

# SYLLABUS

## CE501: *Fundamentals of Construction Management (3 units)*

Fall 2017

**Meetings:** Lectures - Wednesdays, 3:30pm-6:10pm, Location (TBD)

**Professor:** David B. Ashley  
KAP 238A

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**Office Hours:** Office hours are available by appointment. The preferred day and time for appointments is Thursday morning, and this time window will be generally available. Other times may be arranged for mutual convenience. Students should contact the instructor at least two days before the desired appointment to confirm meeting times.

**TA:** TBD  
E-mail: **TBD**

**Course Description:** *CE501 Fundamentals of Construction Management* (also listed as *Functions of the Constructor*) is a 3-unit introductory-level, graduate course designed for students from all engineering and related disciplines involved in creating the built environment (e.g., architecture, urban planning, infrastructure-related engineering disciplines) or technology-based management (e.g., business, research and development) seeking an understanding of the basic concepts and tools of construction project management.

*Fundamentals of Construction Management* provides a basic overview of the Architecture-Engineering-Construction (AEC) industry and its typical business relationships. The course considers options for capital project procurement that in turn lead to different contract approaches and risk allocation. Planning, estimating and scheduling tools are introduced to evaluate potential production processes and prepare competitive bids. A module on controlling project execution includes concepts and tools for monitoring progress, as well as mitigating problems. Discussions of AEC best practices are included throughout. Finally, presentations on future project management advances helps students select specialty areas and anticipate changes in professional practice.

**Course Objectives:** *CE501 Fundamentals of Construction Management* is designed as a first in a series of graduate courses designed to prepare the student for a professional career in the management of large-scale, engineering projects.

The primary course learning objectives are for the student to have:

- An overview of the structure, functioning and contemporary issues of the AEC industry,
- An understanding of the construction process and its factors of production,

- A basic working knowledge of planning, scheduling and estimating methodologies,
- Concepts and tools for managing project execution, and
- An introduction to industry best practices and future advances.

**Prerequisites and Waivers:** Graduate student standing required unless otherwise agreed upon by the instructor. Any student with credit for a similar course or with comparable work experience may request a waiver from taking this required course. A waiver (not credit) will be granted upon demonstration of sufficient background and basic competencies to meet the course objectives.

**Text/Materials:** This course will utilize three textbooks/books:

1. ***Project Management for Construction: Fundamental Concepts for Owners, Engineers, Architects and Builders***, by Chris Hendrickson (Author), Department of Civil and Environmental Engineering, Carnegie Mellon University, Pittsburgh, PA 15213 Copyright C. Hendrickson 1998 (First Edition originally printed by Prentice Hall, ISBN 0-13-731266-0, 1989 with co-author Tung Au. Second Edition prepared for world-wide-web publication in 2000. Version 2.2 prepared Summer, 2008). **[This textbook is available free at: <http://pmbook.ce.cmu.edu/>].**
2. ***Construction Management, 4<sup>th</sup> or 5<sup>th</sup> Edition***, by Daniel W. Halpin (Author), Bolivar A. Senior (Author). John Wiley & Sons, Inc.; 4th edition (November 8, 2010) ISBN-10: 0470447230, 5<sup>th</sup> edition (August 2017) ISBN: 978-1-119-36502-0 (for e-Text). **[This book may also be available as an eTextbook from Amazon Digital Services, Inc. (Amazon.com)].**
3. ***Who Done It?: 101 Case Studies in Construction Management*** [Paperback], by Len Holm (Author). CreateSpace Independent Publishing Platform; 1st edition (July 15, 2015), ISBN-10: 1515065529, pp. 134. **[This book is available from Amazon Digital Publishing (\$15)]. *Please bring this book to each class session.***

An additional selection of required readings will be made available on the *Blackboard* course management system.

