New Jersey Institute of Technology

Department of Civil and Environmental Engineering

CE 495-Senior Design II (Structural) Fall 2017
Section: 103

Text: Wight, James K. Reinforced Concrete, Mechanics and Design, 7th Edition, Prentice Hall, ISBN: 13:978-0-13-348596-7

Instructor: Professor Methi Wecharatana, Office 219 Colton Hall, 973-596-2458,
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Prerequisites: CE 332- Structural Analysis; CE 333 – Reinforced Concrete Design; A working knowledge of how to analyze a structure for the applied design loads in order to obtain the shear and moment diagrams, as well as deflection of the structure. Some basic knowledge in the design of reinforced concrete members.

Week	Topic	Homework to be Assigned in Class
1.	Introduction: Review of RC Design and Introduction to Building Design Concept	
2.	Design of Two-story Building: Structural Floor Plans, Design of Slabs, Beams, Columns and Stair	
3.	Design of Two-story Building (cont.): Design and Drawings of Floor Plans, Slabs, Beams Columns, and Stair	
4.	Design of Two-story Building (cont.): Design and Drawings of Floor Plans, Slabs, Beams,Columns, and Stair	
5.	Overview of the 24-story building	
6.	Design of Structural Floor Plans and Drawings	
7.	Design of Structural Floor Plans and Drawings	
8.	Design of Slabs and Drawing	
9.	Design of Slabs and Drawing	
10.	Design of Beams and Drawing	
11.	Design of Beams and Drawing	
12.	Design of Columns and Drawings	
13.	Design of Stairs and Drawings	
14.	Final Project Submission: Design Report and Drawings	

Grading: Grading will be judged from the final term project presentation, report, and design drawings.

CEE Mission, Program Objectives and Student Outcomes

The mission of the Department of Civil and Environmental Engineering is:

- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Our program objectives are reflected in the achievements of our recent alumni.

1 – Engineering Practice: Recent alumni will successfully engage in the practice of civil engineering within industry, government, and private practice, working toward sustainable solutions in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.

2 – Professional Growth: Recent alumni will advance their skills through professional growth and development activities such as graduate study in engineering, professional registration, and continuing education; some graduates will transition into other professional fields such as business and law through further education.

3 – Service: Recent alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, educational institutions, civic organizations, and humanitarian endeavors.

Our student outcomes are what students are expected to know and be able to do by the time of their graduation:

(a) an ability to apply knowledge of math, science, and engineering
(b) an ability to design and conduct experiments, as well as interpret data
(c) an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to function on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of ethical and professional responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) a recognition of need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues
(k) an ability to use techniques, skills and modern engineering tools necessary for engineering practice

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Course Objectives Matrix – CE 495 Civil Engineering Design II

Strategies and Actions	Student Learning Outcomes	Outcomes (a-k)	*Prog. Objective*	Assessment Methods/Metrics
Course Objective 1: Provide students with the type of design experience they would receive if engaged in a specific area of civil and environmental design practice.				
Present an area specific civil and environmental engineering practice design problem.	Learn how to identify, formulate and solve area specific civil and environmental engineering practice design problems by applying mathematics, science, and engineering integrated with CAD.	A, c, d, e, k	1, 2	Final project report and periodic progress reports.
Discuss specific code, performance, cost, time, quality and safety objectives.	Learn how to identify, formulate and solve specific civil and environmental engineering practice design problems that meet specified code, performance, cost, time, quality and safety objectives.	C, d, e, f, h, I, j	1, 2	Final project report and periodic progress reports.
Work individually and within multi-disciplinary design teams.	Learn how to function and communicate effectively both individually and within multi-disciplinary design teams.	D, g	1, 2	Final project report, periodic progress reports, oral presentation.

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