

Course Name	Code\No.	Number of Credits			
		Theo.	Lab.	Train.	Credit
Principles of Irrigation & Drainage	HWR 241	2	2	-	3
Pre-Requests	HWR 100				

**Course Objectives:**

The objectives of this course are to teach students irrigation and drainage methods and operations and the different types of irrigation and drainage systems. Also, to teach students how to determine crop water requirements, and irrigation efficiencies.

**Course Contents:**

- 1) Soil-water-plant relations.
- 2) Definition of evapo-transpiration and crop water requirements use and its determination methods.
- 3) Factors that affect evapo-transpiration.
- 4) Definition of surface irrigation system its types. The system advantage and disadvantage.
- 5) Definition of sprinkler irrigation systems, its types. The system advantage and disadvantage.
- 6) Definition of micro-irrigation systems its types. The system advantage and disadvantage.
- 7) Irrigation efficiency.
- 8) Explanation of drainage systems.
- 9) Lab experiments.

**Course outcomes:**

- Understanding crop water requirements and factors that affect it.
- Understanding the different irrigation systems and benefits and drawbacks of each of them.
- Understanding irrigation efficiency.
- Understanding farm drainage systems.

**Evaluation Method:**

Students are evaluated through one mid-term exam and one final exam in addition to some assignments and class project.

**References:**

- Burt, C. M. and Styles, S. W. (1994) Drip and micro-irrigation for trees, vines, and row crops (with special sections on buried drip), Irrigation Training & Research Center.
- Ismaeel, Sameer Mohammad (2002), "Design and Management of Field Irrigation Systems", Nasha't and Maa'rif, Alexandria.
- Khalil, Mahmoud Abdel Aziz (1998), "Hydraulic Relations and Irrigation Systems", Nasha't and Maa'rif, Alexandria.
- Theeb, Fawzi and Al-Amoud, Ahmad (1418), "Surface Irrigation Systems and Operations", Scientific Publishing, King Saud University.
- Al-Tayyari, Husain Mohammad (2004), "Sprinkler Irrigation Systems", Scientific Publishing, King Saud University.
- Al-Amoud, Ahmad (1419), "Drip Irrigation Systems", Scientific Publishing, King Saud University.
- Camp, C.R., Sadler, E.J. and Yoder, R.E. (1996) Evapo-transpiration and irrigation scheduling, American society of agriculture engineers.
- Hoffman, G., Howell, T. A. and Solomon, K.H. (1990) Management of farm irrigation system, American society of agriculture engineers.
- Lamm, F. R. Ayars, J. E. and Nakayama, F. S. (2006) Micro-irrigation for crop production, volume 13: design, operation, and management (developments in agricultural engineering), Elsevier Science.
- Mane, M.S. (2006) Principles of drip irrigation, Jain Brothers.