

ME 354, MECHANICS OF MATERIALS LABORATORY

**MECHANICAL PROPERTIES AND PERFORMANCE OF MATERIALS:  
OVERVIEW**

01 January 2000 / mgj

PURPOSE

The purpose of this exercise is to obtain a number of experimental results important for the characterization of the mechanical properties and performance of materials. Four different types of tests will be performed over the course of two weeks. A single laboratory report will be written focusing on materials testing in general, but keying on each type of test in specific sub sections.

First Week

Tensile test - the most fundamental test for obtaining information about materials for design

Hardness test - a superficial test for quality control and to determine degree of heat treatments

Second Week

Torsion test - application of pure shear to determine performance of material in plastic range

Impact test - determination of notch + temperature sensitivities of materials under high strain rates

EQUIPMENT and PROCEDURE

Each test is described in detail in the appropriate laboratory hand out.

ANALYSIS

The analysis of the raw data is described in detail in the appropriate hand out.

LABORATORY REPORT

One laboratory report on Mechanical Properties and Performance of Materials should be prepared. This report should contain the results of all four tests. The report should provide descriptions, discussions, presentations of test results, and discussions and conclusions in sufficient detail so as to allow an engineering manager to make comparative decisions about the usefulness and applicability of each type of materials test.

The basic layout of the report follows the required format for the course. The Title and Objectives sections should key on materials testing in general. However, the each of the sections on Test Description, Results, and Discussion/Conclusions should be divided into four subsections each. Each subsection should focus on the particular test.

Total score for the report will be 200 points to reflect the four tests being included in the report.