Project Controls Institute®

Cost Engineering Training Program

Course Brochure and Competency Matrix

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1. Company Introduction

Project Controls Institute (PCI) is World's first and most unique Project Controls learning platform offering blended education alongside a flexible framework of global accreditations and qualifications. PCI combines unique content with blended learning methods, mapped to major global frameworks that allows candidates to gain accreditations/certifications with AACEi, PMI, APM, ECITB and Engineering Council UK. PCI is also supported by globally recognised professional bodies such as Engineers Australia and ACostE.

Through a simulated classroom experience, you'll be taught by industry experts to not only understand the Project Controls theory that's essential to your career development, but how to use software systems in a real-world, operational setting. What's more, you'll also get access to the PCI Handbook for free. Learn with us and wherever you are in the world, we'll help you achieve the qualifications that will set you apart.

2. Training Program Description

Course Name: Cost Engineering

Dedicated online training module in a structured and professional manner to understand the fundamental concepts of cost engineering and best practices of Total Cost Management (TCM) in the planning, execution and management.

This training distinguishes you as a professional that has the skills and knowledge that is benchmarked with international cost engineering practices.

The Cost Engineering course is prepared to develop the competency (knowledge and skills) in cost engineering, cost estimating, planning and scheduling, cost control, project management, economic analysis, statistics and risk.

2.1 Course Development

Our course is prepared by the industry experts who helped Governmental and professional bodies to draft their national standards and certifications.
This course is mapped to the following standards or guides:

1. AACE's CCP Certification Study Guide
2. AACE's Recommended Practices 11R-88 and 10S-90
3. AACE's Skills & Knowledge of Cost Engineering, 6th Edition
4. AACE's Total Cost Management Framework
5. ECITB L3 & L5 Diploma in Cost Engineering Practice

2.2 Certifications offered by professional bodies

This course leads to the following certifications:

1. AACEi – CCP Certification Study Guide
2. ECITB – L3 & L5 Diploma in Cost Engineering Practice
3. Engineering Council - IEng (Incorporated Engineer), and CEng (Chartered Engineer)

2.3 Prerequisites for certification exams

A. AACEi Prerequisites:

- 8 years industry related experience or 4 years industry related experience + 4-year industry related college degree
- 2,500 minimum word technical paper

B. ECITB Prerequisites:

- There are no age or formal entry requirements that you are required to take for this qualification. However, it's recommended that you have a basic understanding of project management.

2.4 Notes

A. AACEi

- PCI helps to prepare for an AACEi CCP exam, however, participants need to apply and appear for AACEi CCP exam.
- PCI offers help to review the technical paper.
- PCI awards a certificate of completion of CCP certification review course or a letter supporting attendee's participation and Continuing Education Units (CEU).

B. ECITB

- PCI helps to prepare for ECITB L3 & L5 Diploma in Cost Engineering Practice.
- PCI assesses candidates and awards ECITB L3 & L5 Diploma in Cost Engineering Practice

C. Engineering Council

- PCI facilitate IEng (Incorporated Engineer), and CEng (Chartered Engineer) accreditation offered by the Engineering Council UK via ACostE route.

This course includes exam preparation only, assessment and further support is optional.
All accreditations, assessments and certifications are subject to eligibility.

3. Training Delivery Options

- Online training - Access to 20 hours of high quality E-learning videos, knowledge check questions and assessment.
- Blended training

4. Course Syllabus

Sr. No	Lesson
1	**Cost Fundamentals**
1.1	Cost Elements
1.2	Pricing and Costing
1.3	Materials
1.4	Labor
1.5	Engineering Role and Project Success
1.6	Machinery, Equipment, and Tools
1.7	Economic Cost
1.8	Activity-Based Cost Management
2	**Cost Estimating**
2.1	Cost Estimating
2.2	Process Product Manufacturing
2.3	Discrete Part Manufacturing
3	**Planning And Scheduling**
3.1	Project Planning
3.2	Scheduling
4	**Project And Cost Control**
4.1	Earned Value Overview
4.2	Performance and Productivity Management
5	**Project Management**
5.1	Project Management Fundamentals
5.2	Project Organization Structure
5.3	Project Communications
5.4	Project Labor Cost Control
5.5	Leadership and Management of Project People
5.6	Quality Management
5.7	Value Engineering
5.8	Contracting For Capital Projects
5.9	Strategic Asset Management
5.10	Change Management Practical Guide
5.11	Overview of Construction Claims and Disputes
6	**Economic Analysis, Statistics, Probability And Risk**
6.1	Financial and Cash Flow Analysis
6.2	Practical Corporate Investment Decision-Making
6.3	Statistics & Probability
6.4	Optimization
6.5	Risk Management Fundamentals
6.6	Risk Management Practical Guide
6.7	Total Cost Management Overview

5. Program format

This program will be delivered in an interactive, practical, E-learning video format along with knowledge check questions and assessment. Theory will be supported and illustrated through a combination of real-world examples.
The USP of our courses is that these are developed by experts working on real life projects and hence the course content reflects the practical aspects and challenges faced by the professionals and industry during the project delivery.

