

**Syllabus – CE 3220 Principles of Construction I
Fall 2019**

Course and Instructor Information

Course Title: Principles of Construction I **Credits:** 3
Class Time: 10:10AM-11:00AM MWF
Location: AUST 434
Instructors: Dr. Jin Zhu
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Course Website (HuskyCT): <<http://huskyct.uconn.edu/webct/entryPageIns.dowebct>>

Course Description

Modern construction requires an in-depth understanding of the theory and techniques associated with planning, analysis, management and control. Successful delivery of construction projects is not only critical to the success of designers, project engineers, construction managers, and contractors, but also reduces overall costs to owners and society. This is a practical-oriented, introductory course to construction engineering and management. The purpose of this course is to provide a basic understanding of the principles of construction, including construction process and procedures, contracts and delivery methods, scheduling, cost estimation, project control, project change management, and construction safety issues.

Course Objectives

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

1. Explain the history and current trend in the construction industry
2. Examine the activities, participants, and goals at different phases in the construction project life cycle
3. Select the most appropriate delivery method and contract type for a construction project
4. Interpret different construction documents
5. Prepare simple cost estimation for construction projects
6. Conduct project scheduling analysis using Critical Path Method (CPM) and Program Evaluation Review Technique (PERT)
7. Conduct monitoring and control of cost and schedule performance of construction projects using Earn Value Method (EVM)
8. Analyze and manage changes, disputes, and claims in construction projects in appropriate ways
9. Examine the safety and health issues in construction

Topics

The major topics of this course include:

1. Introduction to construction projects and the construction industry
2. Construction project lifecycle
3. Project delivery method and contract type
4. Construction documents
5. Construction cost estimation
6. Construction project scheduling techniques
7. Construction project progress and performance monitoring and control
8. Changes, disputes, and claims in construction
9. Construction safety

Prerequisite

CE 2211 Engineering Economics I

Course Materials

Suggested Textbook:

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

Frederick Gould, Nancy Joyce. (2013). Construction Project Management. 4th edition. Pearson. ISBN: 0132877244.

F. Lawrence Bennett. (2003). The Management of Construction: A Project Life Cycle Approach, 1st edition. Taylor & Francis. ISBN: 0750652543.

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

Course Requirements and Grading

Components	Weight	Requirements
Homework	15%	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. Solutions will be discussed in class.
Class Participation	10%	Class participation accounts for 10% of your grade in this course. Class participation includes actively solving practice problems in class, participating small group activities and discussions in class, and proactively contributing to class by offering ideas and asking questions.
Term Project	20%	There are two formats of term project that you can choose. The traditional term project is conducted by a group consists of 4 members. Each group will select a construction-related research topic, conduct relevant research, and submit a term paper and make a group presentation. Grading criteria and detailed requirements will be posted on HuskyCT. You can select research topics from a list of options: <ul style="list-style-type: none"> • Infrastructure public private partnerships • Green construction • Lean construction • Building Information Modeling • 3D printing in the construction industry • The application of drones in the construction industry • The future of virtual reality in construction management • Prefabrication and modularization in construction • Blockchain technology and smart contract in construction Other topics are encouraged and should be discussed with and approved by the instructor. You can also choose to do an innovative self-designed term project, in which you can use your time to study/develop/create things that you are passionate about. The deliverable of your term project is completely defined by yourself. It could be a 3D construction model, a market report, a Twitter account or anything you propose and the instructor agrees to be valuable.
Mid-term Exam	25%	There will be a mid-term exam on October 11 th . The exam will include multiple choice questions, short answer questions, and problems.
Final Exam	30%	The final exam is scheduled during Dec. 9-15. 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	Monday, August 26	Course Introduction	
	2	Wednesday, August 28	Introduction to Construction I	
	3	Friday, August 30	Introduction to Construction II	
2	Monday, September 2 (Labor Day)		No Class	
	4	Wednesday, September 4	Project Life Cycle Overview	Term paper team and topics submission
	5	Friday, September 6	Value Engineering in Preconstruction	
3	6	Monday, September 9	Construction Project Delivery Methods	HW1 assigned
	7	Wednesday, September 11	Construction Project Contract Types	
	8	Friday, September 13	<i>Exercise Class: Case Study of "The Foolproof Construction Contract"</i>	
4	9	Monday, September 16	Construction Project Contract Types	
	10	Wednesday, September 18	Bidding and Negotiation	
	11	Friday, September 20	<i>Guest Lecture: BIM</i>	HW#1 due
5	12	Monday, September 23	<i>Jobsite Visit</i>	
	13	Wednesday, September 25	Construction Contract Documents	
	14	Friday, September 27	Cost Estimation I	Term project interim report I due
6	15	Monday, September 30	Cost Estimation I	
	16	Wednesday, October 2	Cost Estimation: Quantity Takeoff II	HW#2 assigned
	17	Friday, October 4	Cost Estimation: Quantity Takeoff II	
7	18	Monday, October 7	Cost Estimation: Estimation Methods II	
	19	Wednesday, October 9	Cost Estimation: Estimation Methods III	HW#2 due/ HW #3 assigned
	20	Friday, October 11	Mid-term Exam	
8	21	Monday, October 14	Mid-term Exam Return	
	22	Wednesday, October 16	Scheduling: Bar Chart	
	23	Friday, October 18	Scheduling: Critical Path Method	HW#3 due
9	24	Monday, October 21	Scheduling: Float Analysis	HW#4 assigned
	25	Wednesday, October 23	Scheduling: PERT	
	26	Friday, October 25	<i>Exercise Class: Scheduling</i>	
10	27	Monday, October 28	Project Monitoring and Control: Concepts and Process	HW#5 assigned
	28	Wednesday, October 30	<i>Guest Lecture: Pre-construction</i>	HW#4 due/Term project interim report II due
	29	Friday, November 1	Project Monitoring and Control: Earned Value Method I	HW#6 assigned
11	30	Monday, November 4	Project Monitoring and Control: Earned Value Method II	HW#5 due
	31	Wednesday, November 6	<i>Jobsite Visit</i>	
	32	Friday, November 8	Change Management in Construction	
12	33	Monday, November 11	Construction Disputes and Claims	HW#6 due/HW#7

Week	Lecture	Date	Topic	Assignment
				assigned
	34	Wednesday, November 13	<i>Exercise Class: Case study of "ABC Warehouse"</i>	
	35	Friday, November 15	<i>Guest Lecture: Communication in Construction</i>	
13	36	Monday, November 18	Student Term Project Presentation	HW#7 due
	37	Wednesday, November 20	Student Term Project Presentation	
	38	Friday, November 22	Construction Safety and Health	
14	Monday, November 25 (Thanksgiving)		No Class	
	Wednesday, November 27 (Thanksgiving)		No Class	
	Friday, November 29 (Thanksgiving)		No Class	
15	39	Monday, December 2	<i>Guest Lecture: Construction Project Cost Estimation</i>	Term project report or deliverable due
	40	Wednesday, December 4	Risk Management in Construction	
	41	Friday, December 6	Final Exam Review	

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.