

**Syllabus – CE 4220 Principles of Construction II
Spring 2019**

Course and Instructor Information

Course Title: Principles of Construction II **Credits:** 3
Class Time: 9:05AM-9:55AM MWF
Location: ITE 125
Instructors: Dr. Jin Zhu
Assistant Professor
CEE Department, UConn
Office: CAST 327
Office Tel: (860)486-0489
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Office hours: 1:00PM-2:00PM MWF or by appointment
Course Website (HuskyCT): <<http://huskyct.uconn.edu/webct/entryPageIns.doweбct>>

Course Description

CE 4220 is an advanced level course built upon CE 3220. This course focuses on techniques and methods in addressing the time, cost, productivity, and decision-making challenges in construction engineering and management. Topics to be covered include: advanced scheduling, construction sequencing, economic analysis, financial management, construction equipment and methods, risk management, and sustainable construction.

Course Objectives

Upon successful completion of this class, students will be able to:

1. Make schedules for construction projects considering resource requirements and constraints
2. Arrange the order of tasks/activities in construction projects to optimize performance measures
3. Select and manage construction equipment
4. Conduct economic analysis in construction for various decision making purposes
5. Interpret and utilize financial information of construction companies in making decisions
6. Understand and deal with risks in construction
7. Design and construct towards sustainability goals

Topics

The major topics of this course include:

1. Advanced Scheduling and Sequencing
 - Resource-related scheduling
 - Linear construction scheduling
 - Monte Carlo based scheduling
 - Construction sequencing
2. Construction Equipment and Methods
 - Equipment power requirement
 - Equipment type, operation, and productivity
3. Economic and Financial Management
 - Economic analysis
 - Project cash flow
 - Accounting methods and transactions
4. Risk and Uncertainty in Construction Projects
 - Risk management
 - Decision making under uncertainty
5. Sustainable Construction

Prerequisite

CE 3220 Principles of Construction I

Course Materials

Recommended Textbook:

Daniel W. Halpin, Bolivar A. Senior, Gunnar Lucko. (2017). Construction Management, 5th edition. Wiley. ISBN: 9781119256809.

Additional materials (extra readings, homework assignments and solutions) will be distributed on HuskyCT.

Course Requirements and Grading

Components	Weight	Requirements
Homework	20%	Seven assignments will be given and collected on the dates indicated on the Course Calendar. Homework will be posted on HuskyCT. Each assignment is collected at the beginning of the class on the due date. <u>No late submission will be accepted.</u> It is expected that homework is printed neatly or typed. Illegible homework will be considered incomplete. The top 6 out of 7 homework grades will be counted for the overall homework score. For each homework problem, students will receive ½ credit for attempting the problem and showing their steps to arrive at the solution, and ½ credit for arriving the correct answer.
Class Participation	10%	Class participation accounts for 10% of your grade in this course. You will earn class participation points by actively participating in classroom discussions and group activities, offering ideas and feedbacks, and asking questions.
Term Project	15%	In this individual term project, you will develop a proposal/business plan for addressing one or several significant challenges construction companies/industry are facing. Refer to "Term Project Guide" for detailed requirements and information.
Mid-term Exam	25%	There will be a mid-term exam on March 8 th . The exam will include multiple choice questions, short answer questions, and problems.
Final Exam	30%	The final exam is scheduled during May 6 to 11. Check HuskyCT for a final date and time as we near final exam week. The final exam will be cumulative with more emphasis on contents covered after the mid-term exam. The exam will include multiple choice questions, short answer questions, and problems.

Grading Scale:

Grade	Letter Grade	GPA
93-100	A	4.0
90-92	A-	3.7
87-89	B+	3.3
83-86	B	3.0
80-82	B-	2.7
77-79	C+	2.3
73-76	C	2.0
70-72	C-	1.7
67-69	D+	1.3
63-66	D	1.0
60-62	D-	0.7
<60	F	0.0

Feedback and Grades

I will make every effort to provide feedback and grades. To keep track of your performance in the course, refer to My Grades in HuskyCT.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. This section provides a brief overview to important standards, policies and resources.

Student Code

You are responsible for acting in accordance with the [University of Connecticut's Student Code](#). Review and become familiar with these expectations. In particular, make sure you have read the section that applies to you on Academic Integrity:

- [Academic Integrity in Undergraduate Education and Research](#)

Cheating and plagiarism are taken very seriously at the University of Connecticut. As a student, it is your responsibility to avoid plagiarism. If you need more information about the subject of plagiarism, use the following resources:

- [Plagiarism: How to Recognize it and How to Avoid It](#)
- [Instructional Module about Plagiarism](#)
- [University of Connecticut Libraries' Student Instruction](#) (includes research, citing and writing resources)

Copyright

Copyrighted materials within the course are only for the use of students enrolled in the course for purposes associated with this course and may not be retained or further disseminated.

