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بروجاكس للتدريب والتطوير  
Projacs Training and Development

# Project Budgeting, Cost Estimating, Control and Life Cycle Costing – Certified Program

تقدير وضبط تكاليف المشاريع الإنشائية ودورة حياة  
المشروع – معتمد عالمياً

24 – 28 August 2020

Barcelona / Spain

A Member of:



PROJACS ACADEMY



ProjacsAcademy.com



## Introduction

The cost of a project is the most significant factor in its becoming a reality. Costs are dealt with at the beginning of a project by preparing a “budget cost estimate” incorporating relevant historical cost data and the creative skill of a seasoned estimator with similar project experience. This is the most important, as well as the most difficult, type of estimate to prepare accurately. As a project evolves through the normal design process, additional evaluations of cost are made. These cost estimates are done as precisely as possible and include appropriate contingencies for unknown items. The "concept estimate" helps to control the project early in the design process to stay within budget.

As a part of the conceptual design process, building system alternatives are identified. Life cycle costing is a method which compares both the construction cost as well as the operating costs (energy, water, maintenance, major replacements, staffing) of these alternatives. Using engineering economics, the lowest life cycle cost alternative is identified for incorporation in the design.

## Objectives

This course will provide a basis for the many areas of estimating that may be faced by the design and construction professional. It will provide "hands on" examples to facilitate a familiarity with different types of estimates and their components. With this basis, a person, through research, study and practical application, can further expand their cost estimating skills relative to their own profession or branch out into new areas of estimating. Other methods of cost control, such as value engineering will also be discussed briefly

## Who Should Attend?

This course is targeted for Chief Executive Officers, Finance Managers, Human Resources Managers, Project Managers, Engineers and Planners, Information Technology Managers.

In industries such as: Government, Real Estate Development, Aerospace, Defense, Engineering and Construction, Manufacturing and Industrial, Oil and Gas\Petrochemical, Power and Water Utility Plants, Education and Training, Retail, Banking, Financial Services, Information Technology, Telecommunication, Automotive, Media Production, E-Business Enablers, Marketing and Sales, Pharmaceuticals, Environmental Management, Hospitality Management, Shipbuilding and Repair Yards.

## Course Outline

### Day One

- **Welcome & Introductions**
- Welcome & Opening Remarks
- Participant Introductions
- Objectives of Training Course
- Course Organization & Agenda

### **Cost Management Process in Planning & Design**

#### **Introduction to Project Budgeting & Concept Estimating (CH 1 + 2)**

- Budget Elements
- Design Phases
- Cost Control Concept
- Historical Budget Techniques
- Estimating Standards
- The Uniformat Elemental Classification

#### **Capitalized Approach to Project Budgeting (CH 3)**

#### **Sample Project Cost Plan / Cost Model**

- **Construction Market Survey**
- Regional & National Market Conditions, Potential Bidders
- Labor Availability, Productivity and Union Rates
- Material Availability and Unit Price Summary
- Market Analysis Survey Questionnaire

#### **Fixing Project Scope (CH 4)**

- Facilities Functional & Technical Programs
- Key Cost Drivers

#### **Computing Program Area Requirements (CH 5)**

- Space Efficiency
- Rules of Measurement
- Converting Net of Gross

#### **Case Studies – Example Estimates**

- Case Study 1: Historical Comparative Budget Estimate (UDM)
- Case Study 2: Parametric Budget Estimate (EMU)
- Case Study 3: Parametric Concept Design Estimate (4th Precinct):

#### **Assignment** Reading Assignment, Chapters 1-6

## **Day Two**

### **Discuss Reading Assignment**

#### **Budget Estimating Approaches**

- Capitalized Approach to Project Budgeting (CH 3)
- Historical Projects, Comparable Costs (Per UM) + Summary Level 1
- Parametric Uniformat Level 3 Systems + Summary Level 1

#### **Case Study Project Budgeting (DTF Office)**

- Team Formation & Project Familiarization
- Project Scope (CH 4)
- Program Area Requirements (CH 5)

#### **Historical Comparative Budget Estimate**

- Office Historical Costs
- Estimate Summary Assumptions

#### **Project Workshop**

- Determine Average Historical Costs
- Complete Budget Estimate Summary (Level 1)

#### **Parametric Systems Budget Estimate**

#### **Establishing Configuration / Massing (CH 6)**

- Sitting the Building/ Configuration
- Statistical Configuration Process
- Building Statistical Description Summary

#### **Project Workshop**

Determine & Document Configuration Quantities

#### **Documenting Quality (CH 8)**

- Quality Standards / Levels
- Sample Documentation by Element

#### **Project Workshop**

- Determine & Document Quality

#### **Parametric Systems Budget Estimate Completion**

- Uniformat Systems & Quantities

#### **Project Workshop**

- Determine & Document Systems Level 3 Costs
- Complete Project Summary Level 1

#### **Assignments**

- Project Assignments
- Reading Assignment, Chapter 7

## **Day Three**

### **Discuss Project Assignment/ Turn-in**

#### **Concept Design Estimating Approaches**

- Parametric Unifomat Level 4 & 5
- Quantity Take-off Cost Items
- Summary Level 1 Unifomat

#### **Case Studies - Concept Estimating (Multi-Tower, NPS, PAAET)**

- Team Formation
- Project Familiarization
- Project Scope (CH 4)
- Program Area Requirements (CH 5)

#### **Project Workshop**

Determine Configuration Quantities

#### **Determining Quantities/ Costs for Structural Elements (CH 7)**

- System 01 – Foundation
- System 02 – Substructure
- System 03 – Superstructure

#### **Project Workshop**

- Determine Quantities/ Costs, systems 01-03

#### **Determining Quantities/Costs for Architectural Elements (CH 7)**

- System 04 – Exterior Closure
- System 05 – Roofing
- System 06 – Interior Construction

