Wharton County Junior College

Administrative - Master Syllabus
COVER SHEET

Course Title - Industrial Electronics
Course Prefix and Number - ELMT 2433
Department – Electronics Eng. Tech.   **Division -** Technology and Business
Course Type: (check one)
☐ Academic General Education Course (from ACGM – but not in WCJC Core)
☐ Academic WCJC Core Course
☒ WECM course (This course is a Special Topics or Unique Needs Course: Y ☐ or N ☒)

Semester Credit Hours # : Lecture hours# : Lab/other hours #   **4:3:3**

Equated Pay hours for course – 4.5

List Lab/ Other Hours
Lab Hours 3
Clinical Hours
Practicum Hours
Other (list)

Course Catalog Description - A study of devices, circuits, and systems primarily used in automated manufacturing and/or process control including computer controls and interfacing between mechanical, electrical, electronic, and computer equipment. Presentation of programming schemes. Analog and digital control loops and their application in process control and robotics. Microprocessors for control and monitoring. Sensing devices for pressure, level, flow, temperature, and position. Signal processing: A/D and D/A conversion, feedback, and servos. Laboratory work includes microprocessor and robotics interfacing and control circuits.

Prerequisites/Co requisites - Credit for CETT 1457

Prepared by David Kucera   *Date* 06/20/12

Reviewed by department head David Kucera   *Date* 06/20/12

Accuracy verified by Division Chair David Kucera   *Date* 08/03/12

Approved by Dean of Vocational Instruction or Vice President of Instruction Lac   *Date* 11-9-12

I. Topical Outline – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, clinical or other non-lecture instruction):

        The following performance will be expected of any student completing this course with a passing grade. There is no absolute time limit on the performance of these objectives, unless noted, but the grade received by the student will depend, in part, on the relative speed and precision of the student's performance in these tasks. Where subjective evaluations are indicated, the instructor will make these judgments based on his or her knowledge of the skills required to place a graduate with the expectation of successful on-job performance.

The student will be expected to perform the following tasks in written examination or laboratory demonstration:

Solid-state devices and circuits

Programmable controllers

Thyristors

Lasers

Fiber optics

Power supplies

Op-amp circuits

Open- and closed-loop feedback systems

Input devices

Output devices

AC and DC motors

Motor control devices

Robots and other motion control systems

Data communications

II. Course Learning Outcomes

Course Learning Outcome	Method of Assessment
Describe how electronic input and output circuits are used to control automated manufacturing and/or process systems; Identify basic elements used for input, output, timing, and control; Define how programmable electronic systems use input data to alter output responses; Troubleshoot a representative system; and demonstrate how system operation can be altered with software programming	Assessed in Capstone Experience: CETTT 2370 Final Project course.

III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

An electronics text covering Industrial Electronics. Example: Industrial Electronics by Frenzal

Calculator – scientific with Sine, Cosine, Tangent capabilities

IV. Suggested Course Maximum - 30 lecture, 15 laboratory

V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Lecture facilities for 30 students. Laboratory facilities for 18 students must include 9 bench positions each with a digital meter, logic probe, 20 MHz oscilloscope and probes, bread boarding facility with power supply and signal generator, and a stock of basic AC circuit components.

VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course

Evaluation of Performance:
Course grades will be determined by the percentage of course objectives for which the student can demonstrate mastery and by attendance as stated in the Departmental Policy sheet provided to the student. Mastery of course objectives will be determined by written examinations, an attendance grade as described in the Departmental Policy handout, a daily work grade which will include graded homework, graded laboratory work, and a comprehensive final exam.
Approximate Grade Evaluation Summary:

Major tests 60%
Attendance.. 10%
Lab reports, homework, and quizzes. 15%
Comprehensive Final examination 15%

VII. **Curriculum Checklist**

☐ - **Academic General Education Course** (from ACGM – but not in WCJC Core)
   No additional documentation needed

☐ - **Academic WCJC Core Course**
   Attach the Core Curriculum Checklist, including the following:
   • Basic Intellectual Competencies
   • Perspectives
   • Exemplary Educational Objectives

☒ - **WECM Courses**
   If needed, revise the Program SCANS Matrix & Competencies Checklist.