

## **RELIABILITY ENGINEERING WORKSHOP**

### ***Introduction:***

Reliability Engineering involves analyzing the expected or actual reliability of a product, process or service, and identifying actions to reduce failures or mitigate their effects. The overall goal of Reliability Engineering is to make product/process more reliable to reduce repairs and lower cost. Reliability Engineering focuses on eliminating maintenance requirements and utilizes technology analysis to achieve reliability and maintenance task improvement. It also improves the uptime and production capacity of critical equipment using formalized problem-solving techniques.

Reliability Engineering enables an organization to optimize system design to meet customer requirements and maximize profitability.

This workshop provides participants with practical knowledge of classical, innovative, and emerging technologies for improving reliability in products and processes. In addition, this course also provides a real-life problem solving, goal-oriented approach to developing reliability skills.

### ***Course Objectives:***

At the end of the workshop, participants will be able to:

- Understand the nature, background, importance and basic principles of the techniques of Reliability Engineering.
- Apply the Reliability Techniques in Product Design, Manufacturing and Testing environment.
- Perform Reliability analysis based on test data.
- Assess and demonstrate the Reliability of the products / systems and manufactured.
- Collection, analyze Reliability test data, determine performances and make reliability predictions.
- Design, Plan and Implement Reliability Test programs.

### ***Course Contents:***

- Introduction and importance of Reliability Engineering
- Reliability and Six Sigma

- Measures of Reliability
- Concept of Reliability
- Setting the stage for Reliability
- Reliability Apportionment/Allocation
  - Equal apportionment technique
  - AGREE apportionment technique
  - ARINC apportionment technique
- Case Studies on System Reliability Allocation
- Reliability modeling
  - Series
  - Parallel
  - Standby
  - Complicated Systems
- Optimization of system reliability
- Reliability Prediction using MIL-HDBK-217F
  - Part Count Reliability Prediction
  - Part Stress Reliability Prediction
- Data Sources
- Design for Reliability
- Failure Mode & Effect Analysis
- Fault Tree Analysis
- Development and Product Testing
  - Time Terminated Test
  - Failure Terminated Test
- Reliability testing and demonstration
  - Acceptance Tests
  - Sequential Probability Ratio Test

- Accelerated Aging
  - Arrhenius Model
  - Inverse Power Law
  - Log-normal Distribution
  - Free Tolerance Distribution
- Environmental Stress Screening
- Exercises / Case Studies

***Who Should Attend:***

This workshop is specially designed for Design Engineers & Managers, Manufacturing Engineers & Managers, Quality Assurance & Controls, Process Engineers & Managers, Quality Professionals, Internal Auditors & QMR and Quality Engineers & Managers.

***Training Methodology:***

This workshop utilize a combination of lecture, exercises, discussions, real life examples and case studies to enhance the overall learning experience.

***Award of Certificate:***

Participants will be issued with a Certificate of Successful Completion upon meeting 75% of the required course attendance.

***Duration:***

2 days (14 hours)

***Course Fee:***

\$600 nett per trainee (GST is not applicable).

(Course fee is inclusive of all training materials and light refreshments.)