

Course No. 1582

Engineering Project Cost Estimation & Control Training Course

PROJECT ENGINEERING & CONSTRUCTION
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Engineering Project Cost Estimation & Control Training Course provides a comprehensive professional program designed to strengthen the technical, analytical, financial, and project control capabilities required to estimate, monitor, and control engineering project costs effectively. Accurate cost estimation and disciplined cost control are essential for engineering organizations seeking to establish realistic budgets, optimize resource allocation, manage capital expenditure, and maintain financial visibility throughout the project lifecycle.

The course examines the complete engineering project cost management process, from early-stage conceptual estimates and feasibility assessments through detailed design, procurement, construction, commissioning, and project closeout. Participants develop a practical understanding of how engineering scope, quantities, resources, equipment, materials, labor, procurement strategies, contracts, project schedules, and execution conditions influence total project cost and estimation accuracy.

A major focus of the Engineering Project Cost Estimation & Control Training Course is the integration of cost estimation with project planning, engineering development, procurement, contracts, and project controls. Participants explore work breakdown structures, cost breakdown structures, estimating methodologies, direct and indirect costs, resource-based estimating, cost coding, budget allocation, cost baselines, commitments, actual expenditures, variance analysis, forecasting, and cost performance measurement.

The program also addresses cost uncertainty, escalation, contingency, change management, claims, procurement impacts, schedule-related cost exposure, and emerging financial risks. Through practical exercises, engineering project case studies, cost analysis activities, and integrated workshops, participants develop a structured approach to producing reliable cost estimates and maintaining effective cost control throughout project execution. The course is particularly relevant to oil and gas, petrochemical, energy, utilities, infrastructure, industrial, manufacturing, engineering, and major capital project environments.

Objectives

- Analyze engineering project scope, work breakdown structures, technical deliverables, and execution requirements to identify major cost drivers during the course.
- Develop structured engineering project cost estimates using appropriate methodologies based on project maturity, available information, quantities, resources, and assumptions.
- Evaluate labor, material, equipment, procurement, subcontractor, and indirect cost requirements to establish realistic project cost profiles.
- Apply practical techniques for developing cost breakdown structures and cost coding systems linked to engineering work packages and project activities.
- Design effective project cost control processes that connect financial performance with project progress, schedule performance, procurement, and execution activities.
- Analyze actual costs, commitments, expenditures, accruals, and forecasts to identify cost variances and emerging financial trends.
- Evaluate the impact of engineering changes, scope development, delays, procurement activities, contracts, and claims on total project cost.
- Apply cost forecasting techniques to estimate final project costs and remaining expenditure and identify potential budget overruns at an early stage.
- Assess cost uncertainty, risk exposure, contingency requirements, escalation factors, and assumptions affecting engineering project estimates.
- Develop corrective actions to address cost variances, improve financial performance, and reduce the likelihood of cost overruns.
- Strengthen project cost reporting and performance indicators to provide management with accurate and timely financial information.
- Develop an integrated engineering project cost estimation and control improvement plan aligned with project objectives and organizational financial requirements.

Who Should Attend

The Engineering Project Cost Estimation & Control Training Course is designed for cost engineers, project engineers, planning engineers, project controls specialists, project controls managers, project managers, engineering managers, and professionals responsible for estimating, monitoring, forecasting, and controlling engineering project costs. It is particularly relevant to professionals working on engineering, procurement, construction, infrastructure, industrial, energy, utilities, oil and gas, and major capital investment projects.

The program is also valuable for contract and claims professionals, quantity surveyors, procurement and supply chain specialists, project accountants, financial controllers, cost analysts, risk professionals, construction engineers, civil engineers, mechanical engineers, electrical engineers, and technical specialists who need to understand the relationship between engineering decisions, project scope, resources, procurement, contracts, schedules, and financial performance.

The course is suitable for executives, senior managers, and decision makers within government entities, ministries, public sector organizations, engineering consultancies, project owners, EPC contractors, construction companies, oil and gas organizations, energy and utilities companies, infrastructure developers, industrial organizations, manufacturing companies, and large corporations managing complex engineering projects and capital expenditure programs.

