

Course No. 1585

Engineering Project Planning & Execution Training Course

PROJECT ENGINEERING & CONSTRUCTION
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Engineering Project Planning & Execution Training Course provides a comprehensive professional program designed to develop the technical, managerial, commercial, and coordination capabilities required to effectively plan and execute complex engineering projects. Engineering projects involve multiple technical disciplines, stakeholders, contractors, suppliers, resources, and interdependent activities, making disciplined planning and structured execution essential for achieving scope, cost, schedule, quality, safety, and performance objectives.

The course examines the complete engineering project lifecycle, from project initiation, requirements definition, feasibility, engineering planning, design development, procurement, and resource planning through construction, installation, testing, commissioning, handover, and closeout. Participants develop a practical understanding of how engineering decisions, project interfaces, resource availability, procurement activities, technical documentation, and execution strategies influence project performance.

A central focus of the Engineering Project Planning & Execution Training Course is the integration of engineering functions with project execution requirements. Participants explore project scope management, work breakdown structures, engineering deliverables, design coordination, project scheduling, resource allocation, procurement interfaces, contractor management, technical reviews, change management, risk management, quality control, and progress monitoring. The program emphasizes effective coordination between engineering disciplines and project stakeholders to reduce interface issues, avoid rework, and support efficient project delivery.

The program also addresses project execution strategies, engineering performance indicators, schedule control, cost awareness, technical risks, document management, design changes, construction interfaces, commissioning readiness, and project closeout. Through practical exercises, engineering project case studies, project scenarios, and integrated workshops, participants develop a structured approach to transforming engineering plans into controlled execution activities. The course is particularly relevant to oil and gas, petrochemical, energy, utilities, infrastructure, industrial, manufacturing, construction, and major capital engineering projects.

Objectives

- Analyze engineering project objectives, scope, technical requirements, deliverables, constraints, and execution conditions to establish an effective project planning framework during the course.
- Develop integrated engineering project plans connecting scope, engineering deliverables, schedule, resources, procurement, cost, quality, risk, and execution requirements.
- Evaluate work breakdown structures, engineering work packages, deliverables, interfaces, responsibilities, and dependencies to strengthen project control.
- Apply engineering planning and scheduling techniques to sequence design activities, establish milestones, monitor progress, and support timely project execution.
- Assess engineering resource requirements, including personnel, specialist expertise, technical support, equipment, information, and external services.
- Design effective coordination mechanisms between engineering disciplines, project management, procurement, construction, commissioning, contractors, suppliers, and stakeholders.
- Analyze engineering progress, technical deliverables, schedule performance, design changes, and emerging issues to determine their impact on project objectives.
- Apply structured risk management techniques to identify and respond to technical, engineering, procurement, construction, contractual, and execution risks.
- Strengthen engineering change management and technical decision-making processes to minimize rework, disruption, and uncontrolled project impacts.
- Evaluate project quality requirements, technical reviews, document control, design verification, and engineering assurance activities.
- Implement practical project monitoring, reporting, forecasting, and corrective action processes to improve engineering and execution performance.
- Develop an integrated engineering project execution improvement plan aligned with project objectives, organizational priorities, and delivery requirements.

Who Should Attend

The Engineering Project Planning & Execution Training Course is designed for engineering project managers, project directors, engineering managers, project engineers, lead engineers, engineering coordinators, discipline engineers, design engineers, planning engineers, project controls specialists, technical managers, and professionals responsible for planning and executing engineering projects.

The program is also highly relevant to professionals working in mechanical, electrical, civil, structural, process, instrumentation, control, piping, architectural, and multidisciplinary engineering functions. It is suitable for procurement professionals, construction managers, commissioning professionals, contract and commercial specialists, quality professionals, risk specialists, document control teams, technical coordinators, and project support personnel who work closely with engineering teams.

The course is particularly valuable for executives, senior managers, and decision makers in government entities, ministries, engineering consultancies, project owners, EPC contractors, oil and gas organizations, petrochemical companies, power generation and utilities organizations, infrastructure developers, industrial companies, manufacturing organizations, and large corporations managing engineering-intensive projects and capital investment programs.

Learning Outcomes

- Explain the complete engineering project lifecycle and the relationship between planning, engineering, procurement, construction, commissioning, and project closeout.
- Develop an integrated engineering project plan covering scope, deliverables, resources, schedule, procurement, risks, quality, and execution requirements.
- Establish structured work breakdown structures, engineering work packages, responsibilities, milestones, and project interfaces.
- Develop engineering schedules that effectively sequence design activities, technical reviews, approvals, procurement inputs, and construction requirements.
- Analyze engineering progress and identify technical, resource, coordination, or scheduling issues that could affect project delivery.
- Coordinate multidisciplinary engineering activities and manage technical interfaces between different project functions and stakeholders.
- Evaluate the impact of design changes, technical decisions, incomplete information, and engineering rework on project cost, schedule, quality, and resources.
- Apply practical risk identification and response techniques to engineering and project execution risks.
- Improve coordination between engineering, procurement, construction, commissioning, contractors, suppliers, and project management teams.

