MURRAY STATE UNIVERSITY

DEPARTMENT OF INDUSTRIAL AND ENGINEERING TECHNOLOGY

Fall 2011
COURSE NUMBER: EMT 312 CREDIT HOURS: 4

I. TITLE: Industrial Instrumentation

II. INSTRUCTOR: Sanjeevi Chitikeshi, Room: IET 253U, Tel: 809-6894
E-mail: schitikeshi@murraystate.edu

III. COURSE TIME/PLACE: Class: 8:30 am – 9:20 pm, MWF, IET 244
Lab: TBA, IET 222 and 233

II. CATALOG DESCRIPTION:
This course is a study of signal conditioning, sensors, interfacing to final outputs, controller principles and control loop characteristics.

III. PURPOSE:
The purpose is to cover the elements in a process control system from the initial sensors to the final actuators

.IV. COURSE OBJECTIVES:
This course will enable the student to recognize, analyze, and design the components that make up a process control system. The lab portion will enable the student to recognize and setup devices and test and evaluate control loops.

V. CONTENT OUTLINE:
1. Introduction: Instrumentation, measuring devices, instrumentation diagrams and basic control principles
2. Analog signal conditioning
3. Digital signal conditioning
4. Thermal sensors
5. Mechanical sensors
6. Optical sensors
7. Controller Principles
8. Control loop characteristics in frequency domain.

VI. INSTRUCTIONAL ACTIVITIES:
1. Lectures
2. Class discussions
3. Computer simulation/programming
4. Problem solving
5. Field trip

VII. FIELD, CLINICAL AND/OR LABORATORY EXPERIENCES:
Laboratory assignments related to the lecture topics.

VIII. RESOURCES:
Electronic components, sensors, test equipment, and computers and associated software are provided in the laboratories.

IX. GRADING PROCEDURES:
1. Grading Scale:
90-100% A
80-89% B
70-79% C
60-69% D
Below 60% E

2. Grading Procedure (weighted average):
Mid Term Exam1 20%

Mid Term Exam2	20%
Final Exam	20%
Lab Grade	30%
Homework	10%

3. Homework problems: Homework problems should be solved as assigned. The student will find that having worked homework problems is excellent preparation for exams.
4. Written Communication Skills: Part of the grade of lab reports will be based on written communication skills. Lab reports need to be neat, grammatically correct, and clearly and logically presented. A separate handout will explain lab report requirements in more detail.

X. ATTENDANCE POLICY: This course will adhere to the policy published in the MSU Undergraduate Bulletin. Attendance will not be recorded each day, but students are expected to be regular in attendance. Provisions will be made for making up excused absences from labs. Late lab reports will have a grade reduction. Make-up exams will be given for excused absences only. Notification must be given to the instructor prior to missing an exam or lab in order for it to be considered as an excused absence.

XI. ACADEMIC HONESTY POLICY:
This course will adhere to the policy published in the MSU Undergraduate Bulletin.
Cheating, plagiarism (submitting another person's material as one's own), or doing work for another person which will receive academic credit are all impermissible. This includes the use of unauthorized books, notebooks or other sources in order to secure or give help during an examination; the unauthorized copying of examinations, assignments, reports or term papers; or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

XII. TEXT AND REFERENCES:
Text: Process Control Instrumentation Technology, Curtis D. Johnson, 8th edition; ISBN 0-13-119457-7.
Laboratory assignments will be distributed as assigned.

References: Mechatronics: Electronic control systems in mechanical & electrical engineering, 4th Edition By Bolton; ISBN 978-0-13-240763-2

XIII. PREREQUISITE:
TSM 210, EMT 310, and MAT 230 or equivalent

XIV NON-DISCRIMINATION POLICY STATEMENT
Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact the Director of Equal Opportunity, Murray State University, 103 Wells Hall, Murray, KY 42071-3318. Telephone: 270-809-3155 (voice), 270-809-3361 (TDD).