

Construction Cost Estimation and Control

Code CEM-804	Credit Hours 3-0
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Course Description

This course delves into the critical aspects of construction cost estimation. It covers the role of various types of estimates, unit costs, production rates, and job costs. Students will learn to prepare bids for complete building projects using both manual methods and the CSI format and verify quantity take-offs and cost estimates using PlanSwift. By the end of the course, students will be equipped to prepare project budgets linked to Bills of Quantities, develop feasibility cost estimates, and implement cost control mechanisms. The course also emphasizes accommodating risk in cost estimating, understanding the fundamental principles and processes of construction cost estimation, and distinguishing between cost, value, and waste.

Textbook(s):

1. Peurifoy, R. L., and Oberlender, G. D. (2002). "Estimating Construction Costs" (5th ed.). McGraw-Hill.

Reference Book(s):

1. Peterson, S. J., & Dagostino, F. R. (2010). "Estimating in Building Construction" (7th ed.). Pearson.

Prerequisites

CE 372 (Quantity Surveying & Cost Estimation)

ASSESSMENT SYSTEM FOR THEORY

Quizzes	10%
Assignments	10%
Mid Terms	25%
Term Project	10%
ESE	45%

Teaching Plan

Week No.	Topics	Learning Outcomes
1	Introduction	Course outline, objectives, teaching plan, assessment methods, and review of key concepts.
2-4	Basics of Construction Cost Estimation and Quantity Take-Offs	<p>Understand the principles and importance of cost estimation in construction.</p> <p>Learn different types of estimates and their applications.</p> <p>Develop skills in performing quantity take-offs for various construction tasks.</p> <p>Comprehend unit costs, production rates, and job costs.</p> <p>Calculate direct and indirect job costs and understand the impact of overheads on project cost estimation.</p>
5-6	Bid Preparation and CSI Format	<p>Prepare bids for construction projects using manual methods and the CSI format.</p> <p>Learn to structure bids effectively and ensure accuracy.</p> <p>Verify quantity take-offs and cost estimates using PlanSwift.</p>
7-8	B.O.Q & M.B.	<p>Develop skills in working out quantities, rates, and cost analysis of construction items.</p> <p>Understand the preparation and contents of Bills of Quantities (B.O.Q) and maintaining Measurement Books (M.B).</p>
9	MID-TERM EXAM	
10-14	Working Out Quantities, Rates, and Cost Analysis	<p>Learn the measurement, specification, and costing of various construction activities including excavation, backfilling, mass concrete, retaining walls, beams, concrete piles, steel or wooden trusses, steel, roads, sewer, water main pipe works, woodwork (doors, windows), plumbing and electric work.</p>
15-17	Financial Management in Construction Cost Estimation	<p>Understand the financial management aspects of construction projects.</p> <p>Learn about budgeting and cost control mechanisms.</p> <p>Analyze cash flow management and its importance in maintaining project liquidity.</p> <p>Explore techniques for financial risk assessment and mitigation.</p> <p>Understand how to forecast project costs and revenues.</p> <p>Learn about financial reporting and analysis, including variance analysis and cost performance monitoring.</p> <p>Develop strategies for managing project finances, including cost tracking and control measures.</p> <p>Understand the impact of financial decisions on project outcomes and overall profitability.</p>
18	End Semester Exams	

