

Durability Testing Technology

3 day course

COURSE OUTLINE

- I. Introduction
 - A. Durability testing objectives
 - B. Durability testing in the vehicle development process
- II. Assessment of service conditions
 - A. In-service & proving ground loading
 - B. Road-load data acquisition
 - C. Transducer selection & vehicle instrumentation
 - D. Recording systems
 - E. Digitization of data
 - F. Time & frequency domain analysis
- III. Laboratory reproduction of service conditions
 - A. Fixturing
 - B. Servohydraulic test systems & components
- IV. Programming of test systems
 - A. Test excitation
 - B. Servocontrollers
 - C. Servocontrol tuning & stabilization techniques
 - D. Command compensation methods
- V. Test evaluation metrics
 - A. Test correlation
 - B. Fatigue analysis methods (load-, stress-, & strain-life)
 - C. Cycle counting
 - D. Damage accumulation

In this course, your instructor presents the principles for fatigue-correlated durability testing of ground vehicles and their components using servohydraulic laboratory test equipment. You examine the choices required when designing a durability test, from vehicle instrumentation and data collection through test rig design and test excitation. The course includes an introduction to fatigue analysis methodologies applicable to durability test data editing, test correlation, and evaluation. Numerous test examples and problem-solution scenarios are included. Particular emphasis is given to the design of fatigue tests for ground vehicle structures and components subjected to variable amplitude loading. Test rig design is introduced in this course. A more rigorous, detailed approach to design is provided in another MTS course called Test Rig Design.

Who should attend

The course is excellent training for test or design engineers and technicians who require an understanding of modern simulation testing methods.

- » It should be especially useful for engineers who are planning new test facilities, or who must regularly request testing services from other departments.
- » It will be helpful for experienced test engineers and technicians who are looking to fill gaps in their understanding, and for lab managers and technicians who desire a broader understanding of test design.

Prerequisites

A technical degree or equivalent background in test applications is preferred.