



Introduction to Materials Testing: Static



Objectives

After completing this course, you will be able to:

- Understand how to operate your materials testing system safely
- Understand basic materials testing terminology, theory and concepts
- Understand typical force/displacement test curves and be able to distinguish between different types of curves
- Do's and Don't's when running typical tensile, compression, flexure, and peel tests
- Learn good testing procedures when using a computerized testing instrument to perform tension, compression, flexural and peel testing
- Learn the importance of system calibration for data accuracy
- Understand specimen geometry and the importance of specimen dimensions
- Calculate stress, strain, elongation, modulus, offset yield, and other advanced calculations
- Be able to interpret test curves and to label major points and results
- Understand different types of strain measurements and devices

Overview

In this one-day course, students will learn about materials testing. The course highlights the basics of materials testing including mechanical properties, different types of testing, stress/strain test curves, modulus, yield, and application testing with demonstrations on computerized materials test instruments. Students will observe tensile, compressive, flexural, and peel tests to learn to interpret test curves and calculated results.

Course Outline

Part 1: Who Tests and Why

- What is materials testing?
- Why materials testing is important?
- Who does materials testing and for what applications?
- The role of materials testing in the prevention of material failures

Part 2: The Testing System

- What is static vs. dynamic testing?
- Electromechanical system components
- Common system configurations
- Safe Operation of Materials Testing Systems

Part 3: Quantifying Results

- What are you measuring?
- Understanding system of units
- The relationship between force and stress
- The relationship between displacement and strain
- Understanding the significance of specimen geometry
- Understanding Extensometry
- The importance of calibration

Part 4: Material Properties and Results

- What are Proportional Integral Derivative (PID) controls
- Understanding common test results
- Relationship between material properties and behavior
- Understanding Elastic vs. Plastic deformation
- The effect of testing conditions

Frequently Asked Questions

Who Should Attend?

This course is open to those who are interested in increasing their materials testing knowledge in order to improve testing techniques. It is recommended for operators or supervisors of any Instron Electromechanical (EM) Test Instrument. If you have a different type of Test Instrument, we can provide training at your facility.

What are the prerequisites?

- Familiarity with test instrument operation desirable, but not essential
- Experience with Bluehill software desirable, but not essential

How long is the course?

This course is comprised of 1 full day of lecture, discussion, and video demonstrations.

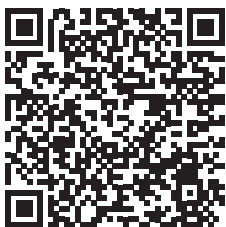
Can the course be tailored to my application?

This course is designed to be interactive, and questions and comments are encouraged. We can tailor this course to your needs, for more information please contact the Training Centre beforehand.

Where can I get more information?

Please contact us directly at Service.UK@instron.com or by phone at +44 (0) 1494 456815.

For more information, please visit us at www.instron.com.



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Locations

Courses are offered at our Training Centre in High Wycombe and at customer facilities across the United Kingdom.

For a list of upcoming sessions, or to schedule on-site training, please visit www.instron.com, or contact us at the information listed below.



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