



# N617: Fundamentals of Project Management

Tutor(s): Morley Selver

3 Days

Competence Level:  
Awareness



Classroom Course

## Summary

This practical workshop will equip participants with the tools, skills, behavioral attributes, and competencies needed to manage design and construction projects. Participants learn "what" to do, "how" to do it, and "why" they need to do it. Participants will receive a copy of the instructor's published book, "Plant Project Engineering Guidebook".

## Learning Outcomes

Participants will learn to:

1. Demonstrate the Project Life Cycle and how it relates to project definition and control.
2. Employ an Estimate Matrix to determine deliverables.
3. Demonstrate the importance of a baseline scope and how it relates to cost control.
4. Determine the different terms for items that make up a contractor's rates.
5. Depict the role of the project manager in the procurement process.
6. Relate the differences between a Request For Quotation (RFQ) and a Request For Proposal (RFP).
7. Employ due diligence as it applies to their projects.
8. Avoid common mistakes when preparing and interpreting the tender document.
9. Interpret information that results from an earned value analysis.
10. Define and understand the difference between commissioning and start-up.

## Duration and Training Method

This three-day course will use lectures, discussions, case studies and exercises to focus on practical applications and techniques for immediate implementation and project results. Participants will earn 2.4 CEUs (Continuing Education Credits) or 24 PDHs (Professional Development Hours).

## Who Should Attend

This course is designed for those involved in planning and implementation of complex industrial design and construction projects. It is intended for new engineers and those with a few years of experience as well as technologists and technicians, tradesmen, maintenance personnel, and other personnel from industries, utilities, municipalities, educational institutions, commercial facilities, consulting engineering firms and manufacturers. Topics covered in this course will also be of benefit to managers and other non-technical project personnel.

## Prerequisites and Linking Courses

There are no prerequisites for this course.

Related Professional Skills courses include N616 (Leadership Skills for Managers: Managing by Influence) and N840 (The Fundamentals of Creativity and Innovation with Applications to E&P Organizations).



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## Course Content

### Topics Covered

- Introduction and Definitions
- Project Manager Behaviors
- Budgeting and the Staged Gate Process
- Project Authorization and Scope of Work
- Engineering Control
- Procurement
- Request for Proposals and the Bidding Process
- Construction Management
- Contract Administration and Earned Value Analysis
- Commissioning Procedures
- Training
- Commissioning and Startup
- Completion

### Day One

1. Introduction
  - The difference between a project manager and a project engineer / project leader
  - The duties of a project engineer /project leader
  - The relationship between scope/schedule/budget/resources and how it relates to all project activities
2. Project Life Cycle
  - Describe the Project Life Cycle and how it relates to project definition and control
  - Describe the six (6) feasibility's and feasibility study
  - Identify the key elements of working in a group and group dynamics
3. Budgets
  - Understand the 3 budgets typical to business
  - Explain resource (money) allocation and its' importance to the project
  - Define Rate of Return and what it means to a project
  - Use an Estimate Matrix to determine deliverables
  - Develop their project risk issues
4. Work Breakdown Structure
5. Project Authorization Documentation & Scope Issues
  - Describe the components of the generic project authorization documentation
  - Explain the importance of a baseline scope and how it relates to cost control
  - Use a checklist to develop a more complete project scope
  - Describe Management of Change
  - Explain the need for approval limits
  - Define and use the back charge documentation
  - Use for the Pareto Rule for defining cost control problems
6. Stakeholders & Risk Analysis



- Identify potentially relevant stakeholders and risk issues
- Evaluate relevant stakeholders and risk issues in terms of dependency, risk, and control
- Determine which stakeholders and risk issues need special attention from management
- Proactively manage key stakeholders and risk issues (or their effects on the project), by trying to decrease the project's dependency on them

## Day Two

1. Estimating
  - Be able to recognize project hidden contracts
  - Be able to define the different methods of estimating
  - Learn how to control currency fluctuations in their projects
  - Know the questions to ask to determine if the estimate is viable
  - Define the different terms for items that make up contractors rates
2. Engineering Issues, Project Cost Control, Managing Changes, Reporting
  - Identify at least three common problems that project managers face with reporting systems
  - Distinguish between reporting, monitoring, and evaluation
  - Explain the contents of a cost report
  - Describe managing change control for changes in scope and changes in design
3. Procurement
  - Define procurement terms
  - Describe the role of the project manager in the procurement process
  - List at least 2 common procurement mistakes
  - Characterize the differences in procurement methods recommended for procuring
    - Works
    - Services
    - Goods
4. Types of Contracts
  - Understand the different types of contracts they need to handle
  - Develop criteria to be used to determine when to use a contract and when to use a purchase order
  - Be able to define the different types of contracts typically used and know what their pros and cons are
5. Bidding Procedures, Bid Evaluation, (Works, Goods, Consultants)
  - Describe the difference between a Request For Quotation (RFQ) and a Request For Proposal (RFP)
  - Explain why bids are required
  - List the contents of a bid document
  - Develop and use a Plant Conditions and Standard Component List
  - Develop and use a Vendor Document Requirements
  - Explain the importance of the Vendor Information Requirements document
  - Describe the bid evaluation process and characterize the major activities and issues
  - Describe the problems that arise from deficiencies in bids and challenges to selection and how these problems may be addressed
6. Purchase Orders & Contracts



- Describe the purpose of the pre-award meeting
- Lead a pre-award meeting to get the required results
- Write a purchase order that meets the needs of the team and other associated personnel
- Revise the purchase order so the total cost is always known

## 7. Construction Management

- Define Construction Management
- Understand the role of and the importance of the construction manager to the project
- Describe the construction managers tasks
- Define the duties if a general or prime contractor as it relates to site safety
- Define due diligence and how it applies to their projects
- Understand the construction managers role in contract signing
- Carry out the construction managers duties

## Day Three

1. Woody's Case Study (a project that has every project management error you can think of)
  - Working in groups, participants are to answer project management questions relating to the various problems talked about in the case study. The objective is to analyze a project that has gone terribly wrong and to learn from the mistakes of others.
2. Tender Documents
  - Develop a tender document using the correct wording and information
  - Understand all aspects of a tender document
  - Avoid common mistakes when preparing and interpreting the tender document
  - Understand the components of the tender document and why they are important to project
3. Contract Administration, Managing Contracts
  - Define contract administration
  - Describe the duties of a contract administrator
  - Understand the difference between and when to use a field work order, change order, and back charge
  - Relate the field work orders and change orders to the overall project scope, schedule, budget, resources, relationship
  - Direct construction inspection
  - Lead construction meetings with the suggested agenda
  - Know what should go into a daily diary
  - Handle project correspondence to their best advantage
  - Develop and complete a deficiency or punch list
  - Manage equipment checkout using the checklists provided
4. Earned Value Analysis
  - Identify the key elements of a project that must be controlled.
  - Interpret information that results from an earned value analysis
  - Describe why it is important to implement scope control for a project
5. Commissioning, Training, Start-up, Completion
  - Develop a commissioning procedure to get the project from construction, to start-up, to operations
  - Set the project up into systems to enable start-up



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- Define and understand the difference between commissioning and start-up
- Develop a turnover sequence chart so the project team understands exactly what makes up the different phases of construction, commissioning, and start-up
- Determine what information is required in their turnover packages
- Develop a commissioning and start-up organization chart
- Understand the different training methods, sessions, trainers and problems associated with each
- Develop a letter of expectations for their trainers
- Define the two points that constitute project completion
- Follow the proper steps required to complete their contracts