



COURSE SYLLABUS

Course Title: Reinforced Concrete III

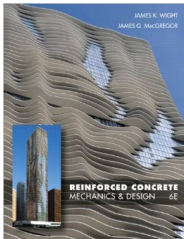
Instructor: Dr. Amer Alkloub, e-mail: a.kloub@ju.edu.jo

Office Hours: TBD or By Appointment

Lecture: Sun. Tue. Thu. 9:00 – 10:00AM

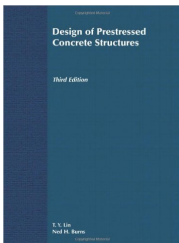
Prerequisite(s): Structural Analysis II, Reinforced Concrete II

Text Book(s) and Code(s):



Book Title: Reinforced Concrete: Mechanics and Design
(6th Edition)

Author(s): James K. Wight and James G. MacGregor



Book Title: Design of Prestressed Concrete Structures
(3rd Edition)

Author(s): T. Y. Lin and Ned H. Burns



Book Title: ACI 318-14 Building Code Requirements for Structural
Concrete and Commentary (2014)

Author(s): ACI 318 Committees



Book Title: PCI Design Handbook: Precast and Prestressed Concrete (2011)

Author(s): PCI Concrete Handbook Committee

Course Description:

Understanding the basic concepts of prestressed concrete, advantages of prestressing, post-tension system vs. pretension system. Calculating losses in prestressed beams, maximum permissible stresses in concrete and reinforcement according to ACI and AASHTO design codes. Design of prestressed concrete beams for flexure and shear. Analyzing and design of piles, pile caps, stairs, and retaining walls. Using computer applications in prestressed/reinforced concrete design.

Class Schedule:

Week	Topic
1	Introduction
2 +3	Basic Concepts and section analysis
4	Materials and Systems of Prestressing
5 +7	Losses
7 +8	Strength Analysis of Prestressed Beams
9 +10	Flexural Design of Prestressed Beams
10 +11	Shear Design of Prestressed Beams
Mid-Term Exam	
12	Deflection in Prestressed Beams
13	Analysis and Design of Stairs
14 +15	Analysis and Design of Piles and Pile Caps
16 +17	Analysis and Design of Retaining Walls
17	Computer Application: Response2000 [®] , spBeam [®] , & spColumn [®]
TBD	Final Exam



Homework:

Homework must be turned in on the due date. Late homework without an acceptable excuse will not be graded. A 10% penalty may be applied if the following requirements are not followed. Extra points for homework prepared by using MathCAD® or Smath®:

- All homework packages must include a cover sheet which shows the student's name, homework number and date.
- Any assumptions that are made must be clearly stated. References must be made for any values taken from tables and equations of the textbook or ACI code.
- All calculations must be done neatly and legibly. Unreadable handwriting will not be graded.
- The calculations should be done in a logical and organized fashion. The final answers must be clearly shown and highlighted or boxed.
- Each problem should begin at the top of a new page, clearly label the problem.

Project:

Maximum of 3 students in each group. Each group is encouraged to identify its own design problem or some comprehensive design works will be assigned by the instructor. Both hand calculation and spreadsheets are expected in the project report. The role of each student should be described explicitly in the project report. Each group will be required to present its design work during the last two classes.