Fall 2019

CE 495-101: Senior Design II (Geotechnical)

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CIVIL AND ENVIRONMENTAL ENGINEERING

NJIT New Jersey Institute of Technology

CE 495-Senior Design II (Geotechnical) **Fall 2019**
Section: 101

Text: Foundation Analysis and Design by Joseph E. Bowles (1982, Hardcover)

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

Optional Text: ACI concrete Manual & AISC Steel Manual

Instructor: Professor Tai Luu
Office Hours: Wednesday, 9-10 PM or by appointment; E-mail: ttl4@njit.edu

Prerequisites: CE 333, CE 432, CE 443 and CE 494. Provides students with the type of design experience they would receive if engaged in civil and environmental engineering design practice. Course will focus on one or more of these design areas: structural, geotechnical, transportation and planning, and sanitary and environmental engineering.

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. *Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:*

http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. **Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.** If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

Week	Topic	Homework to be Assigned in Class
1.	Introduction: Review of Geotechnical Problems and Foundation Design Concept	
2.	Review of Foundation Building Code and FHWA documents	
3.	Design of Support of Excavation-Review of Methodology	
4.	Design of Support of Excavation-Review of Methodology	
5.	Design of Support of Excavation-Review of Methodology	
6.	Design of Soilnail Wall-Review of Methodology	
7.	Design of Soilnail Wall-Review of Methodology	
8.	Design of Soilnail Wall-Review of Methodology	
9.	Shop Drawings Preparation	
10.	Shop Drawings Preparation	
11.	Shop Drawings Preparation	
12.	Shop Drawings Preparation	
13.	Shop Drawings Preparation	
14.	Final Project Submission: Design Report and Drawings	

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

Outcomes Course Matrix – CE 495 Civil Engineering Design II

Strategies, Actions and Assignments	ABET Student Outcomes (1-7)	Program Educational Objectives	Assessment Measures
Student Learning Outcome 1: Analyze, evaluate and design a civil or environmental engineering project (building foundation, treatment facility, etc.)			
Present an area specific civil and environmental engineering practice design problem.	1, 2, 7	1, 2	Final project report and periodic progress reports.
Discuss specific code, performance, cost, time, quality and safety objectives.	2, 4	1, 2	Final project report and periodic progress reports.
Work individually and within multi-disciplinary design teams.	3, 5	1, 2	Final project report, periodic progress reports, oral presentation.

CEE Mission, Program Educational 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 educational objectives are reflected in the achievements of our recent alumni:

1 – Engineering Practice: 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: Alumni will advance their skills through professional growth and development activities such as graduate study in engineering, research and development, professional registration and continuing education; some graduates will transition into other professional fields such as business and law through further education.

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

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

1. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Revised: 2/13/18