

Construction & Building Engineering Courses (CB)

Water Resources & Coastal Engineering Courses Group

CB 483 – Irrigation and Drainage

COURSE INFORMATION

Course Title: Irrigation and Drainage

Code: CB 483

Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: CB 382

GRADING

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

Application of the hydraulic & hydrologic principles to the design and construction of irrigation and drainage systems: Crop water requirements and hydrologic determination of the design flow; traditional and modern irrigation methods and systems; Types of drainage systems; hydraulics of surface drainage-ground water interface; Irrigation and drainage system design and structures.

TEXT BOOK

Irrigation Engineering by Sharma, R. and Sharma T., Publisher: S. Chand & Company Ltd., New Delhi, 2004.

REFERENCE BOOKS

Water Resources Engineering by Linsley, R.L. Franzini, J.B. Freyberg J. and Tchobanogolous G. Publisher: McGraw-Hill Co., New York, 1992.

Elementary Soil and Water Engineering by Schwab, G.O., Frevert, R.K., Publisher: John Wiley & Sons, Inc., 1985.

Computer Applications in Hydraulic Engineering-connecting theory to practice by Walski, M.T.; Publisher: Haestad Press, Waterbury, CT, U.S.A., 2002.

Irrigation and Drainage by Neil Southorn Publisher: Butterworth Publishing Co, UK, 1998.

C O U R S E A I M

The course is designed to teach essentials of planning, selection and design of irrigation and drainage systems and other related topics related to the sustainable management of water resources and disposal or reuse of drainage waters as sectors of water resources system.

S P E C I F I C O U T C O M E S O F I N S T R U C T I O N

The student should be aware with state-of-art practices of irrigation and drainage systems with respect to aspects of planning, hydraulic design, construction, and operation of these systems with focus on arid & semi-arid regions.

C O U R S E O U T L I N E

- Week Number 1:* Water requirements for irrigation and overview of irrigation systems & agricultural & urban drainage system.
- Week Number 2:* Introduction to sustainability of irrigation and drainage ecosystems. Overview of irrigation and drainage structures.
- Week Number 3:* Soil-Water-Crop relationship.
- Week Number 4:* Crop water requirements: Effects of water quality, quantity, impact of irrigation water quality on soil, and food production.
- Week Number 5:* Synoptic diagram for surface irrigation and drainage systems.
- Week Number 6:* Design of cross-sections for surface irrigation channels.
- Week Number 7:* Design of cross-sections for surface (storm) drainage channels.
- Week Number 8:* Water conservation-Introduction to sprinkler and drip irrigation systems and water management.
- Week Number 9:* Selection of sprinkler and drip irrigation systems components;
– Pipes and pumps.
- Week Number 10:* Sprinkler irrigation systems.
- Week Number 11:* Drip irrigation systems.
- Week Number 12:* Drip irrigation systems.
- Week Number 13:* Drainage system, planning, design, construction and operation of subsurface and land drainage.
- Week Number 14:* Quality of drainage water and impact on fresh water resources and coastal waters.
- Week Number 15:* Review of case studies for irrigation and drainage projects.
- Week Number 16:* Final Exam.

APPENDIX A-135

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr. Wael Mohamed Hamdy Khadr.

Course Demand: *Required*