

# CE 556 Project Controls, Budgeting and Estimating (3 Units)

## Spring 2011 Syllabus<sup>1</sup>

### Course Details and Contact Information

Time:	Wednesday, 6:30-9:10 p.m.
Location:	KAP 163
Instructor:	John V. Cowles IV
Office Hours:	By appointment
Contact:	213. 593.0330 (Hathaway Dinwiddie Construction Company)
E-mail:	Cowlesj@hdcco.com

### Course Textbooks

#### Required:

- Holm, Schaufelberger, Griffin, and Cole, *Construction Cost Estimating: Process and Practices*, Pearson Education, Inc. 2005, ISBN 0-13-049665-0; Readings for this text designated on the Class Schedule by **HSGG**.
- Hendrickson, Chris, *Project Management for Construction*, ISBN 0-13-731266-0; available **free** online at <http://www.ce.cmu.edu/pmbook/>; Readings for this text designated on the Class Schedule by **FREE**

#### Optional:

- Johnston and Mansfield, *Bidding and Estimating Procedures for Construction*, 2<sup>nd</sup> Ed., Prentice Hall, 2001. ISBN 0-13-082197-7 (Includes WinEst Software CD).; Readings for this text designated on the Class Schedule by J&M.

### Introduction and Purpose

This course will provide the student with knowledge of the fundamental principles and practices of cost estimating, budgeting, and cost control of construction projects. The course is centered on a semester long cost estimating and control case study of the life of a building project from initial concept through construction with extensive software exercises based on actual project data. Particular emphasis is on the software packages WinEst, a standard construction industry estimating software packages. Building Information Management (BIM) will be introduced with a focus on integrating cost data using Master and Uniformats to represent the “planned outcomes” of the project.

### Course Requirements and Grades

Graduate standing in engineering, architecture, business or urban planning required. Grading is based on four items as follows:

Homework (8 assignments)	24%	Term Project	25%
Midterm Exam	21%	Final Exam	30%

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<sup>1</sup> Updated September 27, 2010

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### **Course Requirements and Grades (continued)**

All examinations are closed book and closed notes, unless otherwise specified during the course. The final examination will be comprehensive of all course material. Make up examinations will not be allowed. Examination format will be short answer case study type questions combining questions of management action and project cost control calculations given a particular project scenario. Sample examination questions will be provided prior to each exam.

Laboratory / homework assignments must be handed in to the instructor by the date listed on the assignment. Late assignments are rarely accepted, but the instructor may allow exceptions for extreme circumstances. This class requires computer laboratory work. No previous computer estimating experience is needed. Although class time will spent in the computer lab, it is likely that additional computer time (either at home or in the lab) will be required to complete your work. Reading assignments are identified on the course agenda. Assignments will be from the course text book or from reading material handed out by the instructor. It is important to complete readings prior to the date listed, since they will form the basis for classroom discussions

As part of the requirements for the course, each student will be required to submit a complete term project consisting of a detailed WinEst based project estimate on an actual local construction project (you will receive plans and specifications). You are encouraged to work on your term project estimate within a team of two or three persons. However, individual submittals will also be accepted.

Dates of assignment and due dates for all assignments, exams, and the term project are shown on the course agenda

### **Return of course assignments**

Returned paperwork, unclaimed by a student, will be discarded after 4 weeks from the due date, and will not be available should a grade appeal be pursued following receipt of his/her grade.

### **Students with Disabilities**

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. Your letter must be specific as to the nature of any accommodations granted. DSP is located in STU 301 and is open 8:30 am to 5:00 pm, Monday through Friday. The telephone number for DSP is (213) 740-0776.

### **Academic Integrity**

The University, as an instrument of learning, is predicated on the existence of an environment of integrity. As members of the academic community, faculty, students, and administrative officials share the responsibility for maintaining this environment. Faculty have the primary responsibility for establishing and maintaining an atmosphere and attitude of academic integrity such that the enterprise may flourish in an open and honest way. Students share this responsibility for maintaining standards of academic performance and classroom behavior conducive to the learning process.

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Administrative officials are responsible for the establishment and maintenance of procedures to support and enforce those academic standards. Thus, the entire University community bears the responsibility for maintaining an environment of integrity and for taking appropriate action to sanction individuals involved in any violation. When there is a clear indication that such individuals are unwilling or unable to support these standards, they should not be allowed to remain in the University.” (Faculty Handbook, 1994: 20)

Academic dishonesty includes: (Faculty Handbook, 1994: 21-22)

- Examination behavior - any use of external assistance during an examination shall be considered academically dishonest unless expressly permitted by the teacher.
- Fabrication - any intentional falsification or invention of data or citation in an academic exercise will be considered a violation of academic integrity.
- Plagiarism - the appropriation and subsequent passing off of another’s ideas or words as one’s own. If the words or ideas of another are used, acknowledgment of the original source must be made through recognized referencing practices.
- Other Types of Academic Dishonesty - submitting a paper written by or obtained from another, using a paper or essay in more than one class without the teacher’s express permission, obtaining a copy of an examination in advance without the knowledge and consent of the teacher, changing academic records outside of normal procedures and/or petitions, using another person to complete homework assignments or take-home exams without the knowledge or consent of the teacher.