Learning Outcomes

- Explain the principles, processes, and methodologies used to estimate and control engineering project costs throughout the project lifecycle.
- Analyze project scope, engineering information, quantities, and technical deliverables and convert them into measurable and traceable cost elements.
- Prepare engineering project cost estimates using appropriate methodologies for conceptual, preliminary, detailed design, and execution stages.
- Develop cost breakdown structures and link them with work breakdown structures, project work packages, and engineering activities.
- Estimate labor, material, equipment, procurement, subcontractor, direct, and indirect project costs.
- Establish project cost baselines and monitor actual expenditures, commitments, accruals, and forecasts against approved budgets.
- Analyze cost variances and identify technical, operational, commercial, procurement, and financial causes of cost deviations.
- Evaluate the financial impact of engineering changes, scope development, delays, procurement issues, and claims on overall project cost.
- Apply cost risk and uncertainty analysis techniques to improve the reliability of engineering project estimates.
- Prepare final cost forecasts and remaining-cost assessments and identify potential budget overruns at an early stage.

- Prepare effective cost reports and performance indicators that provide management with clear information for project decision-making.
- Develop a practical engineering project cost estimation and control improvement plan that can be applied within a real project environment.

Course Outline

DAY 01

Fundamentals of Engineering Project Cost Estimation

- Principles, objectives, and importance of engineering project cost estimation
- Engineering project lifecycle and the evolution of cost estimates
- Project scope, technical deliverables, engineering documentation, and cost relationships
- Work breakdown structures and cost breakdown structures
- Identification of cost elements, work packages, and estimating assumptions
- Estimating labor, materials, equipment, subcontractors, and project services
- Direct and indirect project costs
- Factors affecting engineering project cost estimates
- Estimating accuracy and cost development across different project stages
- Documentation of estimating assumptions, exclusions, inclusions, and supporting information

PRACTICAL APPLICATION

Develop an engineering project cost structure and identify major cost elements, assumptions, and estimating requirements

DAY 02

Cost Estimating Methodologies and Resource-Based Cost Analysis

- Engineering project cost estimating methodologies and selection criteria
- Top-down and bottom-up estimating approaches
- Resource-based estimating and quantity-driven cost estimation
- Analogous estimating and the use of historical project data

DAY 02 — CONTINUED

- Estimating engineering, procurement, construction, and project support costs
- Estimating equipment and long-lead material costs
- Labor rates, productivity assumptions, and resource cost analysis
- Location factors, project conditions, and execution environment
- Inflation, escalation, market conditions, and price fluctuations
- Reviewing, validating, and improving cost estimate quality

PRACTICAL APPLICATION

Develop a detailed engineering project estimate using quantities, resources, rates, historical information, and project assumptions

DAY 03

Cost Baselines, Cost Control, and Performance Monitoring

- Principles of engineering project cost control
- Developing cost baselines and allocating budgets to project work packages
- Cost coding systems and project expenditure classification
- Monitoring actual costs, commitments, accruals, and expenditures
- Integrating cost information with project schedules and progress measurement
- Measuring planned versus actual financial performance
- Cost variance identification and trend analysis
- Root cause analysis of project cost overruns
- Cost performance indicators and project control metrics
- Preparing periodic cost reports and management information

PRACTICAL APPLICATION

Analyze actual engineering project cost data, identify variances and root causes, and develop appropriate cost control actions

DAY 04

Cost Risk, Changes, and Financial Forecasting

- Identification and assessment of engineering project cost risks
- Cost uncertainty and approaches to managing estimating uncertainty
- Contingency, reserves, and cost risk allowances
- Impact of engineering changes on project cost and budget
- Financial evaluation of scope development and additional work
- Cost impacts of engineering, procurement, and construction delays
- Contractual commitments, claims, variations, and change orders
- Procurement and supplier performance impacts on project cost
- Forecasting final project cost and remaining expenditure
- Identifying emerging cost trends and potential budget overruns

PRACTICAL APPLICATION

Analyze an engineering project experiencing cost overruns and scope changes and develop a financial forecast and corrective cost control plan

DAY 05

Integrated Cost Control, Optimization, and Project Financial Performance

- Integration of cost estimation with engineering, procurement, construction, contracts, and project controls
- Linking project cost with schedule performance and physical progress
- Developing cost forecasts and supporting project management decisions
- Cost optimization and identification of value improvement opportunities
- Optimizing labor, resources, procurement, and contractual expenditure
- Cost management during project execution, commissioning, and completion
- Final cost reconciliation, commitments, accruals, and outstanding obligations
- Lessons learned and improvement of future cost estimation methodologies
- Developing governance and control frameworks for engineering project costs
- Improving cost reporting accuracy, transparency, and management visibility

DAY 05 — CONTINUED

FINAL WORKSHOP

Conduct a comprehensive engineering project cost performance assessment and develop an integrated improvement plan covering estimation, baseline, resources, expenditures, variances, risks, changes, forecasting, reporting, and final cost control

Register or Request More Information

Course page: <https://quest-training.com/courses/engineering-project-cost-estimation-control-training-course>

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