**Assignments:** Students will be responsible for preparing and submitting assignments as follows:

- Exercises - Three group exercises will be used to reinforce the basic concepts, methodologies and current practices. The exercises will likely be based on the semester-long group project and may include:
  - *Planning and scheduling*
  - *Estimating, bid and proposal preparation*
  - *Equipment management planning*
  - *Risk assessment and management*
  - *Materials management and quality management*
  - *Safety management*
  - *Change management and dispute resolution*

- Group term project – Students will work in small groups on a semester-long construction management project. The groups will make a professional-level presentation during the final class session. The group project requirements and expectations will be described during the second and third class sessions.
- Midterm exams – Two midterm exams will test each student on construction management terminology, concepts, and basic tools.

### Topics, Readings and Assignments Schedule (Proposed):

Week	Topic	Hendrickson Chapters	Halpin (4 <sup>th</sup> ed.) Chapters	Halpin (5 <sup>th</sup> ed.) Chapters	Presentations and Preparation
1	Industry & company organization	1, 2	1, 3	1, 3	
2	Bidding and selection processes		2, 5	2, 5	
3	Factors of production (Labor & Equipment)	3, 4	4, 13, 14, 15	4, 14, 15, 16	
4	Factors of production (Money)	6, 7	6, 10, 11, 12	6, 11, 12, 13	
5	Planning and scheduling	9, 10, 11	7, 8, 9	7, 8, 9, 10	Project exercise #1 due
6	Estimating and bidding strategies	5, 8	16	17	
7	<b>Exam</b>				
8	Risk assessment and management				
9	Controlling the work (cost, schedule and quality)	12, 13	17	18	Project exercise #2 due
10	Controlling the work (materials management, safety)		18, 19	19, 20	
11	Legal issues and managing subcontractors				
12	Changes, claims and disputes				Project exercise #3 due
13	<b>Exam</b>				
14	Advanced topics: Building Information Modeling (BIM), Lean Construction and/or Sustainability				
15	Presentation of group term projects				Final, in-class presentation of group project due
16					Group project final report due

**Grading:** Grade components will be weighted as follows in the computation of the final course grade:

Class Participation	10%
Group Exercises (3 exercises: 7%, 9%, 9%)	25%
Group Term Project	40%
Exams (2 exams weighted 15% and 10%)	25%
<b>TOTAL</b>	<b>100%</b>

**Course Policies:**

Exams -- There will be **NO** final exam. Each student is expected to take the midterm exams on the date scheduled; any deviation from this timing must be approved by the instructor in advance.

Course Project -- The term-long project is the most important deliverable for the course and must include the final scheduled in-class presentation. Each student in a group will receive the same grade based on the assessment of the final project written report and presentation. It is the responsibility of the groups to manage their own interactions and individual participation.

Class Participation and Attendance -- This course utilizes active learning in the form of case studies and discussion. Each student is expected to be ready to participate in that discussion. It is also important that you are familiar with the course materials as the course evolves; regular attendance is expected. Each student is responsible for all materials and administrative instructions given during the lecture period.

Assignment and project submittals – ALL assignment submittals will be made electronically directly in the *Blackboard* course management system. Each assignment/group project item due will have a corresponding “Assignment” in the *Blackboard* system; this is the only mechanism for accepting the submittals. The system automatically identifies items submitted late and any late items are subject to grade reductions.

Personal Problems -- If you have illness or personal problems that will affect your performance during the course of the semester, please let the instructor know as soon as possible. “After the fact” notification is unacceptable unless there are extreme circumstances.

Statement for Return of Course Assignments and Materials – All assignments are to be submitted electronically in *Blackboard* and all “returned” materials and evaluation information will be available only through this system. The midterm quiz will be graded and then available from the course TA (or returned during the class period).

**Statement on Academic Conduct:**

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu> or to the *Department of Public Safety* <http://adminopsnet.usc.edu/department/department-public-safety>. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage <http://sarc.usc.edu> describes reporting options and other resources.

**Statement on Support Systems:**

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* [http://sait.usc.edu/academicsupport/centerprograms/dsp/home\\_index.html](http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html) provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.