MERCURY

Cost Estimation for Engineering & Maintenance Executions

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Introduction:

In today's industrial and infrastructure-driven sectors, cost estimation plays a critical role in the success of engineering and maintenance projects. This Cost Estimation for Engineering and Maintenance Executions course equips professionals with the tools and methodologies to develop precise, reliable, and realistic cost estimates. Accurate cost forecasting is essential for budgeting and procurement, as well as for effective planning, decision-making, and risk management.

The Cost Estimation for Engineering and Maintenance Executions program blends foundational knowledge with advanced estimation strategies used in real-world turnaround TAR and maintenance project scenarios. Through this structured program, participants will gain exposure to industry standards like AACE classifications, estimation methodologies, specialized tools, and performance benchmarking.

The Cost Estimation for Engineering and Maintenance Executions training emphasizes both technical and managerial aspects, ensuring participants can support capital projects, shutdowns, and ongoing operations efficiently. Participants will be able to navigate the full spectrum of cost estimation processes with confidence and precision.

Targeted Groups:

This Cost Estimation for Engineering and Maintenance Executions training targets professionals seeking specialized knowledge and skills:

- Maintenance planners and cost estimators.
- Project engineers and project controls personnel.
- Turnaround managers and coordinators.
- SAP and asset management specialists.
- Cost engineers in the oil and gas, petrochemical, and infrastructure sectors.
- Procurement and contract administrators.
- CMMS and ERP integration professionals.
- Industrial and facility maintenance supervisors.
- Professionals transitioning into estimating roles.
- Consultants and cost analysts work in capital project teams.

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Course Objectives:

Participants will achieve the following objectives by completing the Cost Estimation for Engineering & Maintenance Executions course:

- Define the classes of cost estimates and determine appropriate accuracy levels.
- Identify and distinguish between direct and indirect cost components.
- Apply quantity-based and parametric estimating methods effectively.
- Utilize tools like Aspen CCE, Excel, and Power BI for cost modeling.
- Analyze historical data and benchmarking indicators for reliable forecasting.
- Evaluate special cost considerations in turnarounds and emergent maintenance.
- Incorporate contingency and risk allowances through structured models.
- Develop cost estimates using vendor quotes and three-point analysis.
- Integrate SAP PS/PM systems with cost tracking workflows.
- Review and validate estimates using structured governance frameworks to ensure accuracy and consistency.
- Construct risk registers and apply Monte Carlo simulations in estimating scenarios.
- Interpret estimate results to aid strategic project planning and execution.

Targeted Competencies:

Participants will gain the following competencies during the Cost Estimation for Engineering and Maintenance Executions program:

- Understanding of cost classification frameworks and estimation accuracy.
- Proficiency in breaking down and categorizing cost elements.
- Ability to use multiple estimation methods for diverse project needs.
- Competence in estimating tools integration and system workflows.
- Skills in handling turnaround-specific cost drivers and challenges.
- Analytical skills for benchmarking and evaluating historical costs.
- Risk-based thinking for contingency planning and simulation modeling.
- Governance-oriented approach for estimating reviews and audit alignment.

Course Content:

Unit 1: Principles and Classifications of Cost Estimation:

- AACE classification system Class 5 to Class 1 estimates.
- Accuracy Range versus Confidence Levels in Estimates.
- Estimator’s role in capital projects and TAR planning.
- Scope definition and work packaging essentials.

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Unit 2: Elements and Structuring of Cost Breakdown:

- Differentiating direct and indirect costs.
- Capturing labor, materials, tools, and equipment accurately.
- Allocating support services, logistics, and overheads.
- Aligning cost breakdowns with work orders and WBS.

Unit 3: Estimation Techniques and Application:

- Bottom-up estimation: quantity-based and productivity-driven.
- Parametric methods using industry norms e.g., RSMeans.
- Three-point estimation: minimum, most likely, and maximum.
- Vendor quote-based costing for real-time market integration.
- Cost modeling and logic validation.

Unit 4: Estimation Tools, Software, and Digital Systems:

- AACE templates and the Aspen Capital Cost Estimator application.
- Integrating SAP PS/PM with estimation and planning processes.
- Leveraging MS Excel, Power BI, and cloud-based cost databases.
- Data validation and reporting for management visibility.

Unit 5: Turnaround TAR Estimating, Risk & Governance:

- Special cost categories in shutdowns: temporary facilities, camps, and overtime.
- Managing emergent work with contingency planning techniques.
- Cost phasing strategies and valuation during execution.
- Using historical databases and benchmarking KPIs e.g., cost per tag/equipment.
- Applying Monte Carlo simulations for range-based risk analysis.
- Constructing and using risk registers.
- Conducting estimate reviews with ERB and using validation checklists.
- Establishing governance, documentation, and audit readiness.

Final Insights & Key Takeaways:

This Cost Estimation for Engineering and Maintenance Executions course delivers comprehensive insights into the technical and strategic aspects of cost estimation for maintenance and engineering executions. By mastering tools, methods, and processes, participants can confidently deliver accurate and defendable estimates. The program empowers professionals to contribute more effectively to planning, budgeting, and the success of execution. Strong governance and risk awareness also position them for long-term impact within their organizations.