Republic of Iraq

Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Apparatus

College: Shatt Al-Arab University College

Department: Civil Engineering

Stage: 3rd stage

Lecturer name: M.Sc. Qasim Mohammed Khudair
Academic title: Assist. Lecturer

Course Weekly Outline

Name	M.Sc. Qasim Mohammed Khudair		
E-mail address	qasim.muhamad@sa-uc.edu.iq		
Course name	Irrigation Engineering		
General course objective	1. This course covers the basic concepts of irrigation engineering and explains the different irrigation methods. 2. Demonstrate the relationship between irrigation engineering (within agricultural engineering) and civil engineering. 3. Develop skills in understanding and solving problems within the field of agricultural engineering, such as water waste problems. 4. Present the principles and laws taken in other related courses and demonstrate their importance and how to apply and employ them in irrigation engineering to solve potential engineering problems.		
Course description / special objectives	1. Clarifying the basic concepts of irrigation engineering systems and their applications in agricultural fields 2. Acquiring basic skills in managing irrigation systems optimally. 3. Gaining the appropriate experience in designing irrigation systems in different ways and their suitability to different surrounding conditions and knowing the difference between the old and modern irrigation systems. 4. Developing the ability to solve water waste problems and finding the best ways to reduce them. Developing the ability to write scientific reports and reading charts with tables.		
References	كتاب هندسة نظم الري الحقلي		
External sources	1. اساسيات الري تأليف جورج هارغريفز وغاري ميركلي 2. مقدمة في نظم الري للدكتور سمير محمد إسماعيل 3. Irrigation and Drainage Engineering by Peter Waller and Muluneh Yitayew 4. Irrigation and water resources engineering by G.L. Asawa		
Course assessment	**Assignments and quizzes**	**Midterm Exam**	**Final exam**
	10	**30**	**60**
General notes			

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Week No.	Theoretical	Unit-chapter	Aims
1	Irrigation, irrigation benefits and irrigation networks	Introduction to the Irrigation Engineering	This course covers a wide range of different irrigation methods, their optimal conditions and design methods with the aim of enriching the knowledge base of the civil engineer in the field of agricultural engineering in a way that enables him to solve potential engineering problems in this field effectively. This module is also complemented by lab classes and tutorials
2	Types of irrigation methods, evaluation of irrigation water sources	Introduction to the Irrigation Engineering	
3	volume of water in the soil and methods for calculating water consumption	Introduction to the Irrigation Engineering	
4	Efficiency, sufficiency and consistency of irrigation	Introduction to the Irrigation Engineering	
5	Land gradation design methods	Land gradation design	
6	Surface irrigation process mechanism and water balance concept	Surface irrigation	
7	Design assumptions in strip irrigation and design flow rate, strip length and width	Strip irrigation	
8	Method of calculating absorption, design parameters, methods of controlling surface runoff	Furrow irrigation	
9	Design equations in basin irrigation and design parameters	Basin irrigation	
10	Sprinkler irrigation system diagram and effect of wind direction on the diagram	Sprinkler irrigation	
11	Hydraulic sprinkler, distribution uniformity factor, and the sprinkler irrigation losses	Sprinkler irrigation	

12	Number of pipes moves, hydraulic flow principles, and flow in the manifold	Sprinkler irrigation	
13	Pressure charge calculation, sprinkler irrigation system design	Sprinkler irrigation	
14	Benefits of trickle irrigation, basic parts of the drip system	Trickle irrigation	
15	Wetness area, drip system design	Trickle irrigation	