications (Prof. Nabil Ibrahim and Prof. Dr. Issam Khader Hadithi)
Recommended books and references (scientific journals, reports...)	Mesopotamia Journal of Agriculture and Al-Anbar Journal of Agricultural Sciences
Electronic References, Websites	The World Health Organization, and the US Fo and Drug Administration.

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