وەزارەتی خوێندنی باڵا و توێژینەوەی زانستی

Department of Soil and Water

College of Agricultural Engineering Sciences

University of Salahaddin

Subject: Principles of Irrigation

Course Book – *(2022 -2023)*

Lecturer's name: Ismael O. Ismael

Academic Year: 2022/2023

Course Book

1. Course name	Principles of Irrigation System
2. Lecturer in charge	
3. Department/ College	**Soil and Water Dept/ College of Agricultural Engineering Sciences**
4. Contact	**e-mail: Ismael.ismael@su.edu.krd** **Tel: +964 7512326160**
5. Time (in hours) per week	**Practical: 3**
6. Office hours	Sunday - 9:30 am – 1:00 pm , Thursday 9:00 am – 12:30 pm
7. Course code	**SW315**
8. Teacher's academic profile	**I am a Lecturer of Irrigation systems and principles of Irrigation in the soil and water Department/ College of Agriculture Engineering Sciences, Salahaddin University-Erbil, Kurdistan Region, Iraq. I got a Master's degree in Irrigation systems at Salahaddin University in 2020.**
9. Keywords	**Irrigation, texture, discharge and principles**

10. Course overview:

This course is a theoretical and practical introduction to understanding the base of principles of irrigation systems and different types of water in the soil. In theory more focused on the knowledge of the principles of irrigation and the theoretical idea of irrigation finally discussing the principal skills of irrigation.

In practice, develop student skills in the application of theoretical subjects in the laboratory to better understand and depend on visuals and practice by themselves. English is the preferred language, with some notes and a brief description of Kurdish.

11. Course objective:

This course prepares students to combine knowledge, skills, and attitude about irrigation principles. This course's pedagogical methods and assessment tools are explained in the content table using colorful legends for the teaching methods and assessment of different assignments.

12. Student's obligation

- Students should come to the lecture on time, if you are late, ask for permission and come in quietly.
- Try not to leave the class without a good reason, if you need it, leave quietly after permission.
- Students should come to the lab on time with laboratory requirements.
- Mobile phones should be turned off during lecture time.
- Participate in all exams as scheduled by the department.
- All assessments must be completed and submitted by the deadline.
- Students should avoid cheating and copying the texts because submitted documents will be plagiarism-checked.

13. Forms of teaching

Different forms of teaching will be used to reach the objectives of the course: power point presentations for the head titles and definitions and white bord for solve mathematical equation. Also, Using class rom activity for students and we have a short scientific trip.

14. Assessment scheme

I will give two examinations before the final one. However we have Class activity 5%, Presentation 10%, Homework 10%, Quiz 5%, Field trip 10%, Midterm exam 25% and Final exam 35%

15. Student learning outcome:

By the End of this module, students will be able to:

' Summarize the main principles of irrigation systems.

' Classify the different types of water in the soil and solve the time needed to increase the plants' water.

' Teach how to calculate the Evapotranspiration and Discharge of the water.

' Get a general view of different types of irrigation systems.

16. Course Reading List and References:

1. Burton, M., 2010. Irrigation management: Principles and practices. Cabi.

2. Israelsen, O.W. and Wiley, J., 1950. Irrigation principles and practices (Vol. 70, No. 6, p. 479). LWW.

3. Srinivasan, M.S., Bewsell, D., Jongmans, C. and Elley, G., 2017. Just-in-case to justified irrigation: Applying co-innovation principles to irrigation water management. Outlook on Agriculture, 46(2), pp.138-145.

4. Karmeli, D. and Peri, G., 1974. Basic principles of pulse irrigation. Journal of the irrigation and drainage division, 100(3), pp.309-319.

5. Majumdar, D.K., 2001. Irrigation water management: principles and practice. PHI Learning Pvt. Ltd..

17. The Topics:	Lecturer's name
18. Practical Topics (If there is any)	

Salahaddin University – Erbil College of Agricultural Engineering Sciences / Soil & Water DepartmentAcademic Calendar				
Module Name		Principles of Irrigation System		
Module Code		SW315		
Fall Semester From (1 Oct 2022) to (20 Jan 2022)				
Date	weeks	Module Name and Code		Workload lecture (hr)
6-Sep-22	Week 1	What is the Priciples of Irrigation system		5
13-Sep-22	Week 2 #	Soil texture		5
20-Sep-22	Week 3	Soil Structure (Flipped Learning)		5
27-Sep-22	Week 4 *	Porosity		5
4-Oct-22	Week 5	Classification of soil water (Flipped Learning)		5
11-Oct-22	Week 6 *	Infiltration		5
18-Oct-22	Week 7	Midterm exam		6
25-Oct-22	Week 8 #	Discharge		5
1-Nov-22	Week 9	Measurement Water Discharge by Volumetric and in Channel or Rivers		5
8-Nov-22	Week 10	short trip to Grat Zaab for calculate Discharge of this river		5
15-Nov-22	Week 11 *	Water holding parameters		5
22-Nov-22	Week 12 @	presentation		5
8-Dec-22	Week 13 #	Evapotranspiration (ET) and the Factors that Affect ET Rates		5
15-Dec-22	Week 14	Types of Irrigation Systems(Flipped Learning)		5
16-Dec-22	Week 15	Final Examination		10
22-Dec-22	Week 16			

Week *	Quiz		3
Week #	Assignment		3
Week @	presentation		1

19. Examinations:

Q/ What is the principles of irrigation? And When plant need to irrigation?
Q/ Enumerate the function of Irrigation.
Q/ what are the advantage and disadvantages of irrigation system?

Q / A soil is sampled by a core measuring 7.8 cm in diameter and 8.4 cm height. Calculate gravimetric and volumetric water contents and dry bulk densities using the following data:
1. Weight of empty core = 300 g
2. Weight of core + wet soil = 1000 g
3. Weight of core + oven dry (1050C) soil = 860 g

Q/ write the main types of weirs.
Q/ Calculate the discharge by (m3/s) in a channel when we use a trapezoidal weir if you know the width of the contracted notch below is equal to 0.4 m and in a surface is 0.6 m and the head of water over the weir is 32 cm.
Q/ what is the water Discharge?

Q/ Calculator the discharge of a plastic pipe, 18 cm in diameter. The pipe is 125 meters in length, and the difference in height between the beginning and endpoints of the pipe is equal to 80 cm.

20.

21. Peer review

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