Course Description Form of Irrigation systems technology

1. Course Name:
Irrigation systems technology
2. Course Code:
IRST406
3. Semester / Year:
First semester/ 2024-2025
4. Description Preparation Date:
15/1/2025
5. Available Attendance Forms:
Full time (theoretical lecture and practical lecture) weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
5 hours (2 hours theoretical and 3 hours practical per week) for 14 weeks, number of units 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Ibrahim Ahmed Hedres ibraheeahmad@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	Science irrigation looking in irrigation water sources and methods to control it, exploit and delivery of agricultural fields and includes planning, design and implementation of irrigation facilities, transmission and distribution of irrigation water and to study ways to add them and calculate the water requirement of the plant through the study of water relationship, soil and climate in addition to the study of problems related to the addition of water problems to salinity and drainage and reclamation of soils.

9. Teaching and Learning Strategies

Strategy	In-person lectures for 14 weeks, including two monthly exams, daily exams, and scientific reports

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	**2**	Introduction to Irrigation	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
2	**2**	Basic factors for designing a field irrigation system	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
3	**2**	Water infiltration in the soil, factors affecting seepage, relationship between seepage and irrigation method, basic seepage rate	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
4	**2**	Surface irrigation	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
5	**2**	Surface irrigation systems	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
6	**2**	Furrow Irrigation, specifications, advantages, disadvantages	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
7	**2**	Furrow Irrigation, design considerations, design equations	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
8	**2**	Basin irrigation, specifications, advantages, disadvantages	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	**2**	Sprinkler irrigation, principles, advantages, disadvantages	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	**2**	Sprinkler irrigation	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	Drip irrigation, definition, benefits, disadvantages and problems, basic parts of drip irrigation system, dripper hydraulics,	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports

		irrigation depth and irrigation interval, dripper selection, irrigation efficiency and consistency			
12	**2**	Wave or pulse irrigation	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
13	**2**	Wave or pulse, advantages, disadvantages	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Scientific trip	Irrigation systems technology	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Review, soil moisture content, methods of representing moisture percentage, solving mathematical problems.	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Applications and exercises in the efficiency, sufficiency and consistency of irrigation	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Measuring the infiltration, extracting the infiltration rate, cumulative infiltration and basic infiltration rate functions, applications and exercises in infiltration	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Applications and exercises on the advance function and its relation to the infiltration functions, exercises on the concept of water balance in surface irrigation	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Mathematical applications on strip irrigation system design	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	**3**	Measurement of imbibition in the furrow	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

7	**3**	Applications and exercises about Furrow Irrigation	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Applications and exercises on Basin irrigation design	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Exercises on calculating sprinkler intervals for each arrangement	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Exercises on calculating irrigation consistency, mist losses and irrigation efficiency	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Drip irrigation applications and exercises	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	**3**	Wave or pulse irrigation applications and exercises	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
13	**3**	Pump capacity calculation	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Scientific trip	Irrigation systems technology	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation

Examination Monthly & daily exams with discussion questions inside the lecture.
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	1- Irrigation, fundamentals and applications written by Dr. Nabil Ibrahim eltaif and Essam Hamza Khudair alhadith .1988 Ministry of Higher Education and Scientific Research - University of Baghdad. 2- Irrigation and drainage written by dr.laith Khalil Ismail . 2000 Ministry of Higher Education and Scientific Research - University of Mosul. 3- Design and management of field irrigation systems written by dr. Samir Mohammed Ismail .2002 College of Agriculture - Alexandria University. 4- Modern irrigation techniques and other topics in the water issue written by Essam Khudair alhadithi ,dr. Ahmed madlool Kubaisi and dr. Yass Khudair Hamza alhadithi.2010 Ministry of Higher Education and Scientific Research University of Anbar.

Main References (Sources)	
Recommended Books and References (Scientific Journals, Reports...)	
Electronic References, Websites	