TITLE: Industrial Instrumentation

CREDITS: 3

CONTACTS: CLASS - LAB - TOTAL

3 - 2 - 3

PREREQUISITES: Preferred: EEM 105

DESCRIPTION: LEVEL I: This course covers the basic principles of instrumentation, including a discussion of various instruments employed in industrial applications.

LEVEL II: The operating principles of the instruments of level one.

LEVEL III: Example of actual application of instruments used in process control.


MATERIALS (specifying those to be purchased by student): Textbook, paper/pencils, and scientific calculator.

COLLATERAL READING: As assigned

CLASS MANAGEMENT ACTIVITIES (Attendance, tardies, testing, etc.):

Academic Honesty: During a test, as well as on any written assignment, paper, or project, anyone caught exchanging information or copying someone else's work will be given a grade of "F" on that work and face further disciplinary action. Refer to the "Student Code Book" on "Academic Dishonesty".

Attendance: 20% will be the maximum amount allowed. After the first five there will be no curve as related to the grades but after this number the student is required to have a conference with his/her advisor and guidance counselor on their first day back at school. There are no unexcused absences except those verified by other instructors for field trips or school related assignments. A student with a doctor's excuse will be able to make up missed work, but the absence is still counted toward the 20%.

Tardies: A student is tardy if he/she arrives for class after the instructor has checked the class roll. Three tardies will count as one absence. Any student who shows up for class more than ten minutes late will be counted as absent for that class. Any student who is tardy more than eight times will be dropped from the class.

Assigned Work: If an assignment is given to the class while a student is absent, he/she is required to turn in the work on the first day back in class.
**Classroom Etiquette:** An integral part of an education is developing a sense of integrity and responsibility not only toward ourselves but also toward others. In the classroom, as on the job or in your home, exhibiting appropriate behavior reflects on your maturity. Arriving late to class, being unprepared, inappropriate talking while class is in session, etc. negatively reflect on you and your fellow students. Please be considerate.

**Student ID:** It is mandatory that every student wear his or her student ID at all times.

During the first week of classes, the instructor will issue a reminder to wear the ID. This reminder is a warning.

Then instructors are required to dismiss students without ID from class. The student may get his/her ID (or a new one from Student Services for $3.00) and return to class before the midpoint of the class. If the student cannot get his/her ID and return to class by the midpoint, the instructor will record the absence.

**DISABILITIES STATEMENT:** Students with disabilities are encouraged to contact the Dean of Student Services to discuss needs or concerns as they pursue an academic program and participate in campus life. The Dean of Student Services will provide guidance regarding official documentation of disabilities and/or accommodation of needs. (See College Catalog)

**RESOURCES (A-V, persons, tools/equipment):**
Lecture, audio visuals, on-site visits (labs)

**COURSE TOPICAL OUTLINE** (List topics and sub-topics of course) and Calendar or approximate length of time devoted to topic.

**CHAPTER ONE**

INTRODUCTION:
A. Basic Considerations.
B. Process Control.
C. Static Characteristics of Instruments.
D. Review Materials.

**CHAPTER TWO**

DC ELECTRICITY:
A. Basic Considerations.
B. Direct Current.
C. Review Materials.

**CHAPTER THREE**

AC ELECTRICITY:
A. Basic Considerations.
B. Alternating Current.
C. Review Materials.

**CHAPTER FOUR**

ELECTRONICS:
A. Basic Considerations.
B. Analog Electronics.
C. Digital Electronics.
D. Review Materials.
COURSE TOPICAL OUTLINE: (Continue)

CHAPTER FIVE  PRESSURE:
A. Basic Considerations.
B. Measuring Devices.
C. Application Considerations.
D. Review Materials.

CHAPTER SIX  SIGNAL TRANSMISSION:
A. Electrical.
B. Pneumatic.
C. Fiber Optics.
D. Review Materials.

CHAPTER SEVEN  TEMPERATURE AND HEAT:
A. Basic Considerations.
B. Measuring Devices.
C. Application Considerations.
D. Review Materials.

CHAPTER EIGHT  LEVEL:
A. Basic Considerations.
B. Measuring Devices.
C. Application Considerations.
D. Review Materials.

CHAPTER NINE  FLOW:
A. Basic Considerations.
B. Measuring Devices.
C. Application Considerations.
D. Review Materials.

CHAPTER TEN  HUMIDITY:
A. Basic Considerations.
B. Measuring Devices.
C. Application Considerations.
D. Review Materials.

CHAPTER ELEVEN  OTHER VARIABLES:
A. Density and Specific Gravity.
B. Viscosity.
C. Position/displacement.
D. Force, Torque, and Load Cells.
E. Sound.
F. pH Measurements.
G. Review Materials.

CHAPTER TWELVE  PROCESS CONTROL:
A. Controller Action.
B. Implementation or Controller Action.
C. Review Materials.
STUDENT LEARNING OUTCOMES:
Students will have a thorough understanding of most instruments used in industrial applications. Students will be able to solve calculations dealing with various pressures.

INSTRUCTIONAL METHODS TO COMPLETE OUTCOMES:
Classroom lecture, audio visuals, on-site visits.

EVALUATIVE METHODS TO APPRAISE OUTCOMES:
Unit(s) test will be given. Total grade will be derived from tests.

GRADING SCALE:
93 - 100 = A
84 - 92 = B
77 - 83 = C
70 - 76 = D
Below 70 = F