



The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus



Course Title:	Construction Cost Analysis & Estimating	Course Number: 110401543
Designation:	Elective	Prerequisite(s): 110401346
Instructor:	Prof. Khaled Hyari	Instructor's Email: hyari@hu.edu.
Office Hours:	10:00 – 11:00: Sun., Tue. & Thurs.	

Course Description: Perceptions of construction cost, engineering economic analysis, risk and uncertainty, range estimating, cost fundamentals, types of cost estimating, estimating construction labor costs, estimating construction equipment costs, cost of concrete structures, estimating project costs, time/cost trade-off analysis, bidding strategies, cash flow analysis.

Textbook(s):

Ostwald, P., and McLaren, T. (2005) "Cost Analysis and Estimating for Engineering and Management" Pearson Prentice Hall.

Other supplemental materials

Ostwald, P (2001) "Construction Cost Analysis and Estimating" Pearson, Prentice Hall.

Holm, L.; Schaufelberger, J.; Griffin, D.; and Cole, T (2005) "Construction Cost Estimating: Process and Practices" Pearson Prentice Hall..

Course Motivation:

Changes in the construction industry, triggered by global competition and technological innovations, have led to striking innovations in the use of financial and non-financial information in organizations. The new environment demands more relevant cost and performance information on the organization's activities, processes, products, services, and customers..

Many companies, however, are not gaining these competitive advantages from enhanced cost systems. Their managers rely on information from a cost system designed for a simpler technological age and do not have timely and relevant information to guide their operational improvement activities. Nor are they receiving accurate, valid information to shape their strategic decisions about processes, products, services, and customers. Companies need cost systems to perform three primary functions:

1) Estimation of the cost of activities, products, services, and customers; and 2) Valuation of inventory and measurement of the cost of goods sold for financial reports; and 3) Providing economic feedback to managers about process efficiency.

During this course students will learn the requirements of these three functions and will be able to understand the limitations of actual construction cost systems and the prerequisites for the development of new integrated systems to drive enhanced efficiency, lower costs, and better asset utilization.

Major Topics Covered:

Topics	No. of Weeks	Contact hours*
Introduction	1	3
Engineering Economic Analysis (Review)	1	3
Risk and Uncertainty in Estimating	1	3
Cost Fundamentals	1	3
Construction Cost Estimating	1.5	4.5
Estimating Construction Labor Costs	1.5	4.5
Estimating Cost of Concrete structures	1	3
Estimating Project Costs	1.5	4.5
Estimating Equipment Costs	1	3
Time/Cost Trade-off	1	3
Bidding Strategies	1.5	4.5
Cash Flow Analysis	1	3
Value Engineering and Life-cycle Costing	1	3
Total	15	45

*Contact hours include lectures and exams

Specific Outcomes of Instruction (Course Learning Outcomes):



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After completing the course, the student will be able to:

- 1) Recognize the potential for risk and uncertainty in construction projects **(a)**
- 2) Understand types of cost estimating and how to organize an estimating document **(a, k)**
- 3) Know how to identify labor cost problems and solve the problems using project cost data **(k)**
- 4) Assemble an estimate for a construction project including direct, indirect, and subcontract costs **(k)**
- 5) Determine bid price for construction projects **(a, k)**
- 6) Understand the trade-off between time and cost in planning construction projects **(a, k)**
- 7) Develop a construction project cash flow and a company cash flow and learn strategies to minimize negative cash flow. **(a,k)**

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
General Engineering Student Outcomes		
(a)	an ability to apply knowledge of mathematics, science, and engineering	H(50)
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	H(50)
H=High, M= Medium, L=Low		

General Notes:

First Exam: Wednesday, 27/6/ 2018

Second Exam: Sunday, 15/7/ 2018

Prepared by:

Prof. Khaled Hyari

Date: 3rd June 2018