Instructor	**Dr. Mahmoud Reda Taha, P. Eng** **Professor & Chair, Department of Civil Engineering** Centennial Engineering Center: 3006 Tel: (505) 277-1258, e-mail: mrtaha@unm.edu
Lectures	**Twice Weekly: Tuesday and Thursday 5:30 – 6:45** **Centennial Engineering Center (CENT) 1026**
References	- Lecture notes delivered in the class. - Reference Book: PCI Design Handbook – 6th Edition - Edward Nawy – Prestressed Concrete A Fundamental Approach
Office Hours	Tuesday & Thursday 1:00 – 3:00 pm or by appointment. You can always communicate with me by email.
Learning Objectives	***After completing this course the student shall be able to*** 1- Explain principles of prestressed concrete mechanics 2- Compute stresses in prestressed concrete member. 3- Calculate prestress and post-tensioning losses. 3- Explain the load balance concept 4- Design of prestressed concrete elements including a- Determining the required amount of prestress strands b- Determining the prestress profile c- Check flexural and shear capacity of pc members d- Check anchorage zone requirements e- Check cracking and deflection 5- Design of prestress two way floor system.
Expected Outcomes (In accordance with Civil Engineering Departmental Goals)	• This course contributes to the following educational outcomes in the objectives of the CE Department: • A familiarity with the modern tools for engineering analysis, including computers and sophisticated laboratory equipment. • An ability to approach and solve engineering problems in a structured manner. • Synthesis of knowledge from various sources to produce creative, cost-effective designs for civil engineering facilities. • A commitment to become registered as professional engineers. • An ability to communicate effectively, both in written and oral forms, as well as an ability to listen. • A sensitivity to practice personal and professional ethics. • A basic understanding of societal and environmental issues as they affect engineering decisions
Assignments	We will have 5 assignments accounting for 10% of the course grade ***The following rules apply to all assignments:*** - Assignments shall be delivered by the due date or will be marked of

a maximum of 50%.
- Assignments delayed for one week from due date will be rejected.

Course Project

A prestressed concrete design project is expected from all students. The project will include providing a design of a concrete structure including performing the basic design calculations and providing basic design drawings. ***Projects are individual efforts and each student shall do one project.*** Further details will be provided by the instructor.

Expected performance

Students are expected to be familiar with computer programs for structural analysis (e.g. SAP 2000 and/or ANSYS). Students shall also get familiar with engineering-programming environments such as MATLAB, MathCad and Excel. Examples in these programs will be used. It is the duty of the student to get familiar with these programs. Feel free to ask the instructor if you have questions in these programs.

Grading

Component	% Final Grade
Assignments	10
Mid Term 1	20
Mid Term 2	20
Course Project	20
Final Exam	30

CE 506 Course Syllabus - Tentative Schedule

Lecture #	Date	Topic
1	Jan. 13	**Chapter 1:** Introduction
2	Jan. 15	**Chapter 1:** Introduction
3	Jan. 20	**Chapter 1:** Introduction
4	Jan. 22	**Chapter 2:** Elastic Design
5	Jan. 27	**Chapter 2:** Elastic Design
6	Jan. 29	**Chapter 2:** Elastic Design
7	Feb. 3	**Chapter 3:** Prestress Losses
8	Feb. 5	**Chapter 3:** Prestress Losses
9	Feb. 10	**Chapter 4:** Exact Analysis
10	Feb. 12	**Chapter 4:** Exact Analysis
11	Feb. 17	**Chapter 4:** Exact Analysis
12	Feb. 19	**FIRST MID-TERM (20 % of Total Grade)**
13	Feb. 24	**Chapter 5:** Load Balance
14	Feb. 26	**Chapter 5:** Load Balance
15	March 3	**Chapter 5:** Load Balance
16	March 5	**Chapter 6:** Flexural Design
--	March 10	Spring Break
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17	March 17	**Chapter 6:** Flexural Design
18	March 19	**Chapter 7:** Moment-Curvature
19	March 24	**Chapter 7:** Moment-Curvature
20	March 26	**Chapter 8:** Shear Behavior & Design
21	March 31	**SECOND MID-TERM (20 % of Total Grade)**
22	April 2	**Chapter 8:** Shear Behavior & Design
23	April 7	**Chapter 8:** Shear Behavior & Design
24	April 9	**Chapter 9:** Bond and Anchorage
25	April 14	**Chapter 9:** Bond and Anchorage
26	April 16	**Chapter 10:** Two Way Prestressed Floor Systems
27	April 21	**Chapter 10:** Two Way Prestressed Floor Systems
28	April 23	**Chapter 10:** Two Way Prestressed Floor Systems
29	April 30	**Course Project Presentation**
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