# Introduction

The decision to proceed with a project is often heavily influenced by early cost estimates, which form the foundation for cash flow projections and budget forecasts in project feasibility studies. Unreliable cost estimates can lead to significant cost overruns, making it difficult to control expenses later in the project lifecycle.

This **Project Cost Estimation Course** will equip delegates with the necessary skills to estimate project costs accurately, eliminate unnecessary expenses, and link cost estimates to selected procurement methods. The course emphasizes optimizing the entire project lifecycle value while ensuring quality and functionality. Techniques such as **Value Engineering** will also be explored to help identify alternative solutions that provide the best value at each phase of the project.

---

## Targeted Groups

This course is ideal for:

- **Project Managers**
- **Project Cost Estimators**
- **Cost Controllers**
- **Project Planners**
- **Contract Professionals**
- **Project Procurement Staff**
- Anyone interested in **project initiation**, **budgeting**, and **cost estimation**

---

## Course Objectives

Upon completing this course, participants will be able to:

- Master various project estimating techniques, from conceptual to detailed estimates.
- Understand the different types of estimates and how they relate to project cost management.
- Grasp the different contract types and how risk is distributed in contract arrangements.
- Apply **Value Engineering** principles to improve project cost-effectiveness and lifecycle value.
- Organize and gather project-related information for cost estimation and scope development.
- Report to top management with clear proposals that improve overall project value.
- Demonstrate proficiency in **lifecycle costing** principles and develop informed decision-making capabilities.
- Accurately prepare and manage the budgeting and bidding processes, ensuring cost efficiency.

---

## Targeted Competencies

By the end of this course, participants will:

- Develop confidence and skills in accurately estimating project costs and avoiding common pitfalls.
- Prepare initial project budgets and assess project feasibility.
- Create detailed bids and cost proposals, and evaluate the impact of change orders.
- Utilize **Value Engineering** in project initiation and planning processes to maximize project value.
- Assess and mitigate risks effectively to maintain project budgets and schedules.
- Integrate project phases and create cohesive and comprehensive cost estimates for successful project delivery.

---

## Course Content Outline

### Unit 1: Cost Estimating Basics

- Phases of the design process: **Programming**, **Schematic Design**, **Design Development**, and **Construction Documents**.
- Estimating accuracy by phase.
- Types of cost estimates: **Conceptual**, **Rough Order of Magnitude**, **Semi-Detailed**, and **Definitive Estimates**.
- Different types of contracts: **Lump-sum**, **Unit-price**, **Cost-plus**, **Time-and-materials**, etc.
- Risk analysis and contingencies.

### Unit 2: Broad Scope Cost Estimating Techniques

- **PERT** (Program Evaluation and Review Technique) project cost analysis.
- Estimating project unit cost using **standard deviation** and **Z-values**.
- Adjustments for time, location, and project size.
- Economic price adjustments and learning curves.

### Unit 3: Budget Estimating Process

- Budget estimates at each design phase: **Programming**, **Schematic Design**, and **Design Development**.
- Pre-construction services and request for proposal (RFP) estimates.

### Unit 4: Bid Contract Estimating Process

- Solicitation of lump-sum bids and order-of-magnitude estimates.
- Estimating team roles and responsibilities.
- Pricing self-performed work, subcontractor work, and general conditions.
- Finalizing bid summaries and validating estimates.

**Unit 5: Unit Price Estimates**

- Estimating direct costs such as **materials**, **labor**, and **subcontractors**.
- Application of mark-up and risk analysis in unit-price estimates.

**Unit 6: Negotiated Contract Estimating**

- Estimating for **Guaranteed Maximum Price (GMP)** contracts.
- Cost proposals for negotiated contracts and determining the fee structure.
- Strategies for responding to RFPs and selecting general contractors.

**Unit 7: Contract Types and Compensation Arrangements**

- Understanding the distribution of risk in various contract types: **Fixed-price**, **Incentive**, **Cost-plus**, and **Time-and-materials** contracts.

**Unit 8: Narrow Scope Cost Estimating Techniques**

- Power-sizing techniques, **Cost Estimating Relationships (CER)**, and **parametric cost estimating**.
- Adjusting for project type, quality level, and economic constraints.

**Unit 9: Framework for Applying Value Engineering in Projects**

- Introduction to **Value Engineering (VE)** and its importance in project management.
- How VE helps manage project scope, lifecycle costs, and stakeholder relationships.
- Developing a **Value Engineering Job Plan**.

**Unit 10: The Function Analysis Phase**

- Defining project constraints and performing **Function-Cost-Worth Analysis**.
- Developing **FAST diagrams** (Function Analysis System Technique) to identify critical components.

**Unit 11: The Creative Phase**

- Enhancing creativity within the project team through brainstorming and **Delphi techniques**.
- Overcoming barriers to creativity and promoting collaboration.

**Unit 12: The Evaluation Phase**

- Evaluating project ideas and using quantitative and subjective evaluation methods.
- Risk lifecycle simulation modeling and decision-making for project cost scenarios.

**Unit 13: The Planning and Reporting Phases**

- Developing and presenting **Value Engineering** proposals.

- Reporting findings to senior management and project stakeholders.
- Strategies for incorporating VE into project planning and execution.

---

## Conclusion

This **Project Cost Estimation Course** provides comprehensive training in cost estimating techniques, budgeting, and **Value Engineering**, all aimed at optimizing project costs and enhancing the value delivered throughout the project lifecycle. Whether you’re new to cost estimation or an experienced professional, this course offers the skills, knowledge, and strategies to successfully manage project budgets, mitigate risks, and deliver high-value projects efficiently.