CERTIFIED QUALITY ENGINEERING (CQE) TRAINING PROGRAM

Overview

This program is designed around the body of knowledge prescribed by the American Society of Quality for professional certification of Quality Engineers. The contents of the program, the structure of the program and the methods of delivery make this program an effective learning experience to ensure work experienced Engineers enhance their proficiency in the principles and practices of Quality Engineering. The CQE status indicate a rank of professional achievement to demonstrate that the participant has the knowledge to ensure quality of products and services. This Program prepares all those eligible and interested Engineers to sit for the Certified Quality Engineer Program of the American Society Quality.

Course Objectives

Upon completing this training, participants will be able to:

- Understand the quality philosophies, principles, systems, methods, tools, standards, organizational and team dynamics, customer expectations and satisfaction, supplier relations and performance, leadership, training, interpersonal relationships, improvement systems, and professional ethics
- Understand the quality system and its development, documentation, and implementation to domestic and international standards or requirements
- Have basic understanding of the audit process including types of audits, planning, preparation, execution, reporting results, and follow-up.
- Develop and implement quality programs, including tracking, analyzing, reporting, and problem solving.
- Plan, control, and ensure product and process quality in accordance with quality principles, which include planning processes, material control, acceptance sampling, and measurement systems.
- Acquire basic knowledge of reliability, maintainability, and risk management, including key terms and definitions, modelling, systems design, assessment tools, and reporting.
- Obtain understanding of problem solving and quality improvement tools and techniques. This includes knowledge of management and planning tools, quality tools, preventive and corrective actions, and how to overcome barriers to quality improvements.
- Get and analyse data using appropriate standard quantitative methods across a spectrum of business environments to facilitate process analysis and improvements.

Who Should Attend (Target Audience)

This course is recommended for Process Engineers, Reliability Engineers, QC Engineers, Test Engineers, QA Engineers, R&D Engineers, Equipment Engineers, Product Engineers, Managers of all of the above disciplines and any interested personnel

Course Duration

24 Days Training (9am – 5pm)

Course Outline

Module 1: Management and Leadership

- Quality Philosophies and Foundations
  - Evolution of Quality
  - Continuous improvement tools
- The Quality Management System (QMS)
  - Strategic planning
  - Deployment techniques
  - Quality information system (QIS)
- ASQ Code of Ethics for Professional Conduct
- Leadership Principles and Techniques
- Facilitation Principles and Techniques
  - Roles and responsibilities
  - Facilitation tools
- Communication Skills
- Customer Relations
- Supplier Management
  - Techniques - Improvement
  - Risk
- Barriers to Quality Improvement

Module 2: Quality System

- Elements of the Quality System

- Basic elements & Design

- Documentation of the Quality System
  - Document components
  - Document control
- Quality Standards and Other Guidelines
- Quality Audits
  - Types of audits
  - Roles and responsibilities in audits
  - Audit planning and implementation
  - Audit reporting and follow up
- Cost of Quality (COQ)
- Quality Training

Module 3: Product, Process and Service Design

- Classification of Quality Characteristics
- Design Inputs and Review - Inputs - Review
- Technical Drawings and Specifications
- Verification and Validation
- Reliability and Maintainability
    - Predictive and preventive maintenance tools
    - Reliability and maintainability indices
    - Reliability models
    - Reliability/ Safety/ Hazard Assessment Tools

Module 4: Product and Process Control

- Methods
- Material Control
    - Material identification, status, and traceability
    - Material segregation
    - Material classification
    - Material review board (MRB)
- Acceptance Sampling
    - Sampling concepts
    - Sampling standards and plans
    - Sample integrity
- Measurement and Test - Measurement tools
    - Destructive and non-destructive tests
- Metrology
- Measurement System Analysis (MSA)

Module 5: Continuous Improvement

- Quality Control Tools
- Quality Management and Planning Tools
- Continuous Improvement Methodologies
- Lean tools
- Corrective Action
- Preventive Act

Module 6: Quantitative Methods and Tools

- Collecting and Summarizing Data
    - Types of data
    - Measurement scales
    - Data collection methods
    - Data accuracy and integrity
    - Descriptive statistics

- Graphical methods for depicting relationships
- Graphical methods for depicting distributions

- Quantitative Concepts
  - Terminology
  - Drawing statistical conclusions
  - Probability terms and concepts
- Probability Distributions
  - Continuous distributions
  - Discrete distributions
- Statistical Decision-Making
  - Point estimates and confidence intervals
  - Hypothesis testing
  - Paired-comparison tests
  - Goodness-of-fit tests - Analysis of variance (ANOVA)
  - Contingency tables
- Relationships Between Variables
  - Linear regression
  - Simple linear correlation
  - Time-series analysis
- Statistical Process Control (SPC)
  - Objectives and benefits
  - Common and special causes
  - Selection of variable - Rational subgrouping
  - Control charts - Control chart analysis
  - PRE-control charts - Short-run SPC
- Process and Performance Capability
  - Process capability studies
  - Process performance vs. specifications
  - Process capability indices
  - Process performance indices
- Design and Analysis of Experiments
  - Terminology
  - Planning and organizing experiments
  - Design principles
  - One-factor experiments
  - Full-factorial experiments
  - Two-level fractional factorial experiments

Module 7: Risk Management

- Risk Oversight
  - Planning and oversight
  - Metrics
  - Mitigation planning
- Risk Assessment
- Risk Control