

LECTURE – T/R 10:10-11:00 AM IN 262 WILLARD

PRACTICUM SEC 1 - T 1:25-3:20 PM IN 109 WALKER

PRACTICUM SEC 2 - R 1:25-3:20 PM IN 118 THOMAS

Instructors:

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Teaching Assistant:

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Course Goal:

The goal of this course is for you to understand the basic concepts and methods used to organize and manage a construction project. When you complete this course, you should be able to:

- Select a method for organizing and delivering a successful construction project;
- Define the goals and objectives of the various players on a construction project;
- Know the typical types of contracts, insurance and bonds, along with when they are best used;
- Create conceptual, square foot, assembly, and detailed construction cost estimates;
- Develop a CPM schedule for a construction project or group of activities;
- Define and apply the typical methods for managing and controlling a construction project; and
- Identify with current construction industry trends, issues, and events.

Organization of Course Material:

The course is organized into three main sections. Section one will focus on the construction industry, lifecycle of construction projects, and roles of the various project participants. The second section of the course will focus on construction project estimating and scheduling. The last section will look at construction project controls: cost, schedule, quality, and safety.

Course Textbook:

Managing the Construction Process, 3rd edition by Frederick E. Gould (3rd Edition).

Prerequisites:

Sixth semester standing in the Architectural Engineering Department or related coursework /background.

ANGEL Course Management System:

We will use the Angel course management system in this class. Lecture notes, review material, assignments, and other course material will be posted to the ANGEL site. Each student should confirm that you have your PSU email address in ANGEL since we will send email to your address that is in your ANGEL profile.

Course Grading:**Assignments:**

Assignment 1: Project Observation and Analysis	10
Assignment 2: Project Estimating	12
Assignment 3: Project Scheduling	12

Other:

Quizzes/Homework/Exercises/Participation	21
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Exams

Exam 1	15
Exam 2	15
<u>Final Exam</u>	<u>15</u>

Total	100
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Grading Scale for Course:

A	93-100
A-	90-92.9
B+	87-89.9
B	84-86.9
B-	80-83.9
C+	77-79.9
C	70-76.9
D	60-69.9
F	59.9 and below

Attendance:

Everyone is expected to attend each scheduled course meeting unless you have a valid excuse and you have informed the instructor *prior to* the class period that you will not be able to attend. You are also expected to be prepared for class by reading any assigned material before the class period. You may lose class participation points if you do not attend the scheduled course meetings or you are not prepared to participate. All students will be responsible for material presented in each class and any announcements made in class.

Construction Site Visits:

There will be a mid-semester trip to Washington, DC and a construction site visit to the MSC project. All students are expected to attend this trip and site visit. You will lose class participation points if you do not attend. Students will be required to provide their own hardhats, safety glasses, and hard soled shoes for the construction site visits.

Lecture/Practicum Topics and Schedule:

See attachment at the end of the syllabus.

Course Assignments:

There will be one (1) individual assignment and two (2) team assignments in the course. The team assignments will culminate in a 'Bid Day' practicum where each group will prepare and submit a bid for a project. Additional information for the project will be provided at a later date.

- Assignment #1 will be an observation/documentation of the MSC construction project with a focus on specific construction activities. You will also be asked to research of specific topic of interest.
- Assignment #2 will involve the creation of a complete cost estimate for a portion of a building project.
- Assignment #3 will involve the development of a schedule and a site logistics plan for a particular project.

For the team assignments you will be assigned to a four or five person team before the start of the assignment and work with the same team for Assignment #2 and #3. Surveys at the end of each of the major projects will be given and the results will be used to account for your participation as a team member and to provide feedback to your fellow team members about their contribution. To supplement this, because the surveys are somewhat limited, you will be responsible for submitting mid-project reports identifying how your team is working together, what roles you are taking in the organization of the team and in completing the project, as well as identifying any concerns or issues about team member performance. These reports will be developed individually. They will be confidential, and they will be submitted electronically via ANGEL.

Practicum Activities:

In addition to the lecture periods, the class will also meet once a week for a practical activity period to allow for more hands-on and problem based application of the course content. The practicum periods will be used to augment the discussion of topics in lecture by introducing tools, software, and exercises to reinforce and add to the available resources. Attendance and participation at the practicum activities is equally important to the lecture periods. In addition, the practicum will also be utilized as meeting times for teams to work on group projects with the TA and Instructors. It is expected that during these opportunities, teams will take full advantage of the time made available for them to meet and work on their projects.

Individual Homework:

Individual quizzes, exercises, and homework will be given to reinforce the concepts presented throughout the course. Assignments may need to be completed in class, practicum, or might be take home. Most quizzes will be online through ANGEL, though some may be in class or in practicum.

