EEL 4746L — Microprocessor-Based System Design Laboratory

Curriculum Designation: Required course for EE and CpE majors.

Course (Catalog) Description: Laboratory in support of EEL 4746.

Prerequisite: EEL3705; EEL3705L
Corequisite: EEL4746

Course Objectives:
1. Maintain an electronic lab notebook and describe the results of each lab experiment in a predefined format.
2. Use a modern development environment to design, code, and implement C or assembly language routines and programs that will run on a prototype or development board.
3. Use debugging techniques to analyze C language or assembly language software routines and programs that have design flaws and/or errors; determine the appropriate “fix” and implement the correct form of the program or routine.
4. Design, code, and implement C language or assembly language software routines and programs that will utilize interrupts, low-power modes, serial interface protocols, and port I/O.
5. Design, code, assemble, debug, and test C or assembly language programs for a microprocessor-based design project.

Topics covered:
1. Laboratory Safety and Documentation
2. Introduction to CCS and the MSP430 Launchpad
3. Using LEDs and Pushbuttons on the MSP430 Launchpad
4. 2-bit Binary Counter
5. Hardware Debugging and Hardware Timers
6. Arbitrary 4-bit Up/Down Counter
7. Introduction to the Educational Boosterpack MKII
8. Introduction to the Interrupts and Low Power Modes
9. Introduction to the Serial Interface Protocols
10. Stepper Motors
11. Class Design Project

Class Schedule: One 165 minute lab per week (1 credit hour).

Subject Area: Engineering

Significant Design: Yes

Relationship to Assessed ABET Student Outcomes: 1(a-c), 7e

Last Updated by: R.J. Perry Date: April 30th, 2021