

Fall 2020

CE 414-001: Engineered Construction

Chrissa Roessner

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

CE 414-001 – Engineered Construction
Fridays, 12:30 PM to 3:20 PM (Synchronous, online)

Fall 2020
Chrissa Roessner, PE (Adjunct Professor)
cdr44@njit.edu

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.”

Meeting Date	Topic
09/04/2020	Introductions
09/11/2020	Loads on Temporary Structures Forms & Formwork Part I (Walls)
09/18/2020	Homework No. 1 Due Forms & Formwork Part II (Walls)
09/25/2020	Homework No. 2 Due Quiz No. 1
10/02/2020	Forms & Formwork Part III (Slabs)
10/09/2020	Homework No. 3 Due Construction Safety Highway & Bridge Engineering
10/16/2020	Business & Legal Aspects of Construction Contracts & Claims Guest Speaker: Mediation, Arbitration, Litigation
10/23/2020	Midterm Exam
10/30/2020	Sheet Piling Slopes, Excavations & Walls
11/06/2020	Soldier Piles & Lagging
11/13/2020	Homework No. 4 Due Quiz No. 2 Guest Speaker: Shotcrete
11/20/2020	Construction Equipment Underpinning
11/25/2020	Cofferdams & Dewatering
12/04/2020	Review for Final
12/11/2020	*No Class* – Reading Day
12/18/2020	Final Exam

Virtual Attendance Policy

Students are expected to attend every class virtually **with camera and microphone** to be able to interact and participate during class. Attendance is worth 10% of each student’s total final grade. **Students will be required to have access to a camera and microphone during class meetings, as well as during quizzes and exams.**

Office Hours

By Appointment (by video or phone conference)

Homework

Students are responsible for submitting all homework assignments (completely and legibly) on or before the due date and time. Late assignments are unacceptable. Homework received after the due date will NOT receive credit.

Quizzes and Exams

Students will take all quizzes and exams online through Canvas and the professor’s WebEx classroom. **All students will be required to have access to an electronic device to take the two quizzes and two exams and students must have both camera and microphone on during quizzes and exams. No exceptions.**

Text

Robert T. Ratay. Temporary Structures in Construction. 3rd Edition. ISBN: 0-07-175307-9 (optional)
Chris Souder. Temporary Structure Design. ISBN: 978-1-118-90558-6 (optional)

Grading

<u>Breakdown</u>		<u>Scale</u>	
Homework	20%	A	100-90
Quizzes	20%	B+	89-85
Midterm	25%	B	84-80
Final	25%	C+	79-75
<u>Attendance</u>	<u>10%</u>	C	74-70
Total	100%	D	69-60
		F	Below 60

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: 08/24/20