Quizzes:

Announced, unannounced, and ANGEL quizzes may be given in this class or in practicum. The quiz may contain questions related to material discussed in the previous classes, material that students are to read in preparation for the current class, or other material specifically addressed by the instructor. You should be prepared for each class by reviewing the previous class notes and reading the course material. Quizzes are typically given at the beginning of class or via ANGEL. No additional time will be provided to students who are late for class. Each student will be able to drop their lowest quiz grade. If a quiz is given on a day that you have a valid excuse for missing class and you have informed the instructor *prior to* the class period that you are not able to attend, then your overall quiz grade will be calculated without counting the missed quiz and it will not be counted as a dropped quiz grade. ***There will be no make-up quizzes.***

Exams:

This course will have three exams throughout the semester. Each exam will contain a combination of multiple choice, free response, problem and/or essay questions. The first and second exam will be given during a practicum period which will be scheduled in conjunction with AE 309 exams so that all students

will take the exam at the same date and time. If you are not taking AE 309 this semester, it is very important for you to come speak with the instructor or TA to identify if there will be any issues with scheduling the exam to meet your schedule. The third exam will be a final exam and offered during finals week.

Penalty for Late Assignments:

All assignments are due at the beginning of class on the due date, unless otherwise noted. ANGEL drop boxes may also be used with deadlines announced in class. Any assignments that are turned in after the beginning of class or after the ANGEL drop box deadline will be considered one day late (we do not want students completing an assignment during a class period). All assignments that are late will be assessed a 10% penalty for each day.

Academic Integrity:

All individual assignments are to be completed on an individual basis. Groups are encouraged to discuss information related to their projects, but all group assignments should be performed by the members of the group and the solutions should be unique. No copying of information within assignments is allowed. All students are expected to comply with the academic integrity policy set forth by Penn State University.

AE 372: Introduction to the Building Industry

Spring 2010

Schedule of Class Sessions

Date	Class Period	Topic	Text Reading *	Practicum Activity	Other Items
1/12	1	Course Intro & Construction Industry	None	Introduction / PE Licensure	Buy Book
1/14	2	Project Organizations & Roles	Ch. 1		
1/19	3	Inside the CM Office	None	Assignment #1 / Inside the MSC Project	
1/21	4	Introduction to Strategic Management	None		
1/26	5	Award Method & Contract Types	Ch.3	PDSS Exercise & 5th Year Presentations	
1/28	6	Project Chronology/Project Lifecycle	Ch. 2		
2/2	7	Introduction to Estimating	Ch. 4	Assignment #1 Presentations	Assignment #01 Due
2/4	8	Rough Order of Magnitude Estimating	Ch. 5, 104-114		
2/9	9	Square Foot Estimating	Ch. 5, 114-121	Exam I	Team Assignments
2/11	10	Square Foot Estimating (cont.)	None		
2/16	11	Assemblies Estimating	Ch. 6	ROM & SF Exercises	
2/18	12	Assemblies Estimating (Estimating w/ BIM)	None		
2/23	13	GMP Development (Guest Speaker)	None	Assemblies Exercise	
2/25	14	Detailed Estimating	Ch. 7		
3/2	15	Detailed Estimating	None	Detailed Exercise	
3/4	16	Bidding, General Conditions, Work packaging	None		Assignment #02 PART I Due
3/9	----	Spring Break - No Class		No Practicum	-
3/11	----	Spring Break - No Class			-
3/16	17	General Conditions and Site Planning	None	Network Scheduling / MS Project	
3/18	18	Introduction to Scheduling	Ch. 8		Trip to DC
3/23	19	Network scheduling and hand calculation	Ch. 9	Sequencing Activity	
3/25	20	Value engineering and structural sequencing	Ch. 10		Assignment #02 PART II Due
3/30	21	Risk Management	None	Exam II	
4/1	22	Schedule Controls Introduction	Ch. 11		
4/6	23	Project Controls (Schedule/Resources)	Ch. 12	Site Visit (MSC)	
4/8	24	Project Controls (Cost Control)	Ch. 13		Assignment #03 PART I Due
4/13	25	Project Controls (Quality Control)	None	Bid Day	
4/15	26	Project Controls (Safety Management)	None		Assignment #03 PART II Due
4/20	27	Sustainability in Design and Construction/Impact of BIM	None	No Practicum	
4/22	----	No Class - PACE Research Seminar	None		
4/27	28	Project Controls (Submittals, RFI's, and Change Orders)	None	Risk Management Activity	
4/29	29	The Future & Final Thoughts	None		
5/3 - 5/7		Final Exam - Time and Date to be announced.			

***All readings are to be completed prior to class period identified above.**