

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
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CE 633 Irrigation Engineering

College: Engineering

Department: Civil

First: Course Definition

1- Course Code: CE 633

2- Units: 3

3- Semester:

4- Prerequisite:

5- Co-requisite:

6- Location (if not on main Campus):

Second: Course Objectives

- To develop understanding of the basic soil-plant-water parameters related to irrigation.
- To ensure that students are able to estimate the quantity of water required by crops using manual and computer methods.
- To ensure that students are able to plan and design irrigation projects
- To make students familiar with a range of computer applications in irrigation designs.
- To give students an understanding of the channels and other irrigation structures's design required for irrigation projects.

Third: Course Specifications

1- Topics to be covered

Subject	No of Weeks	Units
Soil-water relations	1	3

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Crop water requirements	1	3
Planning irrigation systems	2	6
Irrigation methods	2	6
Sprinkler irrigation method	2	6
Drip Irrigation	2	6
Evaluation of irrigation systems.	2	6
Need for optimization of water use	2	6

2- Course components (Total hrs in the Semester): 42

Lecture	Exercise	Other
42	-	0

3- Intended Learning Outcomes of the Course (ILO's)

a. Knowledge

i) Description of the knowledge to be acquired:

- The need and mode of irrigation.
- Irrigation management practices of the past, present and future.
- Hydraulic design of different structures involved in irrigation.
- Collect different methods of design and maintenance of irrigation canals.
- Define and describe any type of irrigation project.

ii) Teaching strategies to be used to develop that knowledge

- Class lectures.
- Term projects.
- Students' presentations.
- Group discussion.
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iii) Methods of assessment of knowledge acquired

- Exams.
- Quizzes.
- Homework assignments.
- Term projects.

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b- Cognitive (Intellectual) Skills

i) Cognitive skills to be developed

- Advanced concepts of canal design.
- Advanced irrigation problem modeling.
- Investigation of irrigation system design alternatives.

ii) Teaching strategies to be used to develop these cognitive skills

- Class lectures.
- Case studies analysis.
- Term projects.

iii) Methods of assessment of students' cognitive skills

- Students' seminars and presentations.
- Term projects.
- Written reports.

c. Interpersonal Skills and Responsibility

i) Description of the interpersonal skills and capacity to carry responsibility to be developed

- Decision making based on engineering analysis.
- Communication skills.
- Team work.

ii) Teaching strategies to be used to develop these skills

- Class lectures.
- Term projects.
- Case studies analysis.

iii) Methods of assessment of students' interpersonal skills and capacity to carry responsibility

- Term project.
- Written reports.
- Students' seminars and presentations.

d. Communication, Information Technology and Numerical Skills

i) Description of the skills to be developed in this domain

- Literature research.
- Problems modeling.

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- Utilization of computer applications in analysis and design.

- ii) Teaching strategies to be used to develop these skills**
- Class lectures.
 - Case studies analysis.
 - Computer lab sessions.
 - Term projects.
- iii) Methods of assessment of students numerical and communication skills**
- Term projects.
 - Written reports.
 - Students' seminars and presentations.

e. Psychomotor (if applicable) & Other Non-cognitive Skills

i) Description of the psychomotor or other skills to be developed and the level of performance required

- NA
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ii) Teaching strategies to be used to develop these skills-

- NA
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iii) Methods of assessment of student's psychomotor skills

- NA
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4- Student Assessment Schedule

Serial	Assessment tool (test, group project, examination etc.)	Week due	Weight
1	Term Project – 1	3 rd	15 %
2	Mid Term Exam -1	7 th	15 %
3	Reports	10 th	15 %
4	Term Project – 3	13 th	15 %
5	Final Exam	16 th	40 %

5- Student Support

- Providing electronic library of textbooks and scientific periodicals.

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- Providing the necessary computer applications for the course.

6- Learning Resources

i) Essential Books (References)
 - Dilip Kumar Majumdar, "Irrigation Water Management (Principles & Practices)", Prentice Hall of India (P), Ltd.
 - Basak, N.N, "Irrigation Engineering", Tata McGraw-Hill Publishing Co.
 - Garg, S.K., "Irrigation Engineering"

ii) Course Notes
 - NA
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iii) Recommended Books
 - Asawa, G.L., "Irrigation Engineering", New Age International Publishers
 - Sharma R.K., and Sharma T.K., "Irrigation Engineering", S. Chand and company, New Delhi
 -Gupta, B.L, & Amir Gupta, "Irrigation Engineering", Satya Praheshan, New Delhi
 - Laycock, A. "Irrigation Systems," CABI; 1st edition, 2007

iv) Electronic Books & Web Sites:
 - Scientific journals and forums.
 - Instructor's instruction.

v) Periodicals
 - Journal of irrigation and drainage engineering ASCE
 - Irrigation Australia Journal

7- Course Evaluation and Improvement Processes

i) Strategies for Obtaining Student Feedback on Effectiveness of Teaching
 - Students' questioners.

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- Students' evaluation of course and instructor.

ii) Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Public faculty seminars.
- Assessment by external evaluators of students achievements.
- Instructor (Course) Report

iii) Processes for Improvement of Teaching

- Assessment of students' work by external examiners.
- Analysis of students' evaluation of course and instructor.
- Seminars by industry professionals.

iv) Processes for verifying standards of student achievement

- Check marking by an independent faculty member of a sample of student work.
- Periodic exchange and remarking of a sample of assignments/exams with a external evaluator.

v) Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Assessment and evaluation of the level of achieving the course outcomes through a continuous improvement process (part of a quality assurance system established by the university),
- Consequently, actions are to be taken to improve the course delivery when necessary.
- Review of the course objectives, outcomes and curriculum every 2 years.