#### **Project Workshop**

- Determine Quantities/ Costs, systems 04-06

#### **Assignments**

- Project Assignments
- Reading Assignment, Chapter 7

## **Day Four**

### **Discuss Project Assignment/ Turn-in**

#### **Determining Quantities/Costs for Mechanical Elements (CH 7)**

- System 07 – Conveying Systems
- System 081 – Plumbing
- System 082 – HVAC
- System 083 – Fire Protection

- System 084 - Special Mechanical Systems

#### **Project Workshop**

- Determine Quantities/ Costs, Systems 07-084

#### **Determining Quantities/Costs for Electrical Elements (CH 7)**

- System 091 – Primary Power & Distribution
- System 092 – Lighting & Secondary Distribution
- System 093 – Special Electrical Systems

#### **Project Workshop**

- Determine Quantities/ Costs, Systems 091-093

#### **Assignments**

- Project Assignments
- Reading Assignment, Chapters 10-11

#### **Determining Quantities/ Costs for Equip./ Site Work Elements (CH 7)**

- System 11 – Equipment
- System 121 – Site Preparation
- System 122 – Site Improvements
- System 123 – Site Utilities
- System 124 – Off-site Work

#### **Project Workshop**

- Determine Quantities/ Costs, Systems 11-12

#### **Assignments**

- Project Assignments
- Reading Assignment, Chapters 10, 11

### **Day Five**

#### **Discuss Project Assignment/ Turn-in**

#### **Project Management Plan (CH 10)**

- Methods of Accomplishment
- Scheduling
- Uniformat Elemental Specifications

#### **Budget Development Remaining Items (CH 11)**

- General Conditions, OH&P, System 10
- Contingencies, Types & Use
- Escalation
- Design & Management Costs
- Management Costs during Construction

- Real Estate Costs
- Reservations

#### **Project Workshop**

- Determine Quantities/ Costs, Remaining Items

#### **Closing the Loop – Recycling Cost Data (CH 12)**

- Controlling Design Work
- Estimates at SD, DD, CD, Bids, Change Orders
- Historical Data

#### **Life Cycle Costing (LCC)**

- Methodology and techniques of life cycle costing
- LCC case studies (building systems, layout alternatives)
- Computer template for analyzing the life cycle costs of alternatives

#### **Value Engineering**

- Assuring best value for dollars spent
- Value methodology process & tools

#### **Open Forum**

- Questions & Answers
- Course Evaluation
- Certificates upon Successful Course Completion
- Next Steps

## Training Method

- Pre-assessment
- Live group instruction
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- Each participant receives a binder containing a copy of the presentation
- slides and handouts
- Post-assessment

## Program Support

This program is supported by interactive discussions, role-play, case studies and highlight the techniques available to the participants.

## Schedule

**The course agenda will be as follows:**

- |                     |                  |
|---------------------|------------------|
| • Technical Session | 08.30-10.00 am   |
| • Coffee Break      | 10.00-10.15 am   |
| • Technical Session | 10.15-12.15 noon |
| • Coffee Break      | 12.15-12.45 pm   |
| • Technical Session | 12.45-02.30 pm   |
| • Course Ends       | 02.30 pm         |

## Course Fees\*

- **4,500USD**  
*\*VAT is Excluded If Applicable*



## مقدمة

تكلفة المشروع هو أهم عامل في تقريرها بأن تصبح حقيقة واقعة. يتم التعامل مع التكاليف في بداية المشروع من خلال إعداد "تقدير تكلفة الميزانية" ودمج البيانات ذات الصلة بالتكلفة والمهارة الإبداعية من مقدر تكاليف محنك مع خبرة سابقة في مشروع مماثل. هذا هو الأهم، وكذلك الأكثر صعوبة، وهو إعداد تقدير تكاليف المشروع بدقة.

كأي مشروع يتطور من خلال عملية التصميم العادي، يتم إجراء تقييم إضافي من حيث التكلفة. وتتم هذه التقديرات على وجه الدقة، وتشمل الحالات الطارئة المناسبة للعناصر غير المعروفة. ليساعد في السيطرة على المشروع في وقت مبكر في عملية التصميم على البقاء ضمن حدود الميزانية. كجزء من عملية التصميم، يتم تحديد بدائل نظام البناء. وتقدير دورة حياة التكاليف وهو الأسلوب الذي يقارن بين كل من تكلفة البناء، وكذلك تكاليف التشغيل (الطاقة والمياه والصيانة والاستبدال، والتوظيف) من هذه البدائل. استخدام الاقتصاد والهندسة، ويتم التعرف على دورة الحياة بأقل تكلفة لتضمينها في التصميم.

## الأهداف

هذا البرنامج سوف يوفر أساساً لكثير من مجالات تقدير التكاليف التي قد يواجهها مهني التصميم والبناء. وسوف توفر أمثلة لتسهيل التوصل إلى ألفة مع أنواع مختلفة من التقديرات ومكوناتها. من خلال تطبيق البحث والدراسة والعملية، ويمكن توسيع المهارات بطريقة ملحوظة. وسيتم أيضاً دراسته وسائل أخرى لمراقبة التكاليف، مثل الهندسة القيمة.

## الحضور

يستهدف هذا البرنامج الدراسي المدراء التنفيذيين ومدراء المالية ومدراء الموارد البشرية، ومديري المشاريع والمهندسين والمخططين ومديري تكنولوجيا المعلومات.