Syllabus – CE 3220 Principles of Construction I
Fall 2017

Course and Instructor Information

Course Title: Principles of Construction I **Credits:** 3
Class Time: 2:30PM-3:20PM MWF
Location: ITE 336
Instructors: Dr. Jin Zhu
Assistant Professor
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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 and control, 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
CE 2252 Probability and Statistics in Civil and Environmental Engineering

Course Materials

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

Optional Textbook:
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. *No late submission will be accepted.* 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.
Term Paper	20%	Each student will select a construction-related research topic, conduct relevant research, and complete a term paper on the topic individually. The term paper should be between 3000 to 5000 words. A template for the term paper will be posted on HuskyCT. Students can select their topics from a list of options below: • US infrastructure public private partnerships • Building Information Modeling and its application in the construction industry • The application of drones in construction site • 3D printing in construction • Lean construction • Green construction Other topics are encouraged and should be discussed with and approved by the instructor. A list of milestones for the term paper are listed below: • September 8th, submission of the selected research topic • September 29th, submission of progress report I • November 3rd, submission of progress report II • December 6th, submission of term paper Templates for progress report will be posted on HuskyCT.
Presentation	15%	Each student will be assigned 10 mins to present their term paper (7 mins presentation + 3 mins Q+A) at the end of the semester. All the students and instructor in the class will be judges to the presenters. Grading criteria will be posted on HuskyCT.
Mid-term Exam	25%	There will be a mid-term exam on October 11th. The exam will include multiple choice questions, short answer questions, and problems.
Final Exam	25%	The final exam is scheduled during Dec. 11-17. 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 28	Course Introduction	
	2	Wednesday, August 30	Introduction to Construction	
	3	Friday, September 1	Project Life Cycle Overview	
2	Monday, September 4 (Labor Day)		No Class	
	4	Wednesday, September 6	Preconstruction Overview	
	5	Friday, September 8	Construction Project Delivery Methods	HW1 assigned/ Term paper topics submission
3	6	Monday, September 11	Construction Project Contract Types	
	7	Wednesday, September 13	*Jobsite Visit 1-UConn Student Rec Center*	
	8	Friday, September 15	*Practical Lecture: Case Study of "The Foolproof Construction Contract"*	
4	9	Monday, September 18	Bidding and Negotiation I	
	10	Wednesday, September 20	Bidding and Negotiation II	
	11	Friday, September 22	Construction Contract	HW#1 due
5	12	Monday, September 25	Cost Estimation: Types and Process	
	13	Wednesday, September 27	Cost Estimation: Quantity Takeoff I	HW#2 assigned
	14	Friday, September 29	*Guest Lecture: Construction Documents*	Term paper progress report I due
6	15	Monday, October 2	Cost Estimation: Quantity Takeoff II	
	16	Wednesday, October 4	Cost Estimation: Estimation Methods I	HW #3 assigned
	17	Friday, October 6	Cost Estimation: Estimation Methods II	HW#2 due
7	18	Monday, October 9	*Guest Lecture: Cost Estimation*	
	19	Wednesday, October 11	**Mid-term Exam**	
	20	Friday, October 13	*Jobsite Visit 2-UConn Tunneling Project*	
8	21	Monday, October 16	Mid-term exam review	
	22	Wednesday, October 18	Scheduling: Bar Chart	
	23	Friday, October 20	Scheduling: Critical Path Method	HW#3 due/HW#4 assigned
9	24	Monday, October 23	Scheduling: Float Analysis	
	25	Wednesday, October 25	Scheduling: PERT	HW#5 assigned
	26	Friday, October 27	*Guest Lecture: Project Logistics and Scheduling*	HW#4 due
10	27	Monday, October 30	*Guest Lecture: Scheduling Analysis*	
	28	Wednesday, November 1	Project Monitoring and Control: Concepts and Process	HW#5 due
	29	Friday, November 3	Project Monitoring and Control: Earned Value Method I	HW#6 assigned/ Term paper progress report II due
11	30	Monday, November 6	Project Monitoring and Control: Earned Value Method II	
	31	Wednesday, November 8	*Jobsite Visit 3-UConn Student Rec*	

Week	Lecture	Date	Topic	Assignment
	32	Friday, November 10	Change Management in Construction	
12	33	Monday, November 13	*Guest Lecture: Project Controls and CII Project Controls Improvement Tool*	HW#6 due
	34	Wednesday, November 15	Construction Disputes and Claims	HW#7 assigned
	35	Friday, November 17	*Practical Lecture: Case study of "ABC Warehouse"*	
13	Monday, November 20 (Thanksgiving)		No Class	
	Wednesday, November 22 (Thanksgiving)		No Class	
	Friday, November 24 (Thanksgiving)		No Class	
14	36	Monday, November 27	Student Term Paper Presentation	
	37	Wednesday, November 29	*Guest Lecture: Construction Safety*	HW#7 due
	38	Friday, December 1	Student Term Paper Presentation	
15	39	Monday, December 4	*Guest Lecture: Career Opportunities in the Construction Industry*	
	40	Wednesday, December 6	Student Term Paper Presentation	Term Paper due
	41	Friday, December 8	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.