Texas A&M University - Kingsville     Civil and Architectural Engineering Program

Course: CEEN 3304 – Reinforced Concrete Design, Spring Semester 2007

Catalog Description and Prerequisites:
Mechanics, behavior and design of reinforced concrete members subject to axial loads, bending, torsion and shear. Pre-requisite: CEEN 3303.

General Educational Requirements:
This course is offered as a required course in the second semester of the junior year. Based on the concepts learned in this course, students should be able to design safe and serviceable engineering projects.

Instructor:
Dr. Francisco Aguíñiga, Assistant Professor, Engineering Complex 359, 593-3967, francisco.aguiniga@tamuk.edu. Web page: http://users.tamuk.edu/kfgfa00/index.htm

Office Hours:
Office hours to be discussed and by appointment. Alternatively, contact the instructor by email or telephone.

Course Objectives:
The main objective of the course is to give students knowledge of concrete design concepts that can be utilized in engineering projects to develop a safe and serviceable structure.

Required Textbooks:
ACI318-05, Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute, 2005.

Methods of Evaluation and Grading Procedures:
1. There will be one exam during the semester and a final exam, each worth 30% of the total grade. The times and dates of exams will be announced at least one week in advance. No special exams will be made. The exams will be closed notes and closed book.
2. Homework will be worth 30% of the grade and class participation will be worth 10% of the grade. Homework assignments may be given more than once a week. Homework assignments offer guidance for exercising concepts discussed in the classroom. Working in groups is encouraged.
3. All students are expected to attend exams on scheduled dates and at scheduled times, including TTVN and independent study students. All students, including TTVN and independent study, without exception must turn in homework at or before designated days and times.

Your grade average will be converted to a letter grade as follows: A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, and F = < 60%.

Policies for Attendance, Make–up Exams, Late Assignments, and Dress Code:
Attendance is required and students who accumulate three unexcused absences will be dropped. Exam make-ups will be granted only for authorized absences. Late homework (homework turned in after class) will not be graded.

Course Outline: (This outline is subject to change in the event of unforeseen circumstances.)

Topics
1. Introduction
2. Materials
3. Flexural analysis and design of beams
4. Shear and diagonal tension in beams
5. Bond, anchorage, and development length
6. Serviceability
7. Analysis and design for torsion
8. Short columns
9. Slab design
10. Foundation design
All homework and reports not picked up one week after the day of the final exam will be discarded.

Disability Statement, Academic and Non–academic (including sexual) misconduct:
See pages 2 and 11 of the Student Handbook for Disability Statement. Misconduct is covered in the Student Handbook as well; obtain a copy of it and read it carefully. Students who do not adhere to the code of conduct found in the Student Handbook will be subject to University disciplinary action.

Relationship of Course to Program Outcomes based on ABET EC-2000:
Engineering students in Reinforced Concrete Design will demonstrate that they have:
2. an ability to use basic engineering skills to engage in lifelong careers as civil engineers (satisfying Criteria 3 a, e and i).
4. an ability to design in progression with the knowledge of engineering science (satisfying Criteria 3 a, c, e, i, and k).
5. an ability to understand the impact of engineering solutions on society, dealing with ethical, social, safety, and economic considerations, including contemporary issues (satisfying Criteria 3 f, h and j).
6. an ability to engage in civil engineering principles and practice with design experiences, including effective communication (satisfying Criteria 3 a, c, d, e, g, i, and k).
7. an ability to understand the business environment and to help provide a congenial academic working environment at TAMUK to enhance learning (not satisfying Criteria 3 a-k).

ABET Engineering Criteria 2000, Criterion 3:
(a) an ability to apply knowledge of mathematics, science, and engineering**
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs**
(d) an ability to function on multi-disciplinary teams*
(e) an ability to identify, formulate, and solve engineering problems**
(f) an understanding of professional and ethical responsibility*
(g) an ability to communicate effectively*
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context*
(i) a recognition of the need for, and an ability to engage in life-long learning**
(j) a knowledge of contemporary issues*
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice**

** Major acquired abilities developed in this course; *minor acquired abilities; "blank" = insignificant
Sample homework page
Use engineering paper
Work on one side of the sheet only