ECE 340 Syllabus

Credits and Contact Hours: 3 credits, 3 lecture hours

Instructor: James F. Frenzel


Course Description: Introduction to use of embedded microcontrollers and microprocessors; processor architecture; assembly language programming; use of development systems and/or emulators for system testing and debugging; software and hardware considerations of processor interfacing for I/O and memory expansion; programmed and interrupt driven I/O techniques. Three lec a wk.

Prereqs. ECE 240-241 or Instructor Permission
        CS112, CS 120 or equivalent knowledge of C

Course Type: Required

Course Goals:
- To instruct student how to solve engineering problems using microcontrollers.
- To instruct students how manage microprocessor resources
- To instruct students to model software based systems

Student Outcomes: Data collected in this course are used to assess achievement of Student Outcomes (b) and (e) for the Electrical Engineering Program: (b) An ability to design and conduct experiments, as well as to analyze and interpret data; (e) An ability to identify, formulate and solve engineering problems.

Students will have the ability to design and conduct experiments, as well as to analyze and interpret data as well as an ability to identify, formulate and solve engineering problems. Students will also have an ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
Course Topics:
1. Elements of C programming
2. Program format and styles
3. Integrated Development Design (MPLAB)
4. Code Instrumentation
5. Microprocessor Resource Management
   (1) Input / Output (I/O) - controlling bits
   (2) Timers and clocks
   (3) Interrupts
   (4) Handshaking
6. Serial I/O
7. Asynchronous
8. Synchronous
9. I2C
10. PWM

Prepared by: Richard W. Wall, PhD Date: February 12, 2013