Adding or Dropping a Course

You must officially drop a course through the [Student Administration System](#) to avoid receiving an "F" on your permanent transcript. Simply discontinuing class or informing the instructor you want to drop does not constitute an official drop of the course. For more information, refer to the:

- [Undergraduate Catalog](#)

Academic Calendar

The University's [Academic Calendar](#) contains important semester dates.

Students with Disabilities

Students needing special accommodations should work with the University's [Center for Students with Disabilities \(CSD\)](#). You may contact CSD by calling (860) 486-2020 or by emailing csd@uconn.edu. If your request for accommodation is approved, CSD will send an accommodation letter directly to your instructor(s) so that special arrangements can be made. (Note: Student requests for accommodation must be filed each semester.)

Course Calendar (Tentative)

Week	Lecture	Date	Topic	Assignment
1	1	Wednesday, Jan 23	Course Introduction and Team Building Activity	
	2	Friday, Jan 25	Advanced Scheduling: Resource Allocation	HW#1 Assigned
2	3	Monday, Jan 28	Advanced Scheduling: Resource leveling	
	4	Wednesday, Jan 30	Advanced Scheduling: Time Cost Tradeoff I	
	5	Friday, Feb 1	Advanced Scheduling: Time Cost Tradeoff II	
3	6	Monday, Feb 4	Advanced Scheduling: Linear Scheduling	
	7	Wednesday, Feb 6	<i>Exercise Class</i>	
	8	Friday, Feb 8	Monte Carlo Based CPM I	HW#1 Due/ HW#2 Assigned
4	9	Monday, Feb 11	Monte Carlo Based CPM II	
	10	Wednesday, Feb 13	Construction Sequencing I	Term Project Idea Submission
	11	Friday, Feb 15	Construction Sequencing II	
5	12	Monday, Feb 18	Construction Equipment and Power Requirements	HW#2 Due
	13	Wednesday, Feb 20	Construction Equipment: Dozers	HW#3 Assigned
	14	Friday, Feb 22	Video Lecture: Read Equipment Performance Chart	
6	15	Monday, Feb 25	<i>Exercise Class</i>	
	16	Wednesday, Feb 27	Construction Equipment: Scrapers	HW#3 Due/ HW#4 Assigned
	17	Friday, Mar 1	Construction Equipment: Excavators I	
7	18	Monday, Mar 4		
	19	Wednesday, Mar 6	Construction Equipment: Excavators II	HW#4 Due
	20	Friday, Mar 8	Mid-term Exam	Online Discussion Due
8	21	Monday, Mar 11	Mid-term Exam Review	
	22	Wednesday, Mar 13	Construction Equipment: Cranes and Lifting Equipment I	
	23	Friday, Mar 15	Construction Equipment: Cranes and Lifting Equipment II	HW#5 Assigned
9	24	Monday, Mar 18	No Class	
	25	Wednesday, Mar 20	No Class	
	26	Friday, Mar 22	No Class	
10	27	Monday, Mar 25	Economic Analysis in Construction I	
	28	Wednesday, Mar 27	Economic Analysis in Construction I	Term Project Interim Report Due
	29	Friday, Mar 29	Economic Analysis in Construction II	HW#5 Due
11	30	Monday, Apr 1	Guest Lecture: Entrepreneurship	
	31	Wednesday, Apr 3	Economic Analysis in Construction II	HW#6 Assigned
	32	Friday, Apr 5	Economic Analysis in Construction II	
12	33	Monday, Apr 8	Project Cash Flow and Payment Schemes I	
	34	Wednesday, Apr 10	Project Cash Flow and Payment Schemes II	HW#6 Due
	35	Friday, Apr 12	Accounting Method and Transactions I	
13	36	Monday, Apr 15	Accounting Method and Transactions II	
	37	Wednesday, Apr 17	Guest Lecture: Communication in Construction	
	38	Friday, Apr 19	Accounting Method and Transactions III	HW#7 Assigned
14	39	Monday, Apr 22	Risk Management in Construction I	
	40	Wednesday, Apr 24	Risk Management in Construction II	
	41	Friday, Apr 26	Sustainable Construction	HW#7 Due
15	42	Monday, Apr 29	Term Project Presentation I	
	43	Wednesday, May 1	Term Project Presentation II Jobsite Visit (3:30pm)	
	44	Friday, May 3	No Class	Term Project Report Due

The course calendar is a tentative plan. The professor reserves the right to make changes in the calendar. Students will be notified in advance if any changes will be made. Students should always refer to the latest version of the syllabus that will be available electronically on HuskyCT.