The use of unauthorized material, communication with fellow students for course assignments, or during a mid-term examination, attempting to benefit from work of another student, past or present and similar behavior that defeats the intent of an assignment or mid-term examination, is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tensions accompanying examinations. Where a clear violation has occurred, however, the instructor may disqualify the student’s work as unacceptable and assign a failing mark on the paper.

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### Course References

American Society of Civil Engineers, *Journal of Management in Engineering* (TA190 J687)

<http://www.asce.org/>

American Society of Civil Engineers, *Journal of Construction Engineering and Management* (TA1 A47 C6)

<http://www.asce.org/>

Project Management Institute, *Project Management Journal* (HD 69 P75 P76) <http://www.pmi.org/>

E & FN Spon, *Construction Management and Economics* (HD 9715 A1 C667)

<http://www.tandf.co.uk/journals/frame-loader.html?http://www.tandf.co.uk/journals/routledge/01446193.html> and <http://www.rdg.ac.uk/~kcshuwil/cme/intro.html>

Blackwell Science, *Engineering, Construction, and Architectural Management*

(HD9715 A1 E54 [http://www.blackwell-](http://www.blackwell-science.com/~cgilib/jnl/page.bin?Journal=ecam&File=ecam&Page=aims)

[science.com/~cgilib/jnl/page.bin?Journal=ecam&File=ecam&Page=aims](http://www.blackwell-science.com/~cgilib/jnl/page.bin?Journal=ecam&File=ecam&Page=aims)

International Project Management Association / Pergamon, *International Journal of Project Management*

(T56.8 I537) <http://www.elsevier.nl/inca/publications/store/3/0/4/3/5/>

AACE International, *Cost Engineering* (TA183 A6) and *Transactions* (HD47A197) <http://www.aacei.org/>

IEEE, *Engineering Management Review* (TA190 I577) <http://www.ieee.org/products/periodicals.html>

American Society for Quality (ASQ), *Congress Proceedings* (TS 155 A1 A5) <http://www.asq.org/>

Construction Industry Institute (the largest Construction research group in the United States)

<http://construction-institute.org/>

Lean Construction Institute <http://www.vtt.fi/rte/lean/>

General Services Administration: 3D-4D Building Information Modeling

[http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA\\_OVERVIEW&contentId=20917](http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_OVERVIEW&contentId=20917)

*Building Information Modeling (BIM): Transforming Design and Construction to Achieve Greater Industry Productivity* (by McGraw Hill)

[http://construction.ecnext.com/mcgraw\\_hill/includes/BIM2008.pdf](http://construction.ecnext.com/mcgraw_hill/includes/BIM2008.pdf)

AIA Document on Integrated Project Delivery (IPD)

<http://www.aia.org/contractdocs/AIAS077630>

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Class	Date	Topic	Reading	Reference	Assignment	Due Dates
1.	1/12/10	Course Introduction	Syllabus	N/A		N/A
2	1/19/10	Background on the Industry Organizations and Delivery Models Budgeting	HSGC Ch1 &2 Package on BB Free Ch G281-3	N/A	HW# 1	
3.	1/26/10	Budget Estimating Tools Reading Drawings	HSGC Ch3 FREE Ch5	N/A	HW# 2	HW# 1
4.	2/2/10	Detailed Estimating – Part 1 WinEst Introduction	HSGC Ch 6-8	J & M Ch 5-8	HW# 3	HW# 2
5.	2/9/10	Detailed Estimating – Part 2 WinEst in Class Practice Team Project Assignment	N/A	N/A	Team Project	
6.	2/16/10	Completing the Estimate	HSGC Ch 10-12 Free Ch 8	J & M Ch 11-14	HW# 4	HW# 3
7.	2/23/10	Site Visit	N/A	N/A		N/A
8.	3/2/10	Bidding and Change Orders Mid Term Review	HSGC Ch 13-15	J & M Ch 1-4		N/A
9.	3/9/10	Mid Term Exam	N/A	N/A		N/A
	3/16/10	Spring Recess – No Class	N/A	N/A		N/A
10.	3/23/10	Tracking Costs, BIM Integration	N/A	N/A	HW# 5	HW# 4
11.	3/22/10	Project Start Up	HSGC Ch 22	N/A	HW# 6	HW# 5
12.	4/6/10	Productivity	Extra Package 1 FREE Ch12	N/A	HW# 7	HW# 6
13.	4/13/10	Earned Value / Forecasting Costs	Extra package 2	N/A	HW# 8	HW# 7
14.	4/20/10	Term Project Presentations	N/A	N/A		Term Project
15.	4/27/10	Class Review	N/A	N/A		Term Project
		Study Days				
	TBD	Final Exam				

**Reading Key:**

**HSGC** - Holm, Schaufelberger, Griffin, and Cole, *Construction Cost Estimating: Process and Practices*

**FREE** - Hendrickson, Chris, *Project Management for Construction*

**J & M** - Johnston and Mansfield, *Bidding and Estimating Procedures for Construction*, 2<sup>nd</sup> Ed