Department of Soil and Water

College of Agricultural Engineering Sciences

University of Salahaddin

Subject: Principles of Irrigation

Course Book – *(2023 -2024)*

Lecturer's name: Ismael O. Ismael

Academic Year: 2023/2024

Course Book

1. Course name	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: 303**
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 irrigation systems and different types of irrigation systems. In theory, more focused on the knowledge of irrigation and the theoretical idea of irrigation systems finally discussing the skills of irrigation systems.

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

11. Course objective:

This course's pedagogical methods and assessment tools are explained in the content table using colourful 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 different irrigation systems.

➢ Apply the design of different irrigation systems such as Drip, sprinkler, and center pivot irrigation systems.

➢ Teach how to calculate the volume of water applied to the crop and the Evapotranspiration of each crop (ETc).

➢ Teach to calculate irrigation interval or frequency and irrigation application efficiency.

16. Course Reading List and References:

11. Phocaides, A., 2007. Handbook on pressurized irrigation techniques. Rome. Food and Agriculture Organization of the United Nations (FAO).

2. Allen, R.G., Pereira, L.S., Raes, D. and Smith, M., 1998. FAO Irrigation and drainage paper No. 56. Rome: Food and Agriculture Organization of the United Nations, 56(97), p.e156.Srinivasan,

3. Darshna, S., Sangavi, T., Mohan, S., Soundharya, A. and Desikan, S., 2015. Smart irrigation system. IOSR Journal of Electronics and Communication Engineering (IOSR-JECE), 10(3), pp.32-36.

4. James, L.G., 1988. Principles of farm irrigation systems design. John Wiley and Sons Limited.

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		Irrigation System	
Module Code		SW303	
Fall Semester From (1 Oct 2022) to (20 Jan 2022)			
Date	**weeks**	**Module Name and Code**	**Workload lecture (hr)**
11-Jan-23	Week 1	Types of Irrigation Systems	3
18-Jan-23	Week 2 #	Drip Irrigation	5
25-Jan-23	Week 3	Design of sprinkler Irrigation (Flipped Learning	5
1-Feb-23	Week 4 *	Center pivot irrigation system	5
8-Feb-23	Week 5	calculate the volume of water applied to the crop and the Evapotranspiration of each crop (ETc)	5
15-Feb-23	Week 6 *	Scientific trip to see different types of irrigation in the field	6
1-Mar-23	Week 7	Midterm exam 1	6
8-Mar-23	Week 8 #	Calculate the area irrigated by center pivoting Calculate the time required for continue one cycle	5
15-Mar-23	Week 9	Calculate irrigation application efficiency.	5
4-Mar-23	Week 10	Calculate irrigation interval or frequency.	5
29-Mar-23	Week 11 *	Scientific trip to see components of different irrigation systems.	4
5-Apr-23	Week 12 @	Midterm exam 2	5
12-Apr-23	Week 13 #	presentation	3
19-Apr-23	Week 14	presentation	3
3-May-23	Week 15	Final Examination	8
14-May-23	Week 16		
Week *	Quiz		3
Week #	Assignment		3
Week @	presentation		1
			80

19. Examinations:

Q/ what is the each phrase below? Write only 5
(irrigation, sprinkler irrigation, sub-irrigation, emitter clogging, Emitters, drip irrigation)
Q/ Write only 5 advantages of drip irrigation.

Q/ what are the components of the drip and centre-pivot irrigation system?

Q/ what the information we must be get before design any sprinkler irrigation?

Q/ Calculate the area of the field and the times need to continue one shift of the center pivot if the velocity of this is equal to 95m/hr if you know the length of the towers is equal to 203 meters and the shout distance of the gun equal to 30 meters.

Q/ what is the determination of the effective rainfall?

Q/ Calculate the volume of water we need to add for the squash plant at Juley for 3 days when the average temperature is equal to 35°C and atmospheric pressure is 9.9 Also, Kc= 0.89 if you know the diameter of wetting is equal 60 cm.

Q/ The highly irrigation Efficiency dependent some points, write all of them.

Q/ Calculate the uniformity distribution for the drip irrigation if you have the below data:

 57, 53, 64, 47, 62, 48, 50, 61, 57, 61, 58, 57, 55, 53, 51 and 50.

Q/ What are the factor affecting of head loss?

Q/ A pipe of 100min m diameter with a discharge of 50 $m3$/hr with a length of 110 m made of plastic, calculate the head loss by Haezn-Williams and Scobey equation.

20.

21. Peer review

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