

<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 611 Prestressed Concrete

College: Engineering

Department: Civil

First: Course Definition

1- Course Code: CE 611

2- Units: 3

3- Semester:

4- Prerequisite:

5- Co-requisite:

6- Location (if not on main Campus):

Second: Course Objectives

Upon completing the course; students would have developed an understanding of :

- 1-The behavior and analysis of pre-stressed concrete structures
- 2-How to conduct equilibrium of pre-stressed concrete members.
- 3-The design of precast, pre-stressed and post-tensioned concrete members

Third: Course Specifications

1- Topics to be covered		
Subject	No of Weeks	Units
Background	1	3
Design Criteria (ACI 318 and PCI)	2	6
Distinctions Between Cast-in-place, Precast, Pretensioned and Post-tensioned Concrete	1	3
Various Structural Systems	2	6
Lateral Load Resistance/Shear Walls	2	6
Flexure, Shear and Torsion Design of Standard Precast/prestressed Products	2	6
Connection Design and Details	1	3
Camber and Deflection	1	3

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Volume Change Effect	1	3
Continuity in Precast/prestressed	1	3

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:

- recognize the role of government agencies and code bodies in the design process.
- gather and sort design input.
- make reasonable assumptions and test those against fundamental knowledge.
- conceive design alternatives.
- carryout design of commonly used prestressed concrete systems using fundamental principles as well as design aids

ii) Teaching strategies to be used to develop that knowledge

- Class lectures.
- Term projects.
- Students' presentations.
- Group discussion.

iii) Methods of assessment of knowledge acquired

- Exams.
- Homework assignments.
- Term projects.

b- Cognitive (Intellectual) Skills

i) Cognitive skills to be developed

- Advanced concepts of prestressed concrete analysis and design.
- Advanced prestressed concrete problem modeling.
- Investigation of advanced prestressed concrete design alternatives.-

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

- Class lectures.

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- Case studies analysis.
- Term projects.-

iii) Methods of assessment of students' cognitive skills

- Students' seminars and presentations.
- Term projects. and exams

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. and - 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.
- 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 and-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

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

- NA

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

- NA-

iii) Methods of assessment of student's psychomotor skills

- NA

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	Term Project – 2	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.
- Providing the necessary computer applications for the course.

6- Learning Resources

i) Essential Books (References)

- Gilbert, R. I. and Mickleborough, N. C. "Design of Prestressed Concrete," Routledge, 2004 ISBN/ASIN 0419161600, EAN: 9780419161608
- Hurst, M. K. "Prestressed Concrete Design," Spon Press, USA, 1998.
- James R. L. "Modern Prestressed Concrete: Design principles and construction methods", Springer, USA, 1990.
- Lin, T. Y. and Burns, N. H. "Design of Prestressed Concrete Structures," Wiley, USA, 1981-

ii) Course Notes

- NA

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iii) Recommended Books
-Edward G. Nawy, Prestressed Concrete Design, latest edition
-PCI Design Handbook, latest edition

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

v) Periodicals
- ASCE scientific journals.
- ACI journals-

7- Course Evaluation and Improvement Processes

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

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- Review of the course objectives, outcomes and curriculum every 2 years.