

€ TRAINING

Estimating with Budgeting and Cost Control
in Value Engineering





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Introduction:

Estimating with Budgeting and Cost Control in Value Engineering is a strategic process within a program aimed at optimizing project costs and performance. By integrating these practices into the broader framework of Value Engineering, organizations can systematically enhance project value by aligning costs with desired outcomes and minimizing waste. This program significantly enhances cost estimating, budgeting, creative thinking, problem-solving, and informed decision-making skills.

Program Objectives:

At the end of this program the participants will be able to:

- Learn project estimating techniques from conceptualization to detailed estimates for accurate cost predictions.
- Understand diverse estimation methods to progressively assess project costs for informed decision-making.
- Grasp various contract types and use incentive structures for optimal project outcomes.
- Implement incentives in contracts to drive performance and enhance project efficiency.
- Master Value Engineering principles for maximizing project value and cost optimization.

Targeted Audience:

- Project Managers.
- Project Cost Estimators.
- Cost Controllers and Planners.
- Contract Professionals.
- Project Procurement Staff.
- Anyone Interest in Project Initiation, Project Estimating and Budgeting, and Development .

Program Outlines:

Unit 1: Cost Estimating Basics and the Estimating Life Cycle:

- Phases of the Design Process: Programming, Schematic Design, Design Development, and Construction Documents.

- Estimating Accuracy by Phase: Conceptual, Rough Order of Magnitude, Semi-detailed, and Definitive Estimates.
- Types of Estimates: Assemblies Cost Estimates, Cost Indices, and Basic Procedures.
- Overview of Construction Contracts: Lump-sum, Unit-price, Cost-plus, and Time-and-Materials Contracts.
- Procurement Methods, Pre-construction Services, Risk Analysis, and Contingencies: Bid and Negotiated Methods, Quantity Take-off, and Mitigating Risk.

Unit 2:

Broad Scope Cost Estimating Techniques:

- Adjustments to Project Cost Estimates: Broad Scope and Previous Projects.
- PERT Analysis for Project Cost Estimation: Unit Costs and Completion Probability.
- Utilizing Formulae and Normal Distribution Curve for Cost Estimating.
- Understanding Probability: Z-Values and Project Completion within Budget.
- Adjustments for Time, Location, Size, and Learning Curve Effects on Cost Estimates.
- Financial Considerations: Future Value, Present Value, Equivalent Annual Interest, and Economic Price Adjustment.

Unit 3:

Budget Estimating Process:

- Estimating by Design Phase: Programming, Schematic Design, and Design Development Budget Estimates.
- Pre-construction Services Estimation: Request for Proposal and Development of Estimate.
- Contracting Pre-construction Services: Pre-construction Services Contract.
- Budget Control: Utilizing Budget Control Logs.
- Logical Flow: Estimation Process followed by Contracting and Budget Management.

Unit 4:

Bid Contract Estimating Process:

- Pre-Estimate Activities: Scheduling and Team Formation.
- Estimating Process: Order-of-Magnitude Estimates and Accuracy Measures.
- Solicitation and Validation: Obtaining Lump-Sum Bids and Ensuring Accuracy.
- Resource Allocation: Subcontractors, Suppliers, and Self-Performed Work.

- Documentation: Estimating Forms, Recap Sheets, and Final Document Review.
- Pricing Factors and Mark-Ups: Applying Pricing and Sales Tax for Finalizing Estimates.
- Project Summary: Summary Schedule and Bid Completion.

Unit 5:

Unit Price Estimates:

- Unit price bid forms.
- Direct cost estimation.
- Mark-up determination.
- Variation-in-quantity contract provision.
- Risk analysis.
- Bid finalization.

Unit 6:

Negotiated Contract Estimating:

- Contract Procurement Process: Strategies and Response to Request for Proposal.
- Estimating Process: Guaranteed Maximum Price Estimates and Cost Proposals.
- Document Preparation: Required Documents for Proposal Submission.
- Risk Assessment: Evaluating Contingencies and Cost Savings Split.
- Fee Structure: Determining Fees and Overhead for Negotiated Contracts.
- Subcontracting: Negotiated Subcontracts and Selection of General Contractors.

Unit 7:

Contract Types and Compensation Arrangements:

- Risk distribution in contracting.
- Project risk profiles.
- Contract types according to risk distribution.
- Fixed Price Contracts, Incentive Contracts, and Incentive.

- Cost Plus Incentive, Reimbursement, Award Fee, and Fixed Fee Contracts.
- Time-and-Materials.

Unit 8:

Narrow Scope Cost Estimating Techniques:

- Cost Estimation Methods: Power-sizing and Cost Estimating Relationships.
- Target Costing: Factor Estimates and Design-to-Cost.
- Quality Adjustments: Features Impacting Quality and Economic Constraints.
- Parametric Estimation: Adjusting for Project Type and Quality Level.
- Accuracy Analysis: Evaluating Estimating Accuracy.

Unit 9:

Framework for Applying Value Engineering in Projects:

- Introduction to Value Engineering: Definition, Purpose, and Importance.
- Principles and Concepts: Understanding Value Engineering and Analysis.
- Application of Value Engineering: Strengths, Weaknesses, and Application Methods.
- Value Engineering in Projects: Project Definition, Stakeholder Analysis, and Scope Development.
- Value Engineering Process: Phases Overview, Information Gathering, and Job Plan Development.

Unit 10:

The Function Analysis Phase - Expressing Project Functional Needs and Constraints:

- Understanding Project Constraints: Analyzing Relationships and Trade-offs.
- Cost Estimation Techniques: Conceptual Project Cost Estimation Methods.
- Function-Cost-Worth Analysis: Importance of Function Analysis in Projects.
- Value Analysis Tools: Developing FAST Diagrams and Technical FAST Models.
- Application and Case Study: Implementing Cross-Functional Project Teams.
- Case Study: Application of Value Analysis Techniques in Real Projects.