ELC 343 – Microcomputer Systems

Fall Semester

2010-11 Catalog Data: ELC 343/Microcomputer Systems 1 course unit

*Prerequisite:* ENG 312

An introductory course in microcontrollers, microprocessors, embedded control architecture, and assembly language programming. Interfacing of external devices with microcontrollers is emphasized.

**Textbooks:** PIC Microcontroller: A Introduction to Software & Hardware Interfacing, by Han-Way Huang, Delmar Cengage Learning, 2007.

**Equipment:** BOL Starter Kit with C Stamp 48-Pin Module - USB Connector - 120V Power Supply (US, etc.), A-WIT Technologies, Inc.

**Course Objectives:\***

Objective 1: To introduce students to the design and development of microcontroller systems and how to interface these products with external devices [a,b,c,d,e,k,m].

Objective 2: To develop students' ability to understand and interpret laboratory data and to incorporate these finding into quality designs, and to be able to communicate these designs and finding to other engineers and supervisors via written reports and oral presentations [a,b,c,d,e,g,k,m]

**Topics covered:**

1. Introduction to Assembly Language Programming
2. Debugging and Downloading Programs
3. How to interface to the Microcomputer
4. Introduction to PROM and EEPROM
5. How to Manage a Limited Memory
6. How to Produce a Proper Program that is Well Documented

**Evaluation:**  A. A Number of Design Project with Technical Reports

1. Homework
2. Final Project with Proper Documentation and Oral Presentation

**Performance Criteria:\*\***

Objective 1

1. Students will demonstrate an understanding of how to program in assembly language and how to design microcontroller systems [A, B, C].
2. Students will demonstrate the ability to interface microcontrollers to other electronic devices and how design these systems [A, C]
3. Students will demonstrate the ability to design microcontroller systems to meet specifications produced by other departments [ A, B, C]

Objective 2

1. Students will demonstrate the ability to evaluate, determine specifications and model devices to incorporate these devices in microcontroller designs [A, B, C].
2. Students will demonstrate the ability to produce quality technical reports and produces quality technical presentations [A, C].
3. Students will demonstrate the ability to write proper software and how to document their designs [ A, C]

Contribution of course to meeting the professional component

Engineering Science: 25%

Engineering Design: 75%

**Prepared by:** Orlando J. Hernandez **Date:** April 2011

\*Lower case letters in brackets refer to the student outcomes of the Electrical/Computer Engineering Program

\*\* Capital letters in brackets refer to evaluation methods used to assess student performance.