

ME450N
Mechanical Engineering Lab 1
Instructor: D. N. Koert
New Course -- First Time Offering, Fall 2000

Textbooks:

- (1) Experimental methods for Engineers, Seventh Edition
Jack P. Holman
McGraw-Hill (2000)

- (2) A Guide to Writing as an Engineer
David Beer
John Wiley and Sons (1997)

This course replaces ME402 (Mechanical Engineering Measurements) and ME523 (Fluid and Heat Flow Lab)

The objective of this course is to introduce students to the basics of obtaining engineering measurements. Some theory will be discussed, followed by many applications in areas such as strain, sound, temperature and pressure.

The format will consist of regular class room lectures, 'lab specific' classroom lectures (which will present the concept of the experiment to be performed and the required data analysis) and laboratories.

Draft

Tentative Outline of the Course:

Basic Concepts

1 class

Analysis of Experimental Data

2 classes

Basic Electrical Measurements and Sensing Devices

1 class + Self-paced study

Pressure Measurement

1 Introductory Class

1 Lab Specific Class

1 Lab "Calibration of a Pressure Transducer"

Flow Measurement

1 Introductory Class

1 Lab Specific Class

1 Lab "Flow Meters"

1 Further Theory Class

1 Lab Specific Class

1 Lab "Hot Wire Anemometry"

Force and Strain Measurement

1 Introductory Class

1 Lab Specific Class

1 Lab "Strain gage and calibration"

1 Further Theory Class

1 Lab Specific Class

1 Lab "Characteristics of a Second Order System Lab"

Motion and Vibration

1 Introductory Class

1 Lab Specific Class

1 Lab "Sound Measurement"

Temperature Measurement

1 Introductory Class

1 Lab Specific Class

1 Lab "Thermocouples and Pyrometers"

Data Acquisition

1 Introductory Class

1 Lab Specific Class

1 Lab "Continuous Acquisition of Strain Gage Data"