

Fall 2019

# CE 414-101: Engineered Construction

Chrissa Roessner

Follow this and additional works at: <https://digitalcommons.njit.edu/ce-syllabi>

---

## Recommended Citation

Roessner, Chrissa, "CE 414-101: Engineered Construction" (2019). *Civil and Environmental Engineering Syllabi*. 219.  
<https://digitalcommons.njit.edu/ce-syllabi/219>

This Syllabus is brought to you for free and open access by the NJIT Syllabi at Digital Commons @ NJIT. It has been accepted for inclusion in Civil and Environmental Engineering Syllabi by an authorized administrator of Digital Commons @ NJIT. For more information, please contact [digitalcommons@njit.edu](mailto:digitalcommons@njit.edu).

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

CE 414 – Engineered Construction  
Section: 101

Fall 2019  
Chrissa Roessner, PE (Adj Prof)  
[cdr44@njit.edu](mailto: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/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](mailto:dos@njit.edu)”

<u>Meeting Date</u>	<u>Topic</u>	<u>Notes</u>
9/06/19	IntroductionBusiness & Legal Aspects	
09/13/19	Sheet Piles and Soldier Piles	
09/20/19	Slopes, Excavations & Walls Coffer Dams & Dewatering	
09/27/19	Shotcrete Presentation: Guest Speaker	
10/04/19	Construction Equipment & Safety <b>Quiz 1</b>	
10/11/19	Highway & Bridge Engineering	
10/18/19	Underpinning <i>Midterm Review</i>	

10/25/19	<b>Midterm Exam</b>
11/01/19	Loads on Temporary Structures Forms & Formwork Part I (Walls)
11/08/19	Forms & Formwork Part II (Walls)
11/15/19	Forms & Formwork Part III (Slabs)
11/22/19	<b>Quiz No. 2</b>
11/27/19*	Failures in Formwork
12/06/19	Scaffolding & Shoring <i>Final Review</i>
12/20/19	<b>Final Exam</b>

\*Note, no class on Friday, November 29, 2019; instead class meets on Wednesday, November 27.

#### General Course Information

##### Grading Policy:

Attendance	10%
Homework Assignments	15%
Quiz #1	10%
Quiz #2	10%
Midterm Exam	35%
Final Exam	20%

##### Grading Scale:

A	100-90
B+	89-85
B	84-80
C+	79-75
C	74-70
D	69-60
F	Below 60

##### Office Hours:

Fridays: 5:25 PM to 5:55 PM

##### Attendance Policy:

Students are expected to attend every class, and it is worth 10% of the total grade. Absences on quiz or exam dates are not preferred, but if absolutely necessary, please notify by email to discuss make-up arrangements.

Assignments:

Students are responsible for submitting all assignments on engineering computation paper (completely and legibly) on or before the due date. Late assignments are unacceptable. Homework received after the due date will NOT receive credit, or will receive drastically lower credit than full.

All assignments are to be submitted in class on paper, unless otherwise requested, on the due date, or via email to cdr44@njit.edu on or before the beginning of class on the due date. Email is only to be used if you will be absent from class.

Text:

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

Class Meeting Time and Location\*

CKB 114, Fridays, 2:30 PM to 5:20 PM

**Course Objectives Matrix – CE 414 – Engineered Construction**

<b>Strategies, Actions and Assignments</b>	<b>ABET Student Outcomes (1-7)</b>	<b>Program Educational Objectives</b>	<b>Assessment Measures</b>
<b>Student Learning Outcome 1: Determine loading on temporary construction structure</b>			
Review loading, live load, dead load, concrete, soil, water	1, 2	1	Homework and exam
<b>Student Learning Outcome 2: Design excavation support</b>			
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
<b>Student Learning Outcome 3: Discuss and Review construction safety for temporary structure</b>			
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: 2/13/18