6. Expected Audience Profile/Background

This course is suitable for everyone who is part of any team that executes industrial projects. If possible, groups will be composed of organizations that are supplementing each other to allow all participants to learn as much as possible. This course is primarily aimed at:

- Project Directors
- Project Managers
- Project Accountants
- Project Planners
- Schedulers
- Project Engineers
- Cost Engineer/Estimator
- Risk Manager
- Project Controls Engineer

7. Course Competency Matrix

Module 1	Cost Fundamentals
This module is designed to develop the ability of the learner to understand the fundamentals of cost elements, the difference between pricing and costing, type of materials, classifications of labour, the role of engineering in project success, management of machinery, equipment, and tools related to a project, the time value of money, tax impact, depreciation, and economic analysis techniques and activity based cost management.	
Knowledge	**Skills**
▸ Understand concepts and fundamental principles of the following: ▸ Cost Elements ▸ Pricing and Costing ▸ Materials ▸ Labor ▸ Engineering Role and Project Success ▸ Machinery, Equipment, and Tools ▸ Economic Cost ▸ Activity-Based Cost Management	▸ Relate the cost elements to the life cycle of the asset: acquisition, use and disposal. ▸ The distinction between cost elements that are directly applied to an asset and those that are indirectly applied. ▸ Calculate financial ratios related to the costing and pricing of projects. ▸ Identify types of project materials. ▸ Develop labor rates for estimating. ▸ Develop and use weighted average rates/composite crew rates. ▸ Establish an equipment valuation database and identify the different equipment value categories and subcategories. ▸ Research equipment price and cost information. ▸ Evaluate, on an economic analysis basis, the differences between two or more alternative courses of action. ▸ Identify how cost drivers cause costs to occur.

Module 2	Cost Estimating
This module is designed to develop the ability of the learner to understand the fundamental concepts of cost estimating and its integral importance to the quality of the cost and scheduling program on any project, understand how to determine the operating and manufacturing costs and concepts of discrete part manufacturing.	
Knowledge	**Skills**
▸ Understand concepts and fundamental principles of the following: ▸ Cost Estimating ▸ Process Product Manufacturing ▸ Discrete Part Manufacturing	▸ Prepare cost estimate. ▸ Relate estimate accuracy to the level of scope information and methodologies used in preparing cost estimates. ▸ Apply the estimating knowledge to specific project estimating situations. ▸ Distinguish between direct and indirect costs in manufacturing as compared to construction. ▸ Relate operating costs at full production to reduce costs at less than full plant capacity. ▸ Identify the four break-even points in discrete part manufacturing. ▸ Calculate the four break-even points in discrete part manufacturing.

Module 3	Planning And Scheduling
This module is designed to develop the ability of the learner to understand and implement the concepts of planning and scheduling.	
Knowledge	**Skills**
▸ Understand concepts and fundamental principles of the following: ▸ Project Planning ▸ Scheduling	▸ Preparation of project charter ▸ Define Project Plan and execution strategy ▸ Organize the scope for meaningful execution ▸ Establish WBS, OBS and CBS based on type and complexity of the project. ▸ Model plans. ▸ Document scheduling specifications. ▸ Develop logic linked and resource loaded schedule (Level 0/1/2/3/4). ▸ Resource levelling. ▸ Perform Schedule Quality Analysis. ▸ Schedule monitoring, controlling and reporting.

Module 4	Project And Cost Control
This module is designed to develop the ability of the learner to understand and implement the cost control for the project.	
Knowledge	**Skills**
▸ Understand concepts and fundamental principles of the following: ▸ Earned Value Overview ▸ Performance and Productivity Management	▸ Implementation of earned value management system for cost control. ▸ Analyse productivity and performance. ▸ Identify ways to increase productivity, improve performance, and minimize waste in the workplace.

Module 5	Project Management
This module is designed to develop the ability of the learner to understand the fundamentals of project management, project organization structure, communications, management of human resources in the project, quality management, value engineering, Contracting for Capital Projects, Strategic Asset Management, Change Management, Construction Claims and Disputes.	
Knowledge	**Skills**
▸ Review and understand the following concepts: ▸ Project Management Fundamentals ▸ Project Organization Structure ▸ Project Communications. ▸ Leadership and Management of Project People. ▸ Quality Management ▸ Value Engineering ▸ Contracting For Capital Projects ▸ Strategic Asset Management ▸ Change Management Practical Guide ▸ Overview of Construction Claims and Disputes	▸ Use project management concepts to achieve project success (cost savings, minimising schedule delays and an improved economic return etc.). ▸ Prepare project organization structure for effective communication and governance. ▸ Use quality management to ensure product meets expected quality. ▸ Conduct value management workshops and implementation of value management process and analyse impact of value engineering on budget and schedule. ▸ Assist in developing strategies for contracting of capital projects. ▸ Implement strategic asset management. ▸ Perform change management. ▸ Analyse impact of delays and claims on schedule and budget.

Module 6	Economic Analysis, Statistics, Probability And Risk
This module is designed to develop the ability of the learner to understand the concepts of cash flow, investment decision making, use of statistics and probability in optimization, optimization and risk management.	
Knowledge	**Skills**
▸ Review and understand the following concepts: ▸ Financial and Cash Flow Analysis ▸ Practical Corporate Investment Decision-Making ▸ Statistics & Probability ▸ Optimization ▸ Risk Management Fundamentals ▸ Risk Management Practical Guide	▸ Prepare cash flow for the project. ▸ Assist in corporate investment decision making by calculating Average Annual Rate of Return (AARR), return on Investment (ROI) etc. ▸ Apply statistics and probability for bidding, planning, scheduling and estimating. Optimization of resources, time and materials to maximise the ▸ profit/productivity and minimise the construction or production time. ▸ Perform project risk management.

Note - Our course brochures are updated on a regular basis for continuous improvement.