

Accelerated Testing Training Course

This results-oriented course provides both an in-depth introduction to the underlying statistical theory and methods as well as a complete overview and step-by-step guidance on practical applications of the learned theory using ReliaSoft's ALTA, a software tool designed expressly for the analysis of accelerated life test data. The first half of the course presents the theory and required background while the latter half concentrates on practical applications. The practical application portion of the seminar involves exploration and interactive hands-on learning (using PC's and software) to complement and enhance the attendee's knowledge in the subject of Accelerated Life Testing. This integrated presentation of both the underlying theories and the software will enable the attendee to quickly and easily apply the learned concepts and methods in the workplace. Each student will receive a course manual and ReliaSoft's ALTA software package, which is a \$995 value.

Course Contents

Introduction Background and Overview

1. Overview of Reliability Engineering and Life Data Analysis
2. Statistical theory and applications
3. Most commonly used distributions for product life, and their applications
4. Product life data types and censoring schemes
5. Parameter estimation methods
6. Confidence Bounds

Accelerated Life Testing Theory Overview

1. Overview of Accelerated Tests
2. Types of Accelerated Tests
3. Accelerated Life Testing and How it is Applied
4. Overview of Stress Loading Models and Analysis
5. Applicable Stress-Life Relationship Models and Their Analyses
 - A. Arrhenius Relationship
 - B. Eyring Relationship
 - C. Inverse Power Relationship
 - D. Temperature - Humidity Relationship
 - E. Temperature - Non-thermal Relationship
 - F. Proportional Hazards Model
 - G. Non-Proportional Hazards Model
 - H. Cumulative Exposure/Damage Model (Step-Stress)
6. Predicting Reliabilities, Warranty Times and MTTF (MTBF) using accelerated life data
7. Looking at Accelerated Life Plots
 - A. Probability Plots
 - B. Reliability Plots
 - C. Probability Density Function Plots
 - D. Life-Stress Plots
 - E. Acceleration Factor Plots
8. Confidence Bounds on accelerated life data
9. Examples and Case Studies

Application of Accelerated Life Data Analysis Theory (Hands-on using computers and software)

1. Overview of ALTA
2. Applying previously presented theory utilizing ALTA
 - A. Entering and analyzing data with different censoring schemes
 - B. Available statistical distributions and Stress-Life relationships
 - C. Probability Plots, creating & using

- D. Life-Stress Plots, creating & using
 - E. Looking at other plots; pdf, Reliability, Failure Rate, Acceleration Factor, etc.
 - F. Looking at 3D plots, creating and interpreting
 - G. Using Confidence Bounds
3. Illustrating ALTA using real life examples
 4. Examples and Case Studies
 5. Hands-on Session Using ReliaSoft's ALTA