

**The Islamic University of Gaza- Civil Engineering Department
Irrigation and Drainage- ECIV 5327**

Course Objectives and Outline

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Irrigation and Drainage- course description

Irrigation water sources and methods of storage, water and soil relationship, salt accumulation and leaching, Water flow through the soil, the quantity and quality of water used in irrigation systems, surface and underground irrigation systems design, wells and its use for irrigation, water measurements, laws and legislation for irrigation.

Course Objectives

On Completion of this course, students should be able to:

1. Understand the basic soil-plant-water parameters related to irrigation
2. Understand how to estimate the quantity of water required by crops using manual and computer methods.
3. Be able to plan and design irrigation and drainage projects.
4. Understand the computer applications in irrigation and drainage designs.

Course Outline

1. Introduction

- Importance of irrigation
- Types of irrigation systems

2. Irrigation Water Measurement

- Velocity of flow
- Flow measurement

3. Soil-Water Relationships

- Soil properties
- Water in soils
- Infiltration
- Soil water measurement

4. Irrigation Water Requirements

- Evapo-transpiration
- Efficiencies and System capacity
- Irrigation Modeling (CropWat model)

Midterm Exam

5. Irrigation Water Sources

- Ground water and wells
- Reuse of treated wastewater effluent
- Water quality for irrigation purposes.

6. Pipeline Hydraulics and pumping units

- Basic relationships
- Friction loss
- Types of pumps
- Pump characteristics
- Pump selection-Power units

7. Irri. & Drainage Systems planning & Design

- Types of systems
- System components
- System performance
- Hydraulics of laterals

8. Laws and Legislative for Irrigation

Final Exam

Homework and Assignments: 10%

Midterm Exam: 30%

Final Exam: 60%