DESCRIPTION:
This course provides coverage of experimentation techniques pertaining to engineering instrumentation and performance testing. This course will make use of laboratory experiments practical applications, problem based learning and case studies.

CONTACT HOURS PER WEEK: 2 Lecture, 1 Lab hours per week.

REQUIREMENT: This is a required course in the Mechanical Engineering Technology baccalaureate degree program.

PREREQUISITE(S): MTH 251 Calculus-II.

COURSE COORDINATOR: Associate Professor Gary S. Drigel


COURSE OBJECTIVES
Upon completion of this course, the student should be able to:
1. Plan and document experimental data.
2. Understand the general characteristics of measurements
3. Understand and specify mechanical measurements associates with temperature, pressure, strain, etc.
4. Observe the dynamic behavior of measurement systems.

OUTCOMES ADDRESSED:
Outcome 13 - “Fundamental knowledge of instrumentation used to measure parameters in fluid mechanics, heat transfer, and mechanical vibrations”
Outcome 14 - “Fundamental knowledge of effective data presentation and technical report writing.”

METHOD OF EVALUATION:
ENT Department Standard for awarding letter grades: Each faculty member will use the following percentage scale in assigning letter grades in their courses, with the following allowances:
- the end (or ends) of any range can be adjusted by 1 point (+/-)
- the assignment of the D- or F may deviate by a few points (2-3) from the values shown
- faculty may elect to not use +/- grades
TOPICAL OUTLINE:
Introduction and Course Planning
Chapter 1 Fundamentals of Mechanical Measurement
Chapter 2 Standards & Dimensional Units of Measurement
Chapter 16 Temperature Measurements
Chapter 11 Displacement & Dimensional Measurement
Chapter 12 Strain & Stress: Measurement & Analysis
Chapter 13 Measurement of Force & Torque
Practical Applications / Case Studies
Chapter 14 Measurement of Fluid Pressure
Chapter 15 Measurement of Fluid Flow
Chapter 17 Measurement of Motion
Non-Destructive Measurements and Testing
Accelerometer Measurements
Summary and Applications

METHOD OF PRESENTATION:
Course is delivered in traditional classroom lecture and lab sessions.

MIAMI UNIVERSITY LEARNING COMMUNITY
Miami University is committed to fostering a supportive learning environment for all students irrespective of individual differences in gender, race, national origin, religion, handicapping condition, sexual preference, or age. Students should expect, and help create, a learning environment free from all forms of prejudice. Disparaging comments, sexist or racist humor, or questioning the academic commitment of students based upon these individual differences are behaviors that undermine our learning community. If such behaviors occur in class, please seek the assistance of your instructor or department chair.