

King Fahd University of Petroleum & Minerals  
College of Environmental Design  
Construction Engineering & Management Department

**CEM 511 (062)**  
**Cost Estimation**  
**SYLLABUS**

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**1. Instructor: Dr. Mohammed AlKhalil**

Office # 19/432

Office hours: Sundays & Tuesdays, 12:30-1:30

Tel #: 860-3715

Email: Alkhalil@kfupm.edu.sa

**2. Design: Required Course**

**3. Course (Catalog) Description**

Introduction to cost aspects of construction, Quantity take-off methods, labor and equipment production rates, Unit Costs, Overhead, and Profits as they relate to the preparation of construction estimates. Creation and coordination of cost control systems with regard to engineering, estimating constructing, purchasing and subcontracting procedures for construction projects, Conceptual Estimating, Computer applications.

**4. Prerequisites(s)**

None

**5. Textbook(s) and or other required material**

David Pratt, *Fundamentals of Construction Estimating*, 2<sup>nd</sup> edition, 2004,  
Thomson Delmar Learning

**6. Course objectives:**

After successfully completing the course, the students will be able to

- Understand the process of cost estimating for construction projects.
- Understand the relevance of cost estimation in the overall context of construction management and the uses of cost estimation at various stages of a project.
- Understand preliminary estimating methods.
- Understand the detailed estimating method including the quantity takeoff and pricing of different trades, the pricing of equipment, general expenses, and the determination of bid markup

## 7. **Topics Covered**

- Introduction to the course
- The Estimating Process & Preliminary Procedures
- Measuring Quantities Generally
- Measuring Site Work
- Measuring Concrete Work
- Measuring Masonry Work
- Measuring Carpentry & Miscellaneous Items
- Pricing Generally
- Pricing Construction Equipment
- Pricing Excavation & Backfill
- Pricing Concrete Work
- Pricing Masonry, Carpentry, & Finishes Work
- Pricing Subcontractor's Work
- Pricing General Expenses
- Closing the Bid
- Preliminary cost estimating methods with emphasis on:
  - i. Unit method
  - ii. Power law
  - iii. Factor estimating
  - iv. Parametric estimating
  - v. Range estimating
  - vi. Cost & price indices
- Computer Application: Several lectures throughout the course will cover the use of computer software in cost estimating.

## 8. **Class Schedule.**

2 lectures per week, 75 minutes each.

## 9. **Contribution of course to Meeting the professional component**

Cost estimating is an essential activity in the construction contracting process. The students will be able to analyze cost estimates, design cost estimating models and manage the cost estimating function in the organization. The multidisciplinary nature of projects is emphasized and the students are expected to prepare and present group projects.

## 10. **Relationship of Course to CEM Program Outcomes**

This course supports the following five program outcomes out of eleven outcomes required by ABET Criterion 3 for accrediting engineering program.

Outcome1: An ability to apply knowledge of mathematics, science, and engineering to the preparation of cost estimates

Outcome2: An ability to design a cost estimating system and process to meet organizational requirements for cost estimating within realistic economic and ethical constraints

Outcome 3: An ability to function in on multidisplinary teams

Outcome 4: An ability to identify, formulate, and solve engineering problems in the area cost estimating.

Outcome 5: An ability to communicate effectively.

Outcome 6: An ability to use the techniques, skills, and modern engineering tools necessary for cost estimating practice.

## 11. **Grade Structure**

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|------------|-----|
| Home-work  | 20% |
| Project    | 10% |
| 2 Exams    | 45% |
| Final Exam | 25% |