



## **Life Testing and Reliability Analysis**

(8 hours)

### **Course Description:**

This course is specifically designed to meet the analytical needs of those individuals working within a variety of industries. Areas of focus include: distribution analysis, area under the curve estimation, hypothesis testing, life and survival estimation, thermal sensitivity confidence intervals and multiple factor modeling.

### **Audience:**

Course is developed to assist all scientists, engineer and quality professionals who actively work on all aspects of discovery, product and process development where the goal is to characterize, optimize and improve product and process performance.

**Prerequisites:** Engineering Statistics and Data Analysis is a recommended prerequisite for this course.

### **Course Objectives:**

Upon completion of the course the participants will be able to:

- Determine product reliability performance
- Understand and apply non-parametric reliability analysis
- Understand and apply parametric reliability analysis
- Perform multivariate reliability assessment
- Understand and apply recurrence analysis
- Use Arrhenius transformations in reliability modeling
- Select appropriate sample sizes for MTBF studies
- Model reliability improvement using reliability growth models

### **Course Outline:**

**Introduction to reliability analysis and basic statistics**

**Nonparametric reliability analysis (Kaplan-Meier)**

**Parametric reliability analysis (LogNormal, Exponential, Weibull)**

**Competing Causes**

**Lifetime distribution analysis**

**Fit Life by X**

**Multivariate reliability analysis (Parametric Survival)**

**Recurrence analysis**

**MFBF analysis**

**Reliability growth analysis**