- Apply engineering quality assurance, technical review, document control, and design verification practices.
- Prepare engineering project progress reports, performance indicators, forecasts, and management information.
- Develop a practical action plan for improving engineering project planning, coordination, execution, and delivery performance.

Course Outline

DAY 01

Engineering Project Planning Fundamentals and Execution Strategy

- Principles, objectives, and characteristics of engineering project planning and execution
- Engineering project lifecycle and major execution phases
- Project initiation, requirements definition, scope development, and technical objectives
- Roles and responsibilities of project owners, engineering teams, consultants, EPC contractors, suppliers, and stakeholders
- Development of work breakdown structures for engineering projects
- Engineering work packages, deliverables, milestones, and responsibility allocation
- Project organization and multidisciplinary engineering coordination
- Engineering execution strategies and project delivery models
- Identification of project constraints, assumptions, dependencies, and interfaces
- Critical success factors and common causes of engineering project execution challenges

PRACTICAL APPLICATION

Develop an engineering project planning framework identifying scope, deliverables, responsibilities, interfaces, milestones, and execution priorities

DAY 02

Engineering Planning, Design Coordination, and Project Scheduling

- Engineering planning processes and development of engineering execution plans
- Design development stages and engineering deliverable management
- Coordination between mechanical, electrical, civil, structural, process, piping, and instrumentation disciplines
- Engineering activity definition, sequencing, and schedule development
- Engineering milestones, technical reviews, approvals, and decision points
- Interface management between engineering and procurement activities
- Interface management between engineering and construction requirements
- Resource planning for engineering teams and specialist technical functions
- Managing design information, technical inputs, and engineering dependencies
- Monitoring engineering progress and identifying schedule risks

PRACTICAL APPLICATION

Develop a multidisciplinary engineering schedule and identify key interfaces, dependencies, technical milestones, and resource requirements

DAY 03

Engineering Execution, Procurement Integration, and Project Control

- Integrating engineering activities with procurement and supply chain requirements
- Engineering specifications, technical documentation, and procurement inputs
- Technical bid evaluation and engineering support during supplier selection
- Long-lead equipment and engineering information requirements
- Engineering document control and technical information management
- Design reviews, technical verification, approval processes, and quality assurance
- Monitoring engineering deliverables against approved project requirements
- Project cost awareness and the relationship between engineering decisions and project costs
- Engineering progress measurement, reporting, and performance indicators

DAY 03 — CONTINUED

- Identifying technical deviations, rework, bottlenecks, and productivity issues

PRACTICAL APPLICATION

Analyze an engineering project with procurement dependencies and develop an integrated engineering and procurement control approach

DAY 04

Engineering Risk, Change Management, Interfaces, and Execution Challenges

- Identification and classification of engineering project risks
- Technical, design, procurement, construction, contractual, and resource-related risks
- Risk assessment, prioritization, mitigation, and monitoring
- Engineering change management and technical query management
- Evaluating the impact of design changes on scope, cost, schedule, resources, and construction
- Managing design revisions, rework, incomplete information, and technical discrepancies
- Engineering interface management with contractors, suppliers, construction, and commissioning teams
- Root cause analysis of engineering delays and execution problems
- Corrective action planning and engineering recovery strategies
- Managing technical decisions and escalation processes

PRACTICAL APPLICATION

Analyze an engineering project experiencing design changes, interface conflicts, delays, and technical issues and develop an integrated corrective action plan

DAY 05

Integrated Engineering Project Execution, Commissioning, and Delivery Excellence

- Integration of engineering, procurement, construction, commissioning, and project controls
- Engineering readiness for construction, installation, testing, and commissioning
- Final technical reviews, design verification, and project completion requirements
- Engineering documentation, technical records, drawings, specifications, and handover information
- Managing outstanding engineering activities and completion priorities
- Forecasting engineering completion and evaluating remaining project requirements
- Engineering performance dashboards and management reporting
- Lessons learned, knowledge capture, and continuous improvement
- Developing engineering execution standards and improvement strategies
- Strengthening multidisciplinary coordination and project delivery performance

FINAL WORKSHOP

Conduct a comprehensive engineering project assessment and develop an integrated execution improvement plan covering scope, engineering deliverables, schedule, resources, procurement, risks, changes, interfaces, quality, construction readiness, commissioning, and handover

Register or Request More Information

Course page: <https://quest-training.com/courses/engineering-project-planning-execution-training-course>

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