

Syllabus: CVEG 5353- Prestressed Concrete Design

Course description:

This course is intended to provide the engineering student with the basic tools required to design and build prestressed concrete structures. Emphasis will be placed on the behavior of prestressed concrete under load along with potential failure mechanisms.

From the Catalog:

Analysis and design of prestressed concrete beams. Topics include flexural analysis, prestress bond, draping and debonding, allowable stresses, shear analysis and design, camber prediction, and prestress losses. Prerequisite: [CVEG 4303](#) with a grade of C or better. Syllabus: CVEG 5353 - Prestressed Concrete Design

Required Textbooks:

- Building Code Requirements for Structural Concrete (ACI 318-11 or 14) and Commentary, 2011 or 2014, The American Concrete Institute, Detroit, MI. **Required.**
- Contact me if you do not have a version of the ACI 318 Code.
- PCI Design Handbook, 7th Edition, Precast/Prestressed Concrete Institute, Chicago, Illinois. **Required.**
- Join PCI as a student member: <https://www.pci.org/memberships/membership-list.aspx>. Go to the PCI bookstore and purchase the CD of the PCI Design Handbook, 7th Edition for \$20.00 or you can purchase a hardcopy for \$99.
- Prestressed Concrete: A Fundamental Approach, Fifth Edition Upgrade (5th Edition), Edward G. Nawy, 2009, ISBN-10: 0136081509 **Required.**

Course Objectives:

After successfully completing this course, the student will be able to:

1. Calculate prestress losses
2. Design prestressed concrete beams to resist flexure
3. Analyze flexural forces in prestressed concrete beams
4. Design prestressed concrete beams to resist shear
5. Calculate camber and deflection
6. Investigate the bond of prestressing strands

Course Requirements:

Grades for this course will be based upon mastery of course concepts as demonstrated by successfully completing:

- Assigned readings from text, articles and case studies
- Written assignments
- Guided discussions

- Homework Assignments
- Article Summaries
- Midterm Exam
- Final Exam
- Final Paper, Presentation, Peer-Review

Evaluation Procedures:

Grading Scale

- A = 90-100%
- B = 80-89%
- C = 70-79%
- F = below 69%

Course Points

- Midterm Exam: 30%
- Final Exam: 35%
- Homework: 10%
- Discussion Board Participation: 5%
- Final Paper, Presentation, Peer-Review: 20%