Spring 2022

CE 414-002: Engineered Construction

Chrissa Roessner

New Jersey Institute of Technology
John A. Reif Department of Civil & Environmental Engineering

CE 414-002 – Engineered Construction
Fridays, 2:30 PM to 5:20 PM (In-person / Synchronous)
Kupfrian (KUPF) 202

Spring 2022
Chrissa Roessner, PE (Adjunct Professor)
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Prerequisites: CE 210, CE 332, CE 341. Design, erection, and maintenance of temporary structures and procedures used to construct an engineering project. Business practices, codes, design philosophies, construction methods, hardware, inspection, safety, and cost as they pertain to engineered construction projects.

"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/academicintegritycode.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."

Date	Topic
Fri 01/21/2022	Introductions Discuss Syllabus
Fri 01/28/2022	Loads on Temporary Structures Forms & Formwork Part I (Walls)
Fri 02/04/2022	Homework No. 1 Due* / Quiz No. 1 Forms & Formwork Part II (Walls)
Fri 02/11/2022	Homework No. 2 Due* / Quiz No. 2 Forms & Formwork Part III (Slabs)
Fri 02/18/2022	Homework No. 3 Due* / Quiz No. 3 Forms & Formwork Part III (Slabs Continued)
Fri 03/04/2022	Guest Speaker: Shotcrete
Fri 03/11/2022	Midterm Exam
Fri 03/18/2022	No Class – Spring Break
Fri 03/25/2022	Construction Safety Slopes, Excavations & Walls Soldier Piles & Lagging
Fri 04/01/2022	Homework No. 4 Due* Reading and Assignment to Be Posted
Fri 04/08/2022	Quiz No. 4 Sheet Piling Cofferdams & Dewatering
Fri 04/15/2022	No Class – Good Friday
Fri 04/22/2022	Homework No. 5 Due* / Quiz No. 5 Highway & Bridge Engineering
Fri 04/29/2022	Business & Legal Aspects of Construction Contracts & Claims Guest Speaker: Business Contracts
Tues 05/03/2022	Construction Equipment Underpinning
Date and Time Pending	Final Exam

Note: No sessions on Fridays 3/18/22 (Spring Break) and 4/15/22 (Good Friday).
*Homework is to be done and posted to Canvas for professor to review and grade. Homework will be assigned on Friday and will be due the following Wednesday, when assigned.

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In-Person and Virtual Attendance Policy

Students are expected to attend every class in-person, weekly. Attendance will be taken. Additional course content will be made available through Canvas, as appropriate. Students are responsible for all course content regardless of how it is presented. Students must check Canvas frequently to check for new modules and content.

For instances when synchronous instruction is directed by NJIT administration, the following guidance applies:

Students will be expected to attend every class virtually ***with camera ON and microphone working*** *to be able to interact and participate during class.* ***Students will be required to have access to a camera and microphone during class meetings, and there are no exceptions during quizzes and exams, and as directed by the professor and or by the proctor service.*** *Students are expected to treat any remote class meeting like s/he would the course that meets in-person and should set the slotted time aside to dedicate to this course and the content being presented.*

Office Hours

By Appointment (by video or phone conference). Please email professor to make an office appointment. Generally, office hours are virtual or on campus Fridays between 5:30 PM and 6:00 PM.

Homework

Students are responsible for submitting all homework assignments (completely and legibly) before the due date and time **in Canvas**. Late assignments **will generally not be accepted,** and should any homework be submitted after the due date, it will receive no more than 50% receive credit, regardless of accuracy, unless the absence and missed assignment are substantiated by the Dean of Students Office. Homework can be lengthy, please plan accordingly. Students should consult the professor well in advance of the due date if there are any issues or questions regarding the homework, especially since homework content likely appears on a quiz.

Quizzes and Exams

Students will take all quizzes and exams in-person as scheduled.

For instances when synchronous instruction is directed by NJIT administration, the following guidance applies:

Quizzes and exams will be held through Canvas and the professor's WebEx classroom. All students will be required to have access to an electronic device to take the quizzes and exams, and students must have both camera and microphone on during quizzes and exams; video and audio must be available for professor to view and hear for the duration of the quiz/exam. If professor requests a student to adjust a camera or to unmute during a quiz or exam, the student must comply, or the resulting grade will be a 0. No exceptions. Quizzes and exams will begin at a set time, and there will be set time limits for the same. Quizzes will be held at the start of class. There will be no pop-quizzes, and all quiz dates are shown on the syllabus. Please ensure you arrive to the virtual classroom on time, so you do not miss a quiz. ***THERE WILL BE NO MAKEUP QUIZZES OR EXAMS UNLESS SUBSTANTIATED / APPROVED BY THE DEAN OF STUDENTS' OFFICE.***

Text

Not applicable for this semester.

Grading

Breakdown		Scale	
Homework	25%	A	100-90
Quizzes	25%	B+	89-85
Midterm	25%	B	84-80
Final	25%	C+	79-75
Total	100%	C	74-70
		D	69-60
		F	Below 60

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Course Objectives Matrix – CE 414 – Engineered Construction

Strategies, Actions and Assignments	ABET Student Outcomes (1-7)	Program Educational Objectives	Assessment Measures
Student Learning Outcome 1: Determine loading on temporary construction structure			
Review loading, live load, dead load, concrete, soil, water	1, 2	1	Homework and exam
Student Learning Outcome 2: Design excavation support			
Determine earth pressure and loading for various soil conditions	1, 2	1	Homework and exam
Design support member sheeting and shoving	1, 2	1	Homework and exam
Student Learning Outcome 3: Discuss and Review construction safety for temporary structure			
Review OSHA 1926	4, 7	1	Class Review and Discussion, Homework, Exam

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: 08/16/2021