ELC 343 – Microcomputer Systems

Fall Semester

2015-16 Catalog Data: ELC 343/Microcomputer Systems 0.5 course unit

*Corequisite:* ELC 411

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

**Textbooks:** [ZHU] Embedded Systems with ARM® Cortex-M3 Microcontrollers in Assembly Language and C, by Dr. Yifeng Zhu, E-Man Press, 2015

ISBN 978-0-9826926-2-2

Class/lab manual handouts, and software tools and equipment user and reference manuals.

**Supplements:** PSoC® 5LP Architecture TRM (Technical Reference Manual), Cypress Semiconductor Corporation, 2013.

**Equipment:** CY8CKIT-050 PSoC® 5LP Development Kit, Cypress Semiconductor Corporation.

**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].

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]

**Topics covered:**

1. Introduction to Assembly Language Programming
2. Debugging and Downloading Programs
3. Software monitoring and control of interface pins and displays
4. Conversion between digital and analog signals
5. How to Produce a Proper Program that is Well Documented

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

1. 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].
2. Students will demonstrate the ability to interface microcontrollers to other electronic devices and how to design these systems [A, B]
3. Students will demonstrate the ability to design microcontroller systems to meet specifications produced by other departments [ A, B]

Objective 2

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

**Prepared by:** Orlando J. Hernandez **Date:** August 2015

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

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